● PSF C.F. Ofc. of Petroleum Coordinator

BF

67

Office of Petroleum Coordinator

July 14, 1941

x56
x48

Dear Harold:

I have your note and I am asking the Maritime Commission to explore the possibilities in this at once. x1705 x99

Very sincerely yours,

/s/ FRANKLIN D. ROOSEVELT

The Honorable
The Secretary of Interior. x4435 x6

HLH/lmb

x4193
x463-6

THE WHITE HOUSE
WASHINGTON

July 12, 1941

MEMORANDUM FOR

HON. HARRY HOPKINS x4117

For preparation of reply.

F. D. R.

Enclosures

Ltr. to the President Hon. Harold L. Ickes, Office of Petroleum Coordinator for National Defense, 7/9/41; encl a report which has just been handed to him by Deputy Coordinator Davies; re obtaining facts of the British situation as regards petroleum supplies. Matter confidential, urgent and important.

x G. F. State European War

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF PETROLEUM COORDINATOR
FOR NATIONAL DEFENSE
WASHINGTON

July 9, 1941.

URGENT AND IMPORTANT -- CONFIDENTIAL

My dear Mr. President:

I am enclosing a report that has just been handed to me by Deputy Coordinator Davies. This matter is so urgent that I am sending it to you immediately without further comment by myself.

Sincerely yours,

Harold L. Ickes

Coordinator.

The President,
The White House.

Enc.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF PETROLEUM COORDINATOR
FOR NATIONAL DEFENSE
WASHINGTON

July 8, 1941

CONFIDENTIAL

DEPUTY COORDINATOR

MEMORANDUM FOR THE COORDINATOR:

As you know, we have been endeavoring for some time to obtain the facts of the British situation as regards petroleum supplies. Sir Arthur Salter has now delivered to us a statement of the British position as of June 1st, together with data, which enables us to approximate their situation as of this date. Copies of the reports have been delivered to Admiral Land.

I think the British position as regards petroleum stocks, particularly motor gasoline, is nothing less than shocking.

Total stocks of motor gasoline in the United Kingdom are reported as sufficient to meet current requirements for only 5 weeks. Even these figures carry no discount for tank bottoms which are not actually usable, or for the fact that stocks are distributed over an extensive area and so cannot be made actually available in total at the point of need.

Aviation gasoline stocks are reported as sufficient for aviation purposes for 12 months. This position is good, but must be maintained, and as additional planes are placed in service proportionately greater quantities of aviation fuel must be supplied.

Admiralty fuel oil stocks have fallen below the safety point by 2,000,000 barrels. A proper minimum is considered 7 months' supply. Black oil supply is sufficient for 2 months -- short 3,600,000 barrels.

To meet current British petroleum needs would require 16 more tankers than are now in this service. Beyond this, the British are losing through sinkings 7 more tankers per month than we and they are building. By the end of the year, at the present rate, there would be a deficit of 65 tankers, stocks would be practically exhausted, and the deficit would continue to increase by 7 a month.

To supply current petroleum needs of the United Kingdom and to build up depleted inventories to a minimum level of safety by Dec. 31st, will require 100 tankers additional to those now in this service. To the extent that the effectiveness of tankers now in service can be increased, this number would be reduced, and there are certain prospects for improved operation.

The 43 tankers already released to the British are now engaged in transporting product from the Dutch West Indies and the U. S. Gulf to points North of Hatteras for trans-shipment in British convoy via Halifax. This transport plan is highly inefficient and results from the prohibition against American ships entering combat zones. Were these American ships free to move unrestricted, they would be twice as effective.

The U. S. Navy has in its service 12 high-speed, large tank ships. If these could be used in transporting oil to the United Kingdom by the most direct route and at full speed, they would be the equivalent of approximately 40 ordinary ships in convoy. Whether or not the Navy could extend such assistance in the light of their own needs, is of course not known to me, but I suggest in the emergency that this and other possibilities for greater utilization of Navy tankers should be immediately explored.

The British can themselves obtain some tankers through introducing restrictions in the use of petroleum products, or increasing the existing restrictions, in the Dominions and the Colonies of the Empire. By this means 10 or more tank ships can be obtained. The British oil representative is today in Canada, acting with the Canadian Oil Controller to this purpose.

In the light of the distressing situation which the foregoing facts reveal, I recommend to you immediate action along the following lines:

(1) The release to British service of an additional 50 tankers from American owned or controlled fleets now in Western Hemisphere trade. These should be foreign flag ships to avoid the restriction of the Neutrality Act, as otherwise their employment would be comparatively ineffective.

(2) The American tankers now engaged in British "shuttle service" should be replaced with foreign flag ships so that these vessels may also be used in an unrestricted way. This may require some re-registry of American flag vessels.

(3) The Navy Department should be called upon to explore with us in proper relation to our domestic situation, and to our Western Hemisphere problems, the possibilities connected with an increased utilization of the tanker tonnage in Navy service, totaling some 31 vessels.

(4) The new possibilities connected with transport via Iceland should be explored in the light of our occupation of that outpost -- this in conjunction with the Navy Department, the British Petroleum Mission, the Maritime Commission, and any other governmental agencies concerned.

(5) German and Italian tank ships taken into custody by Western Hemisphere Governments should be pressed into service. It is reported that there are some 20, only part of which are in operating condition.

At best, the transfer of additional tank ships from American owners, the re-registry of some of these vessels, and the equipping for service in combat zones, will take some weeks. Likewise, the substitution of foreign flag ships for American flag vessels now in shuttle service, will require perhaps a month's time. Considering this, and recognizing the seriousness of the present day British petroleum inventory position, there is not a day's time to spare. The foregoing proposals I urge be made effective forthwith.

I repeat that the British position from the standpoint of petroleum supply, as it is now understood by us, is grave in the extreme, and while this further aid will call for sacrifices domestically, these sacrifices are relatively inconsequential. Food, ammunition and planes will mean nothing to the British if their petroleum stocks reach the point of exhaustion, which, if we do not act promptly, is a distinct possibility.

Deputy Coordinator

PSF

27

Office of Petroleum Coordinator

October 30, 1941

MEMORANDUM FOR THE PETROLEUM COORDINATOR: x4435

I have received your letter of x56
October 18 enclosing the memorandum sent to you under date of October 15 by the Deputy Petroleum Coordinator relating to the question of oil reserves.

I have read Mr. Davies' memorandum with interest.

I am keeping as fully informed as possible with regard to this question and concerning developments in relation therewith through the Department of State and the War and Navy Departments. x25 x18

"F.D.R." F.D.R.

No papers accompanied the original of this memorandum to the Petroleum Coordinator.

U:SW:PRH

THE UNDER SECRETARY OF STATE
WASHINGTON

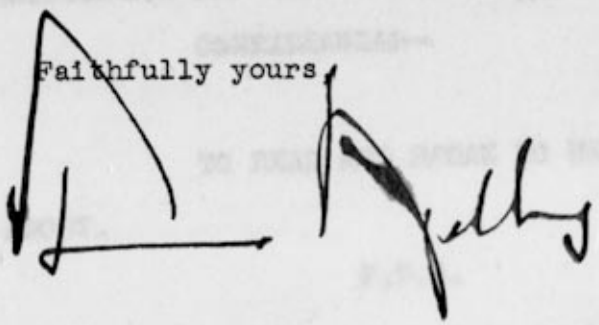
October 29, 1941.

My dear Mr. President:

In accordance with our conversation of yesterday I am sending you a suggested memorandum to be sent by you to the Petroleum Coordinator in reply to his memorandum to you of October 18.

Believe me

Faithfully yours,



Enclosure

The President,

The White House.

THE WHITE HOUSE

WASHINGTON

October 25, 1941.

MEMORANDUM FOR SUMNER WELLES: x20

~~CONFIDENTIAL~~

TO READ AND SPEAK TO ME

ABOUT.

F.D.R.

Ltr. to the President from Hon. Harold L. Ickes, Petroleum Coordinator for Natl Defense, 10/18/41, encl memo for the Petroleum Coordinator, with accompanying chart, from the Deputy Petroleum Coordinator, Ralph K. Davies, 10/15/41; re the importance to the U.S. of oil reserves in Mexico.

x723

x146

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF PETROLEUM COORDINATOR
FOR NATIONAL DEFENSE
WASHINGTON

October 18, 1941.

My dear Mr. President:

I consider the enclosed memorandum, with accompanying chart, one of the most important documents that I have sent to you.

Sincerely yours,

Harold L. Ickes

Petroleum Coordinator
for National Defense.

The President,

The White House.

Enc.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF PETROLEUM COORDINATOR
FOR NATIONAL DEFENSE
WASHINGTON

DEPUTY COORDINATOR

October 15, 1941

MEMORANDUM for the Petroleum Coordinator:

Recalling our conversation of this morning with regard to the importance to the United States of oil reserves in Mexico.

Please note the attached chart showing the petroleum reserves and production position of the United States over the last forty years. The trends are unmistakable and are of the greatest significance. You have here a graphic presentation of the facts which we have discussed on several occasions.

In proportion to the demand for petroleum products the petroleum reserves ratio of the United States proper has been diminishing steadily since 1933. Since 1938 the discoveries of new reserves in the United States have not equalled the quantity of oil produced. As you will see from the chart, the known petroleum reserves of the United States have dwindled far below the reserve-depletion index of 20 which, I think, may be considered the lowest safe index.

We in the United States must face the prospect of acquiring and holding sufficient additional reserves to supply our military and civilian needs in the years ahead, irrespective of whether such reserves are within the borders of the United States or not. That is to say, the United States must have extra-territorial petroleum reserves to guard against the day when our steadily increasing demand can no longer be met by our domestic supply. Much can be accomplished in terms of improved efficiency in production through better practice, but not enough to solve the nation's future petroleum problem.

Looking ahead — and not so very far ahead — the petroleum resources of Mexico, Colombia, Venezuela, and other Caribbean countries must be considered to be reserves for the United States. They are, in fact, more important to the United States than to the countries that have them, because they are more vital to the life of the consumer than to the producer. Great Britain has long recognized this principle, and in result we find the British in control of oil fields throughout the world.

x87

In this connection the pending settlement with Mexico as to the expropriated oil properties is of great importance and I think the point should be made that such economic considerations should enter strongly into our appraisal of the Mexican problem and into our determination as to the sound course to be pursued. In addition to the delicate diplomatic considerations involved, there is an economic issue of the greatest importance which should be fully weighed. More particularly is this true as to the Mexican negotiations, since the Mexican settlement will very largely determine the course that will be pursued by the other Latin American countries having large oil reserves of equal or even greater importance to us.

The production of petroleum is a process of liquidation from the very day each well is completed. It represents the liquidation of a vital and an irreplaceable natural resource. What a tragedy it would be if the United States, having by reason of the intensive liquidation of its own petroleum resources led the world to an age of mechanized life, transportation and warfare, should itself have lost the ability to compete in it.

I suggest that those who are cognizant of the economic aspects of the problem, and qualified through knowledge of the facts, might well be of assistance to the State Department and to others in the consideration of the Mexican oil problem from the standpoint described herein.

Ralph K. Davies,
Deputy Petroleum Coordinator.

PSF

THE WHITE HOUSE
WASHINGTON

67 Office of Petroleum Coordinator

February 24, 1942

MEMORANDUM FOR

HON. HARRY HOPKINS ×4117

Please prepare reply.

×56-73

F. D. R.

Enclosure ×4435

Letter from Hon. Harold L. Ickes, Petroleum Coordinator for National Defense, 2/21/42, to the President. States that on 2/18 he was advised in the President's name that the apportionment of high octane gasoline would be in the hands of the Joint Chiefs of Staff. ×5014 Word has just come to him that the Joint Chiefs of Staff have decided that the Aviation Assignment Committee should apportion the gasoline. When this matter was under consideration the British promptly insisted that their oil representative here, Mr. Wilkinson, be included in the group considering 100 octane gasoline. The interesting part of it all is that while the British use 100 octane gasoline, they do not produce it. The program of pro-

×48

(over)

duction and distribution is coming more and more exclusively within the jurisdiction of the Petroleum Coordinator, but no one on the American side seemed to think that it was worth while having his judgment or assistance in determining the important questions relating to this important production. He points out further that Russia, Australia and other countries are very much interested in this high grade gasoline. That Australia has any supply at all now, although it is only a dwindling one, is due to our insistence last Summer and Fall that her storage stocks be built up. Austrial is not satisfied to take whatever crumbs may drop from Great Britain's table. The situation in the Far East is bound to throw an even heavier burden upon our petroleum resources, including 100 octane gasoline. This means that other countries will feel that they are entitled to consideration. Mr. Ickes wants to assure the President that he accepts the President's decision as a soldier should. It will be difficult for this board to function without the Office of Petrolem Coordinator's assistance and cooperation but they will be glad to furnish these whenever they are called upon.

67

Office of Petroleum Coordinator

February 18, 1942

x56-B

My dear Harold:

It seems to me the question of how high octane gasoline should be distributed in so far as it concerns military use is a matter that should be decided by the Joint Chiefs of Staff, because it is an important strategic decision.

I have, therefore, referred the matter to them and have asked them to advise you the moment the decision is made.

I do not think it is advisable to set up a special committee on this matter because the Joint Chiefs of Staff are considering all of the munitions of war, of which high octane gasoline is one. x5014

Very sincerely yours,

(SIGNED) FRANKLIN D. ROOSEVELT

The Honorable
Harold L. Ickes,
Petroleum Coordinator for National Defense. x4435

HLH/lmb

THE WHITE HOUSE

WASHINGTON

February 18, 1942.

MEMORANDUM FOR

HARRY HOPKINS x4117

You had better take this up and try to rush it as it is a bit late.

F. D. R.

Letter from Hon. Harold L. Ickes, Petroleum Coordinator for National Defense, 1/19/42, to the President, stating that in view of the vital importance of 100 octane gasoline in the war effort, and the limited supply of this essential fuel, the Dept. will be called upon to make some important decisions as to the allocation of supplies as between our own Army and Navy and our allies in the war. So far, Mr. Ickes' office has worked along quite effectively on such problems with liaison officers designated by the Army and Navy and the Joint Aeronautical Board, and representatives of the allies and the Lend-Lease officials. However, it occurs to him that it may be desirable that the President himself

(over)

designate a committee to pass final judgment on the matter of the allocation of the product. Mr. Ickes suggests the Secretary of War, the Secretary of the Navy, the President's assistant in charge of Lend-Lease, and the Petroleum Coordinator. Perhaps in the light of recent reorganization, Mr. Donald Nelson should be included. The allocation of supply in the case of 100 octane aviation gasoline is bound up with production problems in some rather special ways, in that the product is itself a blend of fuel components that are produced in various places in the U.S. and abroad, and intricate stock transfer and refinery balancing operation come into play. Mr. Ickes asks President's wishes in this direction.

UNITED STATES

DEPARTMENT OF THE INTERIOR

OFFICE OF PETROLEUM COORDINATOR
FOR NATIONAL DEFENSE
WASHINGTON

My dear Mr. President:

In view of the vital importance of 100 octane gasoline in the war effort, and the limited supply of this essential fuel, we will be called upon to make some important decisions as to the allocation of supplies as between our own Army and Navy and our allies in the war.

So far, my office has worked along quite effectively on such problems with liaison officers designated by the Army and Navy and the Joint Aeronautical Board, and representatives of the allies and the Lend-Lease officials. However, it occurs to me that it may be desirable that you yourself designate a committee to pass final judgment on the matter of the allocation of this product. I suggest the Secretary of War, the Secretary of the Navy, your assistant in charge of Lend-Lease, and the Petroleum Coordinator. Perhaps in the light of recent reorganization, Mr. Donald Nelson should be included. x4735

x25
x18
x4559

The allocation of supply in the case of 100 octane aviation gasoline is bound up with production problems in some rather special ways, in that the product is itself a blend of fuel components that are produced in various places in the United States and abroad, and intricate stock transfer and refinery balancing operations come into play.

Would you please let me know your wishes in this direction.

Sincerely yours,

Harold L. Ickes

Petroleum Coordinator
for National Defense.

The President,

The White House.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF PETROLEUM COORDINATOR
FOR NATIONAL DEFENSE
WASHINGTON

JAN 30 1942

a copy of the Presidents
memo of 1/19/42 sent to Mr Bunlew
for Sec Ickes. 1/31/42

My dear Mr. President:

I do not wish to press unduly the question raised in my letter to you of January 19, as to the allocation of 100 octane aviation gasoline supplies, but important problems are now before us which require decision.

My letter of the nineteenth inquired your wishes as to whom you desired to designate as the authority to pass final judgment upon the matter of the allocation of 100 octane gasoline, and suggested that the Secretary of War, the Secretary of the Navy, and your assistant in charge of Lend-Lease, join with the Petroleum Coordinator to assume this responsibility.

Sincerely yours,

Harold L. Ickes

Petroleum Coordinator
for National Defense.

The President,
The White House.

x249 official

THE WHITE HOUSE
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, $300

Betty Bonstetl

For your confidential files

This is copy of letter sent to Donald Nelson with President's memorandum of 1/19/42

UNITED STATES

DEPARTMENT OF THE INTERIOR

OFFICE OF PETROLEUM COORDINATOR

FOR NATIONAL DEFENSE

WASHINGTON JAN 19 1942

My dear Mr. President:

In view of the importance of the 100 octane aviation gasoline supply position, world-wide, I am sending you a copy of our latest report thereon. I think that you may wish to glance through it.

The production rate of the country has already been stepped up almost 50% and plants building will double that figure. An additional 25,000 barrels per day capacity is under active development, and with a clear flow of materials we will have, early in 1943, a production of over 150,000 barrels per day, in comparison with 40,000 when we started.

But this will not be enough. Your recently announced plane production program calls for a further adjustment in estimates and a new and more difficult goal for 100 octane must be established and attained. Further, both the British and our own Army are demanding higher and higher specifications, which means a greater tax upon productive capacity.

Our fighting forces cannot be effective in the air without this special high octane product. They must have it, and we must supply it on schedule. We shall be called upon here to do the apparently impossible, but I am confident that the result will be achieved.

Sincerely yours,

(Sgd.) HAROLD L. ICKES

Petroleum Coordinator
for National Defense.

The President,

The White House.

(1)

H. F. Office of Petroleum Coordinator

THE WHITE HOUSE
WASHINGTON

January 19, 1942.

MEMORANDUM FOR

DONALD NELSON: x4735

FOR YOUR INFORMATION.

x56-B

F.D.R.

Letter from Hon. Harold L. Ickes, Petroleum Coordinator for National Defense, 1/19/42, to the President, a copy of which has been retained for our files, memorandum from Ralph K. Davies, Deputy Petroleum Coordinator, addressed to the Members of the War Production Board, dated 1/17/42, and marked "copy", transmitting a mimeographed report of the Office of Petroleum Coordinator for National Defense to the Supply Priorities and Allocations Board, dated 1/15/42, together with a copy of the President's memorandum of 1/19/42 to Hon. Harold L. Ickes, reading "I have yours of January 19th about 100 octane aviation gasoline. There is no question that the production must be greatly stepped up. Please take this up with Donald Nelson." x4560

THE WHITE HOUSE

WASHINGTON

January 19, 1942.

MEMORANDUM FOR

HAROLD ICKES: x4435

I have yours of January 19th about 100 octane aviation gasoline. There is no question that the production must be greatly stepped up. Please take this up with Donald Nelson.

F.D.R.

No papers accompanied the original of this memorandum to Secretary Ickes.

x249 official

~~CONFIDENTIAL~~

C. F.

Office of Petroleum Coordinator

December 10, 1941

x4435

Honorable Harold L. Ickes,
Petroleum Coordinator for National Defense,
Department of Interior.

My dear Mr. Ickes:

The existence of a serious situation with reference to 100-octane aviation gasoline is well recognized by the Army. The Army indorses in full the steps which are being taken by your office in meeting this emergency.

The Army Air Forces has participated throughout in the determination of requirements and in supporting recommendations for increasing production of aviation fuel as indicated in your letter of November 26, 1941.

The Army Air Forces has taken action to use lower quality gasoline in certain training airplanes, which have heretofore used 100-octane fuel and has approved a change in specifications which will have the effect of increasing the available supplies of aviation fuel.

Your efforts in assisting in the important work of the Army Air Forces through the provision of aviation fuel are deeply appreciated.

Very sincerely yours,

(signed) Franklin D Roosevelt

x56-B
x249 official
x25-U
x C. F. War

~~CONFIDENTIAL~~

WAR DEPARTMENT

OFFICE, SECRETARY, GENERAL STAFF

DISPOSITION SLIP

Subject of paper: Letter from Sec/Interior to the President requesting 100 Cotton Gauntlets

To	Tally No. 16071-34	Date
.....	Office, The Ass't Sec. of War	.....
.....	Adm. Ass't S/W	.....
.....	A. C. of S., G–1	.....
.....	A. C. of S., G–2	.....
.....	A. C. of S., G–3	.....
.....	A. C. of S., G–4	.....
.....	A. C. of S., W. P. D.	.....
.....	The Adjutant General	.....
.....	Budget & Legislative Planning Branch	.....
.....	Statistics Branch	.....
.....	Executive for Reserve Affairs	.....
.....	The Chief of the General Staff Thru Air Staff	4/27/42

For—

..... Necessary action. ..... Draft of reply.

..... Preparation of reply. ..... Direct reply.

..... Note and return. ..... Note and file.

..... Remark and recommendation. ..... File.

..... Comment or concurrence. ..... Signature.

..... Inviting attention to {notation / direction} of Sec. War. ..... D. C. of S.

For signature of the President and letter of transmittal for the signature of the Sec of War

By direction of D. C. of S.

JOHN R. DEANE

Lt. Col. General Staff

Asst. Secretary, General Staff

WAR DEPARTMENT
O. C. or S.—Form No. 3

3—10116
U. S. GOVERNMENT PRINTING OFFICE

AG 463.7 (80)

P. 7 p. 4 Nov. 4 Yrmed.

THE WHITE HOUSE
WASHINGTON

November 27, 1941.

MEMORANDUM FOR

THE SECRETARY OF WAR ×25
THE SECRETARY OF THE NAVY ×18

FOR PREPARATION OF REPLY

FOR MY SIGNATURE.

F. D. R.

Letter from Hon. Harold L. Ickes, Petroleum Coordinator for National Defense, 11/26/41, to the President, enclosing report (confidential), issued by the Office of Petroleum Coordinator, dated 11/18/41, "100-Octane Aviation Gasoline Report to the Supply Priorities and Allocations Board". Mr. Ickes states that without ×4560 100 Octane Gasoline the airplanes of Great Britain and America would not be effective as instruments of warfare. Tells of new plants to produce 100 Octane are being constructed, but to brige the gap between now and the time the plants can be completed, a number of measures must be resorted, as for example, certain changes in product specifications for the Army and Navy (which have been agreed to by the Aeronautical Board on 11/25), the use of lower quality product in training planes, certain

(over)

×48 ×3717

consolidations of blending stocks as between the various units in the petroleum industry, and so forth. The original of the President's ~~memor~~ memorandum and the report sent to the Secretary of War. Copy of President's memorandum and explanation of enclosures sent to the Secretary of the Navy.

x56

THE WHITE HOUSE

WASHINGTON

November 27, 1941.

MEMORANDUM FOR

✓THE SECRETARY OF WAR
THE SECRETARY OF THE NAVY

FOR PREPARATION OF REPLY

FOR MY SIGNATURE.

Return Enc. F. D. R.

Staff

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF PETROLEUM COORDINATOR
FOR NATIONAL DEFENSE
WASHINGTON

1292

My dear Mr. President:

Without 100 Octane Gasoline the airplanes of Great Britain and America would not be effective as instruments of warfare. Unlike the German type, these planes require this special high-test fuel to operate successfully. The effective use of American and British planes is as dependent upon 100 Octane Gasoline as is the outcome of the war dependent upon airplanes themselves.

The 100 Octane productive capacity of the United States is now approximately 40,000 barrels per day. The total present requirement for Army, Navy and Lend-Lease is approximately 57,000 barrels per day. The requirement during 1942 will be about 85,000 barrels per day, and in the first part of 1943, 120,000 barrels per day. Inventory, at the present rate of consumption, would be reduced to minimum operating levels in March of next year. Thus, we have in 100 Octane a problem, important and acute.

This Office, since assuming responsibility for 100 Octane production, has cleared the way for rapid construction of additional capacity to the amount of 40,000 barrels per day, which will double the amount existing. These plants will come into production at various periods through next year, the first seven being scheduled for completion in January. Beyond this, priority clearance from the Aeronautical Board has just been obtained for materials required for another 40,000 barrels, which will bring the total to the 120,000 barrel figure mentioned above. Financing arrangements essential to the completion of certain of the plants are under development with the R.F.C., and with the War, Navy and Treasury Departments.

To bridge the gap between now and the time the new plants can be completed, a number of measures must be resorted to, as for example, certain changes in product specifications for the Army and Navy (which have been agreed to by the Aeronautical Board yesterday), the use of lower quality product in training planes, certain consolidations of blending stocks as between the various units in the petroleum industry, and so forth. Given the maximum cooperation all along the line, such measures promise reasonably to meet the emergency.

The foregoing, and the report attached, I give you simply as a matter of information. The 100 Octane problem is a good example in

many ways of the war production problem as a whole. Requirements ahead are triple the present output--former estimates have been revised drastically upward in recent months--the British estimate in January this year of 5,000 barrels per day, is now 30,000 barrels per day--additional plants require critical materials available only on priority--only by extraordinary effort and determined drive can the necessary result be achieved.

Sincerely yours,

Harold L. Ickes

Petroleum Coordinator
for National Defense.

The President,

The White House.

Enclosure 2860544

CONFIDENTIAL

WAR DEPARTMENT

WASHINGTON

WD 463.7 (11-26-41)MC-G

December 9, 1941.

The President,

The White House.

Dear Mr. President:

Herewith is a letter for your signature in reply to a communication from the Office of the Petroleum Coordinator, dated November 26, 1941.

The Army is fully aware of the serious situation which exists with reference to 100-octane aviation gasoline. We have participated fully in the determination of requirements and are doing all in our power to stretch available supplies of 100-octane fuel by changes in specifications and by the use of lower quality product in certain training airplanes.

Any further improvement in the situation should come from the Petroleum Industry in cooperation with the Office of the Petroleum Coordinator.

Respectfully yours,

Henry L. Stimson

Secretary of War.

Incls:
1-Draft of ltr to Hon.
Harold L. Ickes.
2-Ltr to Pres. Roosevelt
11/26 frm The Pet.Coord.
w/Incl 2860544.

CONFIDENTIAL

THE WHITE HOUSE
WASHINGTON

C. F.
Office of Petroleum Coordinator

March 24, 1942.

MEMORANDUM FOR HON. HAROLD L. ICKES: x4435

Dear Harold:

Many thanks for the 100 octane gasoline report.

F.D.R.

No papers accompanied the original of this memorandum to Mr. Ickes.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF PETROLEUM COORDINATOR
FOR NATIONAL DEFENSE
WASHINGTON

MAR 23 1942

My dear Mr. President:

Knowing your keen interest in the aviation program, I enclose a copy of our latest report to the War Production Board on the subject of 100 octane aviation gasoline. I do not expect you to read it through, but do believe it is sufficiently important to justify your glancing over it and noting the highlights which are condensed on the first page.

x4735

Sincerely yours,

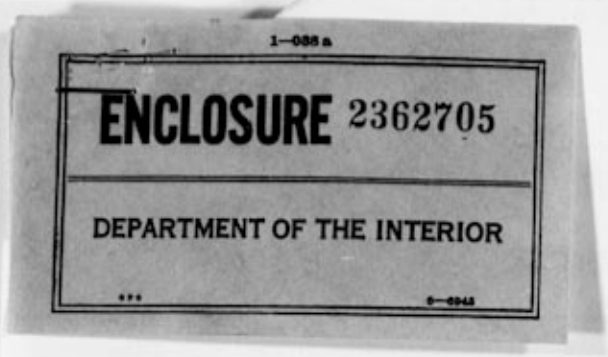
Harold L. Ickes

Petroleum Coordinator
for National Defense.

The President,
The White House.

Enclosure 2362705.

x56-73
x249 official


1—038 a
ENCLOSURE 2362705
DEPARTMENT OF THE INTERIOR

OFFICE OF THE
PETROLEUM COORDINATOR
FOR NATIONAL DEFENSE

HIGHLIGHTS OF REPORT OF MARCH 16, 1942 TO WAR PRODUCTION BOARD

RE:- 100-OCTANE AVIATION GASOLINE

Section I. Forecast of Production

Estimated production in daily barrels containing 4 cc. of tetraethyl lead per gallon:

Forecast of March 16		Forecast of February 16
66,700	Mar. 1942	63,300
68,000	June 1942	65,600
72,400	Sept.1942	69,400
78,100*	Dec. 1942	81,500
105,600*	Mar. 1943	132,600
143,300*	June 1943	158,200

*Downward revision results from delay in obtaining materials.

Proposed use of so-called "rich mixture" specifications would shrink this barrelage.

Section II. Forecast of Requirements

On basis of best data available it appears that, as of June 30, 1942, if consumption were permitted to continue at the present rate, 4,286,000 more barrels of product would be required than can be produced. Present storage will not offset this deficiency. Consumption must therefore be restricted.

Consumption within the United States for non-military purposes is now scheduled on the basis of 11,100 barrels per day for the second half of 1942. The major portion of this would be used in testing and breaking in aircraft engines. Part, perhaps half, can be saved by modification of testing procedures being urged by Petroleum Coordinator.

Section III. Allocation of Available Supplies

Munition Assignments Committee (Air) has created a sub-committee designated "Aviation Petroleum Products Allocations Committee" composed of working members of U. S. Army Air Force, U. S. Naval Air Force, Royal Air Force, British Petroleum Mission, and Office of Petroleum Coordinator. This committee should prove an effective allocation agency.

Section IV. Status of Plant Expansion Program (Rated capacity on basis of 3 cc. T.E.L.)

(A) Plants Built and Building

	Report for March 16	Report for February 16
Plants operating	48,487 bbls./day	48,487 bbls./day
Plants building	133,116	94,846
Additional projects	79,049	51,340
	260,652	194,673
Add foreign plants building	11,660	9,550
	272,312	204,223

(B) Contractual Status

	Report for March 16		Report for February 16	
Contracts signed	121,318 bbls./day		89,800 bbls./day	
Letters of Intent	28,998		8,529	
		150,316		98,329
Other capacity built or building	32,539	32,539	27,904	27,904
		182,855		126,233
Negotiations well advanced	32,782		24,735	
New projects under consideration	45,015		43,705	
		77,797		68,440
		260,652		194,673

(C) Material Delivery Schedules

No steel plate allocated for use during January or February, 1942. Result: Most of construction program delayed.

UNITED STATES
DEPARTMENT OF THE INTERIOR
Office of Petroleum Coordinator
For National Defense
Washington

March 16, 1942.

[redacted]

100-OCTANE AVIATION GASOLINE

REPORT TO THE WAR PRODUCTION BOARD

This report presents to the War Production Board our monthly forecast of production and requirements of 100-Octane aviation gasoline, as well as the status of the plant-expansion program.

I

FORECAST OF PRODUCTION

In our report of February 16, 1942, a production forecast of 100-octane gasoline by months for the year 1942 and for the first 6 months of 1943 was presented. This forecast was prepared on the assumption that all fuel would be procured to Specification AN-VV-F-781, with Amendment 4 (100-octane gasoline containing 4 cc's of tetraethyl lead per gallon). A revised monthly production forecast on the same basis, presented in daily average barrels, follows and a more detailed analysis is presented in Table I attached.

MONTH		FORECAST FEBRUARY 16 BARRELS PER DAY	FORECAST MARCH 16 BARRELS PER DAY
March	1942	64,300	66,700
April	"	64,600	68,000
May	"	64,600	68,000
June	"	65,600	68,000
July	"	68,400	68,000
August	"	68,400	68,800
September	"	69,400	72,400
October	"	73,100	72,700
November	"	81,500	75,500
December	"	81,500	78,100
January	1943	93,400	90,600
February	"	102,900	91,900
March	"	132,600	105,600
April	"	149,500	119,200
May	"	150,900	138,900
June	"	158,200	143,400

The forecasted figures presented in the previous report of February 16 are also given for purposes of comparison. It will be noted that a substantial increase in production has been predicted for the immediate future, March through July, as compared with the previous forecast, but that for the latter months of 1942 and the early part of 1943 the indicated production rate has decreased materially.

The increase in production shown for the early months of 1942 is a direct result of the controlled blending procedure which has been sponsored by the Office of the Petroleum Coordinator whereby all available stocks are blended to produce the maximum amount of 100-octane gasoline. This procedure involves, in certain cases, the shifting of the point of manufacture from one refinery to another and, in other cases, the rebalancing of operations along somewhat more costly lines, which, however, effect an increase in production.

The decrease in the forecast of production capacity for the latter part of 1942 and for the first 6 months of 1943 is a direct result of the failure to include 100-octane aviation gasoline plant projects on steel plate rolling schedules for the January and February plate allocations.

The immense importance of "rich mixture" fuels (higher than 100-octane number) in the performance of tactical planes was emphasized in the report of February 16. The Aeronautical Board requested that the Office of the Petroleum Coordinator obtain from the industry information on the relation of production capacity to fuel quality as determined by the AFD 3-C Method, which measures "rich mixture performance." For the past month all available test engines in the country were devoted almost entirely to an intensive program rating all 100-octane fuels and the components thereof by this method. A preliminary survey of these data permits an approximate estimate of the relation of production capacity to fuel quality as set forth above.

The following tabulation shows the approximate relation of production capacity to fuel quality:

Reduction in Capacity with Improved Quality

Average Rich Mixture Rating*	Estimated Production Capacity, Barrels Per Day
0.7	66,700 (present specifications)
0.8	59,700
1.0	54,900
1.25	49,300

This shrinkage effect can be partially offset by the use of benzol. This is shown below in a continuation of the tabulation

Effect of 5% Added Benzol

Average Rich Mixture Rating*	Estimated Production Capacity Barrels Per Day
1.0	62,300
1.25	57,200

*Expressed as ml. of T.E.L. in pure iso-octane (100 octane number by definition)

Table II attached presents these summarized data by districts.

As indicated above, the current production of 66,700 barrels per day has an average rich mixture rating of 0.7. For individual manufacturers this ranges from a low of 0.3 to a high of 1.25. It is indicated that the ultimate quality requirement requested by the Aeronautical Board of 1.25 will reduce our production capacity to approximately 74 percent of its current rate, or 86 percent of its current rate if the inclusion of 5 percent of added benzol is permitted. This would require approximately 3,000 barrels per day of benzol.

It is anticipated that within the next few weeks sufficient confirmatory data will be obtained to present a more accurate forecast.

II

FORECAST OF REQUIREMENTS

A. Supply and Demand Forecast

The report to the War Production Board of January 15 presented a forecast of production and requirements for the year 1942. Further estimates covering a revision of both the 1942 and the 1943 requirements

are in the process of preparation. We have been receiving currently from the individual companies a three-month forecast of supply and demand, which provides the necessary information to permit intelligent allocation of available supplies.

The following tabulation indicates that consumption cannot continue at the rate indicated by current estimates of "requirements" for it shows that, as of the end of June 1942, the deficiency then scheduled to prevail cannot be offset by available sealed storage.

Inventory -100 octane, March 1*	1,663,000	Barrels
" - components as 100 octane	2,157,000	"
Total Inventory -	3,820,000	"
Less working inventories	1,329,000	"
Available supplies	2,491,000	"
Production - March 1-June 30	8,820,000	"
Total supplies	11,311,000	"
Requirements	15,597,000	"
Deficiency	4,286,000	"

*Does not include Army-Navy sealed storage.

The above information is summarized in greater detail in Table III attached.

There is available in addition to the above-enumerated quantities, 1,604,000 barrels in Army-Navy sealed storage. Diversion of all or a portion of this will correspondingly reduce the supply deficiency indicated above, if in the opinion of the allocation authorities there is sufficient justification for such diversion.

The supply situation has been complicated in recent weeks by both a temporary and a permanent loss of production in refineries outside the continental United States. The destruction of the facilities in the Netherlands East Indies has resulted in a loss in production amounting to approximately 4,300 barrels per day. In addition to this, the extremely critical situation in the West Indies has resulted in a temporary loss of production amounting to approximately 3,000 barrels per day over the last week in February and the first part of the present month. The above forecast of the supply and demand situation does not take into account possible loss of either production, storage, or cargoes in movement.

B. Possible Reduction in Consumption.

In the report to the Supplies and Allocations Board on January 15, it was pointed out that the industrial requirement for 100-octane gasoline for the first 6 months of 1942 would amount to approximately 1,200,000 barrels, or an average rate of 6,700 barrels a day. This was shown to increase for the second half of 1942 to 2,039,000 barrels, or an average rate of 11,100 barrels a day. The major portion of this consumption is in production testing of aircraft engines.

In the hope that some reduction in this quite considerable requirement could be obtained through modification of engine testing procedures without sacrifice in production testing efficiency, the Office of the Petroleum Coordinator called a meeting of the engine manufacturers in collaboration with the Aeronautical Board and representatives of the Army and the Navy. As a result of this meeting, a series of resolutions (See Appendix I) were adopted modifying current engine testing procedures. These were later approved by the Aeronautical Board.

It is anticipated that the modifications in testing procedure set forth in these resolutions will result in reducing by at least one half the quantity of 100-octane fuel which will be required for production engine testing. As soon as revised estimates of requirements have been obtained from the engine manufacturers, a more accurate forecast of the saving obtained will be prepared.

III

ALLOCATION OF AVAILABLE SUPPLIES

The January 15 report to the War Production Board pointed out in Section 3 the extremely urgent need for the formation of an authoritative body which could study the coordination of available supplies of 100-octane fuel with requisitions, demands, and estimated requirements, in view of the fact that the total of urgent current requirements exceeds by approximately 20 percent the present productive capacity of refineries under United States control.

To meet this need the Munitions Assignment Committee (Air) has designated a sub-committee to be known as the "Aviation Petroleum Products Allocations Committee". This committee has been charged with the responsibility of studying in detail all requests, requisitions, and proposed shipments of 100-octane fuel or other aviation petroleum products for which the supply situation is critical. This committee is composed of working member representatives of the U. S. Army Force, U. S. Naval Air Force, Royal Air Force, British Petroleum Mission, and Office of the Petroleum Coordinator.

After critical examination of each allocation request, the Aviation Petroleum Products Allocations Committee presents recommendations for allocation of such portion of the requested quantities, if any, as, in its judgment, will be in the best interests of the war effort. These recommendations are acted upon by the Munitions Assignments Board through the intermediary of the Munitions Assignments Committee (Air), and when approved, are implemented by the appropriate purchasing, transportation, and manufacturing agencies through the medium of the Office of Petroleum Coordinator.

In addition to the allocation procedure above outlined, the Aviation Petroleum Products Allocations Committee is currently issuing to all non-military consumers of 100 and 91-octane gasoline allocation requests to be submitted through the Office of Petroleum Coordinator. These allocation requests, when submitted by non-military consumers to the Office of Petroleum Coordinator, will be reviewed by the Aviation Petroleum Products Allocation Committee and allocation of all, a part, or none of the requested quantities granted on a monthly basis.

The following recommendations were made by the Munitions Assignments Committee (Air) to the Munitions Assignments Board:

(1) That this committee (The Aviation Petroleum Products Allocation Committee), transmit information on requirements for aviation fuels and lubricating oils to and obtain its information from the Office of Petroleum Coordinator.

(2) That other authorized agencies obtain their information on aviation fuels and lubricants from, and transmit information to, the Office of Petroleum Coordinator.

The Office of Petroleum Coordinator is receiving currently from industry all necessary information for suitable allocation of available supplies, and, through its representation on the Aviation Petroleum Products Allocation Committee, is thus in a position to administer directly the strategic recommendations made with regard to their disposition and to provide necessary information to vitally concerned departments of government.

IV

STATUS OF PLANT EXPANSION PROGRAM

(A) Expansion To 200,000 Barrels Per Day National Capacity

Since our report of February 16, the War Production Board has authorized an increase from 180,000 barrels per day to 200,000 barrels per day national production capacity. The achievement of such capacity is naturally entirely dependent on the allocation of steel and other construction materials for the new plants, and it will be understood that all subsequent discussion of expansion is predicated on the assumption that such materials will be provided as rapidly as needed.

The comparative situation for January, February, and March 1942 (mid-months) is summarized below on the basis of the rated capacity of the various units to produce 100-octane aviation gasoline of U. S. Army-Navy Specifications containing 3 cc. per gallon of tetraethyl lead. The current supply figures cited in Sections I, II, and III of this report are on the basis of the temporary specifications which permit the use of 4 cc. of tetraethyl lead, and thus, on the grand average, produce about 15% more barrels of gasoline than would otherwise be possible. It is for this reason that the figures in Tables I and IV do not coincide. Table I covers the present situation, Table IV the ultimate.

The data shown in Table IV, plus additional data on foreign plants, are briefly summarized as follows:

	Jan. 15 Barrels per day	Feb. 15 Barrels per day	March 15 Barrels per day
PLANTS OPERATING	46,608*	48,487	48,487
PLANTS BUILDING			
(a) Plants Under Field Construction	15,837	74,067	75,917
(b) Plants in advanced Engineering Phase	44,871	8,685	8,685
(c) Plants in Preliminary Engineering Phase	22,812	12,094	48,514
TOTAL PLANTS BUILDING	83,520	94,846	133,116
PLANTS IN INITIAL DEVELOPMENT STAGE	19,800	51,340	79,049
TOTAL PROJECTED CAPACITY	149,928	194,673	260,652
FOREIGN PLANTS BUILDING			
Anglo-Iranian-Abadan Iran	7,000	7,000	7,000
Imperial Oil-Calgary-Alberta	1,200	1,200	1,200
Royal Dutch Shell-Curacao NWI	1,350	1,350	1,350
TOTAL FOREIGN PLANTS BUILDING	9,550	9,550	9,550
FOREIGN PLANTS IN DEVELOPMENT STAGE			
Montreal, Canada			940
Sarnia, Canada			1,170
GRAND TOTAL (3 cc. TEL Basis)	159,478	204,223	272,312

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* Differs from Jan. 17 Report by 2,600 BPD capacity at Aruba, N.W.I. Hereafter Aruba will be considered as a Domestic Plant.

The above progress summary gives assurance that the capacity authorized can be achieved, provided construction materials are supplied in accordance with the planned production schedules.

(B) Contracts for Output and Financing.

The following tabulation with figures expressed in barrels per day, presents the status of negotiations with respect to the purchase of the output from new and existing facilities:

Company	Present Capacity	New Capacity	Total
CONTRACTS SIGNED			
Cities Service Oil Company (E. Chicago)		1,800	1,800
Standard Oil Company of New Jersey & Affiliates(a)	13,340	23,750	37,090
Magnolia Petroleum Company	4,500	7,500	12,000(b)
The Texas Company	4,240	12,335	16,575
Sun Oil Company		10,000	10,000
Richfield Oil Company	1,750	2,050	3,800
Sinclair Refining Company (Houston)		3,400	3,400
Phillips Petroleum Company	3,250	4,460	7,710
Pan American Refining Company		4,800	4,800
Shell Oil Company (Wood River)	3,000	7,000	10,000
Standard Oil Company (Indiana)	1,315	2,685	4,000
Pure Oil Company (Defense Plant)		1,800	1,800
Premier Oil Refining Company (Defense Plant)(c)		2,285	2,285
Terminal Refining Corporation (Defense Plant)(c)		1,971	1,971
Southport Petroleum Company (Defense Plant)(c)		2,087	2,087
General Petroleum Corporation		2,000	2,000
Total Contracts Signed	31,395	89,923	121,318
LETTERS OF INTENT ISSUED			
Great Southern Corporation (Pontiac) (Defense Plant)		2,760	2,760
Root Petroleum Company (Defense Plant)		1,480	1,480
Republic Oil Refining Company (Defense Plant)		2,558	2,558
Cities Service Oil Company (Port Arthur)		14,000	14,000
Standard Oil Company of New Jersey (Defense Plant)		8,200	8,200
Total Letters of Intent	———	28,998	28,998
OTHER CAPACITY IN EXISTENCE OR UNDER CONSTRUCTION BUT NOT UNDER CONTRACT	17,092	15,447	32,539
Total Under Contract, Letters of Intent Issued. Plus Plants in Existence and Under Construction but not Under Contract.	48,487	134,368	182,855
NEGOTIATIONS WELL ADVANCED		32,782	32,782
RECENT PROPOSALS	———	45,015	45,015
GRAND TOTAL	48,487	212,165	260,652

(a) Includes Humble Oil and Refining Company, Standard Oil Company of Louisiana, and Lago Oil and Transport Company.

(b) On Table II capacity of Magnolia and Socony totals 12,850 barrels - on account of shrinkage original estimate offset by new expansion planned.

(c) Defense Plant Lease signed
Short Form Supply Contracts signed
Cost Formula still under negotiation.

Contracts signed and Letters of Intent issued are enumerated above, together with summarized figures on other present or projected capacity. Table IV attached to this report presents detailed information with regard to present and projected capacities, listing each individual plant. Of the total projected capacity for 100-octane gasoline, 34,575 barrels per day will be produced in "combination plants" which will make both 100-octane gasoline and butadiene. In some cases these plants will also produce toluene. These projects are indicated in Table II by means of asterisks. We anticipate that the further development of the synthetic rubber program will involve additional combination plants.

It will be noted from Table II that there is 17,092 barrels per day of existing capacity and 15,447 barrels per day of capacity under construction which is not yet covered by contract. The companies involved are Shell, Sinclair, Standard of Ohio, Continental, Gulf, Standard of California, Union, Tidewater Associated, and Atlantic. Negotiations are in progress with these companies.

The tabulation also shows projected capacity of 32,782 barrels per day as to which negotiations are well advanced. A part of this capacity is new increments of expansion on the part of companies already under contract as to other capacity--i.e. Shell, Standard (Indiana) and Socony and its subsidiary, Magnolia. Other companies with which negotiations are well advanced are Atlantic, J. S. Abercrombie and Harrison Oil Company, Champlin, Lion, and Pennzoil. The new projects are those sponsored by Mohawk, Standard (California), Wilshire, Continental, Gulf, Crown Central, Eastern States, Pan American, Phillips, Ashland Refining, Frontier Refining, Globe, National Refining, Skelly, and Utah Oil.

B. Material Delivery Schedules

In the report of February 16 to the War Production Board, it was pointed out that considerable difficulties had been experienced in obtaining prompt delivery of materials in order to insure early operation of the planned new facilities. Following the February meeting of the War

Production Board, authorization was given to extend the national productive capacity for 100-octane aviation gasoline up to 200,000 barrels per day. It was the recommendation of the Office of Petroleum Coordinator that such expanded capacity be granted immediately a preference rating of A-1-A, with steel plate allocation placed in the same class as for direct Army and Navy orders, in order that the facilities may be completed at the earliest possible date. However, no allocation of steel plate was made to the 100-octane aviation gasoline projects for the months of January and February.

This has directly resulted in a delay ranging from 2 months to 10 weeks on all facilities listed in Table II attached as plants building. This sacrifice of production corresponds to approximately 8 million barrels of 100-octane gasoline which otherwise would have been available during the year 1943. Illustrating the serious consequences of a delay of this length, it is estimated that this quantity of fuel would have been sufficient to provide two and one half million flying hours to our air combat forces. It is the urgent recommendation of the Office of Petroleum Coordinator that all government agencies involved be impressed with the paramount importance of the 100-octane aviation gasoline program to the end that it may take precedence over all less vital requirements of the war effort.

APPENDIX I

Resolution on Aircraft Engine Testing Procedure Adopted by The Aeronautical Board

1. That all engine manufacturing plants now equipped with three fuel systems continue to use 65 octane gasoline (clear) to complete the final run as now required by Army-Navy Aeronautical Specification.

2. That manufacturing plants not equipped for systems to handle three grades of fuels, start preparation for the installation of such triple systems and that necessary priorities for materials for immediate additional equipment required be made to:

The Director of Refining,
Office of Petroleum Coordinator,
Department of Interior,
New Interior Building, Washington, D. C.

3. That engine manufacturers lacking a third system conduct as much of the preliminary runs as possible on 91 octane gasoline and finish acceptance runs on 100 octane gasoline, thus eliminating the final run-in on 65 octane gasoline (clear).

4. That engine manufacturers will develop or submit revised test schedules with a view of eliminating the tear-down operation as now required by AN Specification 9503, and that these revised test schedules be submitted to the respective Army or Navy Services (depending upon the contractual control for production engines) to be reviewed and approved by the Chiefs of the Power Plant Sections of the U. S. Army Air Corps and the Bureau of Aeronautics, Navy Department, at the respective engine manufacturing plants.

5. That all engine manufacturers start investigations immediately to determine the maximum power that can be obtained on gasoline, 87 octane number; and that this gasoline be substituted for the present requirement for running at 90% power as required by AN Specification 9503; and that the results of investigations by the aircraft engine manufacturers be forwarded to the Working Committee of the Aeronautical Board, Room 4844, Navy Building at the earliest possible date for coordination and approval by the Air Corps and the Bureau of Aeronautics, with a view of revising the above referenced specification.

6. That these aircraft engine manufacturers producing engines for the use of 91 octane gasoline determine if such engines can develop full power on 87 octane gasoline and that the gasoline of 87 octane number used for the above tests conform in all respects to ANA Specification AN-VV-F-776 for 91 grade gasoline plus or minus ½ octane number, and not to contain more than 4 ml. of tetraethyl lead per U. S. gallon. (The results of these investigations are to be transmitted by the engine manufacturers to the Working Committee of the Aeronautical Board, Room 4844, Navy Building, at the earliest possible date for coordination and approval by the Air Corps and the Bureau of Aeronautics, with a view of revising the above referenced specification). It was the consensus that if this gasoline of 87 octane number, can be established as an engine test grade, it can be adopted as standard fuel for tanks where more than 4 ml. of tetraethyl lead per U. S. gallon is not permissible in the fuel.

7. That the requirement in AN Specification 9503, Paragraph F5a(1) b, for the 5 minute run at take-off power between intervals of running at 50% power, be modified to specify one minute run, minimum.

[redacted]

E.O. 11652, Sec. 5(E) and 5(D) or (E)
Interior Dept Ltr, 11-3-72
MAR 21 1973

TABLE I

ESTIMATED DAILY PRODUCTION OF 100 AVIATION GASOLINE

TO END 1943

TOTAL U.S.A. AND ARUBA, N.W.I.

(Ass'n of Petro Ethyl Lead per U. S. Gallon)

Office of
Petroleum Coordinator for National Defense
Refining Division

(Barrels per day - 42 gallons)

	1942										1943												Possible last half 1943
EAST COAST	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	
Atlantic, (Philadelphia, Pa.)	–	–	–	–	–	–	–	–	–	–	2,900	2,900	2,900	2,900	2,900	2,900	2,900	2,900	2,900	2,900	2,900	2,900	2,000
Socony Vacuum (Paulsboro, N.J.)	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	–
Standard Jersey (Baltimore, Md.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	–
Standard Jersey (Bayway, N.J.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9,500
Sun (Marcus Hook, Pa.)	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500	–
Total East Coast	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	12,900	12,900	12,900	18,800	22,600	22,600	22,600	22,600	22,600	22,600	22,600	22,600	
			Total East Coast last ten months 1942					3,060,000							Total East Coast year 1943				7,262,000				
			Average B/D					10,000							Average B/D				19,896				
PACIFIC COAST																							
General Petroleum (California)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Mohawk (Bakersfield, Calif.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Richfield (Watson, Calif.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2,300
Shell (Martinez, Calif.)	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	4,500	4,500	4,500	4,500	4,500	4,500	4,500	900
Shell (Wilmington, Calif.)	800	800	800	800	800	800	800	800	800	800	800	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	
Standard California (El Segundo, Calif.)	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	
Standard California (Richmond, Calif.)	3,000	3,000	3,000	3,000	3,000	3,000	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	14,400
Texas (Wilmington, Calif.)	3,000	3,000	3,000	3,000	3,000	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	
Tidewater (Avon, Calif.)	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	5,800
Union (Wilmington, Calif.)	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	
Wilshire (Los Angeles, Calif.)	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	6,100	6,100	6,100	6,100	
Total Pacific Coast	17,100	17,100	17,100	17,100	17,100	17,900	20,400	20,400	21,400	21,400	22,800	23,300	23,300	23,300	23,300	25,700	25,700	25,700	31,000	31,000	31,000	31,000	2,800
			Total Pacific Coast last ten months 1942					5,721,000							Total Pacific Coast Year 1943				9,649,200				
			Average B/D					18,635							Average B/D				26,436				
GULF COAST AND ARUBA, N.W.I.																							
Abercrombie (Houston, Texas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Atlantic (Atreco, Texas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	7,500
Cities Service (St. Rose, La.)	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	16,000	16,000	16,000	16,000	5,200
Continental (Lake Charles, La.)	–	–	–	–	–	–	–	–	–	–	–	800	800	800	800	800	800	800	800	800	800	800	3,400
Crown Central (Houston, Texas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2,900
Eastern States (Houston, Texas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2,100
Gulf (Pt. Arthur, Texas)	–	–	–	–	–	–	–	–	–	–	5,500	5,300	5,300	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	6,300
Humble (Baytown, Texas)	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	9,800	9,800	10,400	10,400	10,400	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	
Humble (Ingleside, Texas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	
Lago Oil (Aruba, N.W.I.)	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	
Magnolia (Beaumont, Texas)	2,300	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	7,800	7,800	7,800	7,800	7,800	7,800	7,800	7,800	7,000
Premier (Cotton Valley, La.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2,500	2,600	2,600	2,600	
Pontiac (Corpus Christi, Texas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3,200	3,200	3,200	3,200	
Pure (Naiderland, Texas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2,100	2,100	2,100	2,100	2,100	2,100	2,100	
Panam (Texas City, Texas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5,500	5,500	5,500	5,500	5,500	5,500	4,600
Republic (Texas City, Texas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2,900
Shell (Houston Incl. Norco)	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	
Sinclair (Houston, Texas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3,900	3,900	3,900	3,900	3,900	3,900	
Southport (Texas City, Texas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2,400	2,400	2,400	2,400	2,400	
Standard of La. (Baton Rouge, La.)	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	14,500	14,500	14,500	14,500	14,500	14,500	14,500	14,500	14,500	14,500	
Terminal (Corpus Christi, Texas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2,300	2,300	2,300	2,300	
Texas (Pt. Arthur, Texas)	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	
Total Gulf Coast & Aruba	30,800	32,100	32,100	32,100	32,100	32,100	32,100	32,400	34,200	34,200	40,300	41,100	52,900	57,500	68,100	70,200	79,600	82,000	104,000	104,000	104,000	104,000	
			Total Gulf Coast & Aruba last ten months 1942					9,919,700							Total Gulf Coast & Aruba 1943				27,679,700				
			Average B/D					32,277							Average B/D				75,835				
INLAND																							
Champlain (Enid, Oklahoma)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Cities Service (East Chicago, Ill.)	–	–	–	–	–	–	–	–	–	–	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,900
Ashland (Ashland, Ky.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2,400
Continental (Ponca City, Okla.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1,100
Frontier (Cheyenne, Wyoming)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1,400
Globe (Lamont, Ill.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1,700
Lion Oil (Eldorado, Arkansas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1,600	1,600	1,600	1,600	
National (Coffeyville, Kansas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1,300
Pennzoil (Oil City, Pennsylvania)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Phillips (Borger, Texas)	2,900	2,900	2,900	2,900	2,900	2,900	2,900	2,900	2,900	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	2,300
Phillips (Lep & Oklahoma City, Okla.)	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	
Phillips (Kansas City, Kansas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	
Root, (Eldorado, Arkansas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1,700	1,700	1,700	1,700	
Shell, (Wood River, Illinois)	3,800	3,800	3,800	3,800	3,800	3,800	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	11,800	11,800	11,800	11,800	11,800	11,800	
Skelly (El Dorado, Kansas)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6,000
Sinclair (East Chicago, Ill.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Socony Vacuum (Lubrite)(East St.Louis,Ill.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Standard Indiana (Whiting, Indiana)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	
Standard Ohio (Toledo, Ohio)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	–	3,100	3,100	3,100	3,100	3,100	10,000	10,000	10,000	10,000	
Texas Company (Lockport, Ill.)	–	–	–	–	–	–	–	–	–	–	–	–	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Utah (Salt Lake City, Utah)	–	–	–	–	–	–	–	–	–	–	–	–	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	
Total Inland B/D	8,800	8,800	8,800	8,800	8,800	8,800	9,900	9,900	9,900	12,500	14,600	14,600	16,500	19,600	24,900	24,900	31,800	31,800	43,400	43,400	43,400	43,400	4,600
			Total Inland last ten months 1942					2,907,600							Total Inland year 1943				10,746,200				
			Average B/D					9,471							Average B/D				29,442				
Total U.S. & ARUBA N.W.I. B/D	66,700	68,000	68,000	68,000	68,000	68,800	72,400	72,700	75,500	78,100	90,600	91,900	105,600	119,200	136,900	143,400	159,700	162,100	201,000	201,000	201,000	201,000	
			Total U.S. & Aruba last ten months 1942					21,498,300							Total U.S. & Aruba Year 1943				55,727,100				
			Average B/D					58,904							Average B/D				152,686				

TABLE II
VARIATION PRODUCTION CAPACITY
FOR VARIABLE 3-C RATING
B.P.C.D.

DISTRICT	B.P.C.D.	AFD 3-C* Rating Iso.-Oct.+Tel.	Iso.-Oct.+0.8	Iso.-Oct.+1.0	Iso.-Oct.+1.25	Iso.-Oct.+1.0 Incl.5% Benzol	Iso.-Oct.+1.25 Incl.5% Benzol
EAST COAST	10,000	1.25	10,000	10,000	10,000	10,000	10,000
GULF COAST	30,800	0.70	27,600	25,200	21,900	29,000	26,500
INLAND	8,800	0.4	5,700	5,100	4,600	6,000	5,300
WEST COAST	17,100	0.75	16,400	14,600	12,800	17,300	15,400
TOTAL	66,700	0.7	59,700	54,900	49,300	62,300	57,200
% of Present Capacity	100.		89.7	82.5	74.3	93.5	86.0
Added Benzol Required	-	-	-	-	-	3,150	2,910

*AFD 3-C Rating taken at maximum IMEP for reference fuel (Rich Mixture)

Office of Petroleum Coordinator
For National Defense

TABLE III

ESTIMATED 100 OCTANE AVIATION GASOLINE SITUATION

MARCH 1 TO JUNE 30, 1942

1000's BARRELS 42's

	EAST COAST	GULF COAST INCL. ARUBA	INLAND	TOTAL EAST OF ROCKIES	PACIFIC COAST	TOTAL
INVENTORY MARCH 1st (Finished 100)	194	809	57	1,060	603	1,663
" " " (100 Equiv. of blending agts.	161	866	706	1,733	424	2,157
TOTAL INVENTORY MARCH 1st	355	1,675	763	2,793	1,027	3,820
MIN. WORKING INVENTORY (Finished 100)	110	220	45	375	216	591
" " " (100 Equiv.of blend.agts.)	41	300	193	534	204	738
AVAILABLE INVENTORY	204	1,155	525	1,884	607	2,491
RECEIPTS	600(2)	-		600(2)		600(2)
PRODUCTION	1,220	3,840	1,074	6,134	2,086	8,220
TOTAL SUPPLIES	2,024	4,995	1,599	8,598	2,693	11,311
REQUIREMENTS-PRESENTLY COMMITTED						
Army	406	405	463	1,274	1,722	2,996
Navy	80	372	-	452	504	956
U.K.	363	507	-	870	100	970
Russia	-	72	-	72	25	97
Australia	-	248	-	248	20	268
China	-	30	-	30	-	30
India	-	52	-	52	-	52
Pan Am. Ferry	-	313	-	313	-	313
Canada	-	(1)200	132(1)	332	-	332
Caribbean & Latin American		103		103		103
Aircraft & Engine Testing	320	128	320	768	100	868
Others	32	25		57	69	126
Transfers to Other Districts	-	600(2)	-	600(2)		600(2)
TOTAL COMMITTED REQUIREMENTS	1,201	3,055	915	5,171	2,540	7,711
AVAILABLE INVENTORY JULY 1st	823	1,940	684	3,427	153	3,600
ADDITIONAL REQUIREMENTS-NOT COMMITTED						
Army	-					
Navy	-	583	-	583	583	1,166
U.K.	823	3,065	-	3,888	-	3,888
Russia	-	377	-	377	-	377
Australia	-	676	-	676	-	676
China	-	90	-	90	-	90
India	-	-	-	-	-	-
Pan Am. Ferry	-	1,692	-	1,692	-	1,692
Canada	-	-	-	-	-	-
Aircraft & Engine Testing	-	-	-	-	-	-
TOTAL UNCOMMITTED REQUIREMENTS	823	6,480	-	7,306	583	7,886
LONG-(SHORT)	-	(4,560)	684	(3,876)	(430)	(4,286)
ARMY AND NAVY SEALED STORAGE	-	891	490	1,381	223	1,604

(1) 100 Octane equivalent of blending agent
(2) From District #3 to #1

~~SECRET~~

TABLE IV

STATUS OF PLANT EXPANSION PROGRAM
for
100 Octane Aviation Gasoline Production
Barrels (42 gallon) per Calendar Day
(Basis Continental U.S. and Aruba
3 ml. TEL. per Gallon

	Plants Operating B/D	PLANTS BUILDING						Plants in Initial Development Stage B/D	Total Projected Capacity
		(a) Under Field Construction		(b) In Advanced Eng. Phase		(c) In Preliminary Eng. Phase			
		B/D	Completion	B/D	Completion	B/D	Completion		
EAST COAST REFINERIES									
Atlantic (Point Breeze Pa.)		2,500	Jan. 43					1,700	4,200
Sun (Marcus Hook Pa.)		10,000	Apr. 43						10,000
Socony (Paulsboro N.J.)		3,435	May 43						3,435
Standard-Jersey (Baltimore)		3,300	May 43						3,300
Standard-Jersey (Bayway)								8,200*	8,200
TOTAL EAST COAST		19,235						9,900	29,135
WEST COAST REFINERIES									
Richfield (Watson Cal)	1,750	2,050	June 43						3,800
Shell (Martinez Cal.)	534								534
Shell (Wilmington Cal.)	2,350	1,100	Jan. 43					8,016	11,466
Standard-Cal. (El Segundo Cal.)	2,500	1,000	Sept.42						3,500
Standard-Cal. (Richmond Cal.)	2,500	800	Aug. 42						3,300
Texas (Wilmington Cal.)	1,300								1,300
Tide Water Associated (Avon Cal.)	1,435	850	Nov. 42						2,285
Union (Wilmington Cal.)	700					4,600	Jul. 43		5,300
General Petroleum (Torrance Cal.)						2,000	Jul. 43		2,000
Mohawk (Bakersfield Cal.)								780	780
Standard-Cal. (Defense Plant)								5,000	5,000
Wilshire (Los Angeles Cal.)								2,400	2,400
TOTAL WEST COAST	13,069	5,800				6,600		16,196	41,665

	Plants Operating B/D	PLANTS BUILDING (a) Under Field Construction B/D	(a) Under Field Construction Completion	(b) In Advanced Eng. Phase B/D	(b) In Advanced Eng. Phase Completion	(c) In Preliminary Eng. Phase B/D	(c) In Preliminary Eng. Phase Completion	Plants in Initial Development Stage B/D	Total Projected Capacity
GULF COAST REFINERIES									
Continental (Lake Charles La.)	573							3,000	3,573
Gulf (Port Arthur Tex.)	1,500	3,000	Jan. 43					5,500*	10,000
Humble (Baytown Tex.)	5,700	5,650	May 43						11,350
Lago (Aruba D.W.I.)	2,600	4,400	May 43						7,000
Magnolia (Beaumont Tex.)	4,500	1,581	May 43						6,081
Shell (Houston and Norco La.)	4,000	1,107	July 42						5,107
Standard-La. (Baton Rouge LA.)	5,040	9,300	May 43						14,340
Texas (Port Arthur Tex.)	2,940	3,810	Mar. 43			6,875*	Jul. 43		13,625
Abercrombie-Harrison (Houston Tex.)								6,560	6,560
Atlantic (Atreco Tex.)								4,500	4,500
Cities Service (Port Arthur Tex.)						14,000*	Sept.43		14,000
Crown Central (Houston Tex.)								2,550	2,550
Eastern States (Houston Tex.)								1,800	1,800
Great Southern (Pontiac) (Corpus Christi Tex.)						2,760	Sept.43		2,760
Humble (Ingleside Tex.)		1,100	May 43						1,100
Frenier (Cotton Valley La.)						2,285	Sept.43		2,285
Pure (Nederland Tex.)						1,800	June 43		1,800
Pan American (Texas City Tex.)		4,800	July 43					4,000	8,800
Republic (Texas City Tex.)								2,558	2,558
Sinclair (Houston Tex.)		3,400	July 43						3,400
Southport (Texas City Tex.)						2,087	Aug. 43		2,087
Terminal (Corpus Christi Tex.)						1,971	Sept.43		1,971
TOTAL GULF COAST	26,853	38,148				31,778		30,468	127,247

	Plants Operating B/D	PLANTS BUILDING (a) Under Field Construction B/D	(a) Under Field Construction Completion	(b) In Advanced Eng. Phase B/D	(b) In Advanced Eng. Phase Completion	(c) In Preliminary Eng. Phase B/D	(c) In Preliminary Eng. Phase Completion	Plants in Initial Development State B/D	Total Projected Capacity
INLAND REFINERIES									
Phillips (Borger Tex.)	2,250	3,100	Dec. 42					2,000	7,350
Phillips (Okla. City & Lep. Okla.)	1,000								1,000
Shell (Wood River Ill.)	3,000	1,000	Dec. 42	6,000	Jul. 43				10,000
Sinclair (E. Chicago Ind.)	690								690
Standard-Ohio (Toledo Ohio)	310	490	Mar. 42						800
Standard-Ind. (Whiting Ind.)	1,315			2,685	June 43	6,000	Sept.43		10,000
Ashland (Ashland Ky.)								2,100	2,100
Champlin (Enid Okla.)								2,500	2,500
Cities Service (E. Chicago Ind.)		1,800	Jan. 43						1,800
Continental (Ponca City Okla.)								1,000	1,000
Frontier (Cheyenne Wyo.)								1,215	1,215
Globe (Lemont Ill.)								1,500	1,500
Lion (El Dorado Ark.)						1,420	Sept.43		1,420
National (Coffeyville Kans.)								1,170	1,170
Pennzoil (Oil City Pa.)						1,236	Sept.43		1,236
Phillips (Kansas City Kan.)		1,360	May 43						1,360
Root (El Dorado Ark.)						1,480	Sept.43		1,480
Socony (Lubrite) (E. St. Louis)		3,334	May 43						3,334
Skelly (El Dorado Kan.)								7,000	7,000
Utah (Salt Lake City Utah)								4,000	4,000
Texas (Lockport Ill.)		1,650	Mar. 43						1,650
TOTAL INLAND REFINERIES	8,565	12,734		8,685		10,136		22,485	62,605
GRAND TOTAL	48,487	75,917		8,685		48,514		79,049	260,652

67 PSF Office of Petroleum Coordinator file

Filed by Mrs Belady Confidential

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF PETROLEUM COORDINATOR
FOR NATIONAL DEFENSE
WASHINGTON April 15, 1942.

My dear Mr. President:

Among the tankers flying our flag and sunk during the week ending April 11, were 3 of our newest tankers, one of them on her maiden trip. These were the biggest and fastest tankers in our service, each one of the three being equivalent to two of the older tankers.

In addition to the 12 American tankers sunk, the British lost 7, making a total for the week of 19.

Sincerely yours,

Harold L. Ickes

Petroleum Coordinator
for National Defense.

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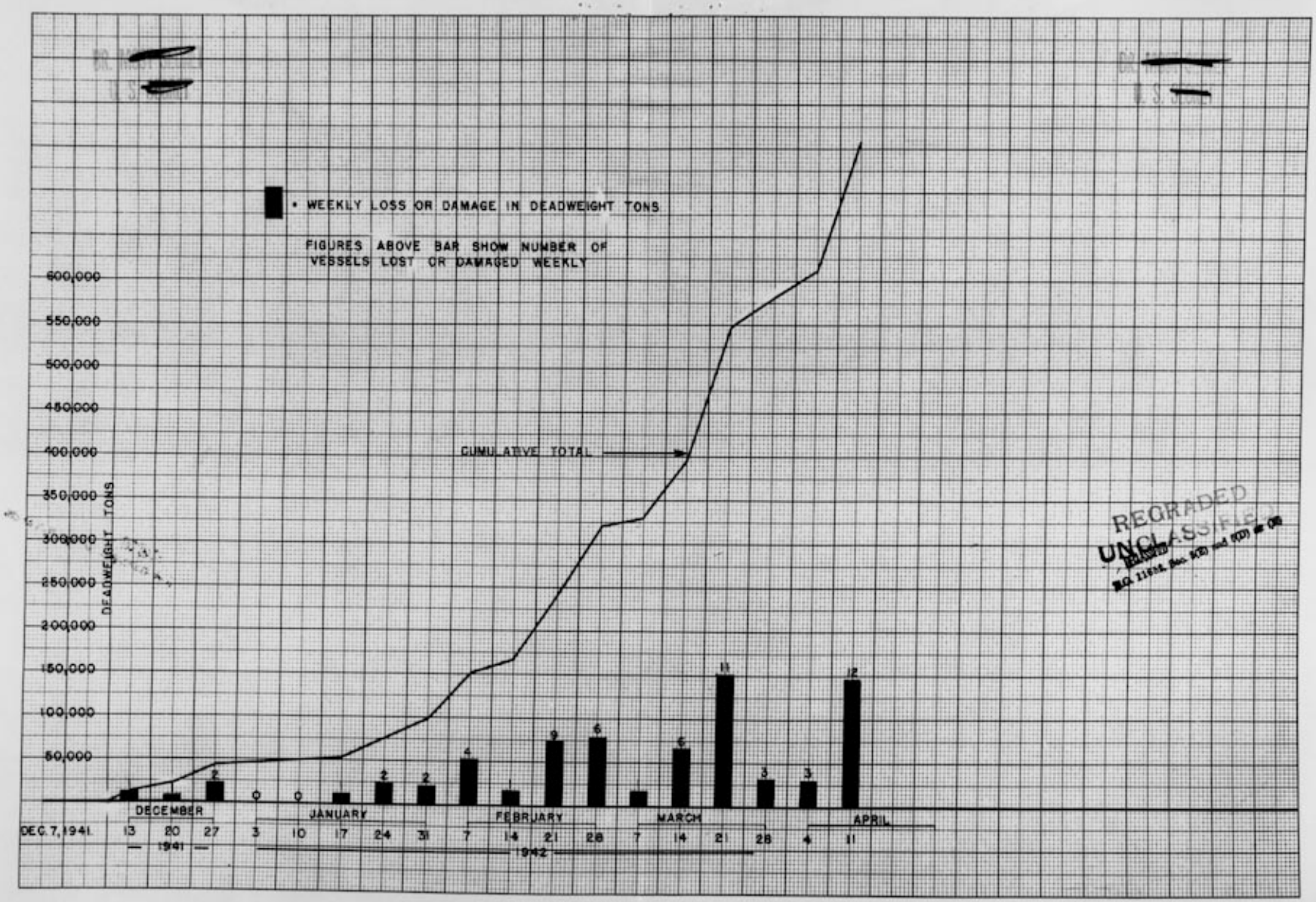
x99
x56
x463-C Sinking of American Ships

The President,
The White House.

x4695
x773

Enclosure.


WEEKLY LOSS OR DAMAGE IN DEADWEIGHT TONS
FIGURES ABOVE BAR SHOW NUMBER OF VESSELS LOST OR DAMAGED WEEKLY
CUMULATIVE TOTAL
DEADWEIGHT TONS
600,000
550,000
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
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2
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9
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6
13
3
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12
DECEMBER
JANUARY
FEBRUARY
MARCH
APRIL
DEC. 7, 1941
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1941
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Office of Petroleum Coordinator

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF PETROLEUM COORDINATOR
FOR NATIONAL DEFENSE
WASHINGTON

THE WHITE HOUSE
APR 21 10 25 AM '42
RECEIVED

April 21, 1942.

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My dear Mr. President:

As you know, the petroleum situation is really disturbing. I foresee the possibility, in the not too distant future, when there may not be a single tanker carrying petroleum products to our Atlantic Coast States.

We have just about reached the limit of the amount that we can take in by tank car. There is a double limitation here, first that of tank cars themselves, and second, that of the ability of the railroads to carry more tank cars. From practically nothing a day, we are now getting into the East Coast, by other than tankers, the phenomenal total of 586,350 barrels a day. In this service we are using 43,520 tank cars. We may be able to increase this by 100,000 barrels more daily, but this is problematical.

It seems to me that the only answer to the possibility of closed factories, cold homes and a negligible amount of gasoline next Fall and Winter, is a pipe line. If we had been permitted to build the pipe line that we projected last year and had been able to do it on schedule, it would have been finished last April 1. This pipe line would now be transporting 350,000 barrels of crude oil daily to the New York-Philadelphia area.

An adequate supply of petroleum on the East Coast is fundamental to the winning of the war. We could have a complete complement of airplanes, tanks, ships, motorized artillery, small arms--or whatever you may name--and yet without oil and gasoline we would be as helpless before the Axis powers as were Holland and Belgium and Norway. We not only ought to have enough oil to run our New England industries, we must keep our houses warm and we ought to have enough so that we could supply the Navy, if necessary from our northern ports and even, on occasion, send tankers straight across the Atlantic, instead of on the long trip from Aruba or the Gulf of Mexico, where danger lurks in every long mile of ocean.

This situation is desperate. We have lost so much time now that even if we get priorities promptly for a pipe line we cannot hope to build one in less than about 10 to 12 months. But it seems

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x99

to me that the building of this pipe line is even more important than the building of additional ships and tankers.

Another matter of steel--in order to keep the pace that we had set for ourselves in the matter of 100 octane gasoline, we asked for 10,000 tons of steel plates each for January, February, and March. We did not get a single pound of that 30,000 tons, although we kept pressing for the full allotment. Beginning with this month we have been getting steel at the rate of 10,000 pounds, but we have to be on the job constantly to see to it that this steel does not go somewhere else. The result is that we have lost three precious months in our 100 octane program. And without 100 octane aviation gasoline, I don't see how we can hope to keep our flying fortresses flying. x342

I hope you will have an opportunity to discuss this pipe line situation with Mr. Donald M. Nelson. The shocking revelations in yesterday morning's paper concerning violation of steel priorities orders enforce my belief that if the officials in the War Production Board will only realize the seriousness of the petroleum situation on the East Coast, they will be able to find a way to supply us with the steel that we need.

Sincerely yours,

Harold L. Ickes

Petroleum Coordinator
for National Defense. x4435

The President,

The White House.

P
Y

MEMORANDUM TO THE FILES: May 1, 1942

I discussed the attached letter from Mr. Ickes to the President at the meeting of the Cabinet on Friday, April 24, and told the members that of course we could have a pipe line if the President wanted it. However, steel was in such a tight spot that in approving this pipe line we would have to eliminate 400,000 tons of seamless steel pipe which is now being used for bombs and other essential uses, 30 merchant ships, and an indeterminate number of naval vessels, and probably many other items as well, because of the steel compressors, turbines, storage tanks, and other things that would be needed in building a pipe line.

The President thereupon appointed a committee of four, consisting of Harold Ickes, Leon Henderson, General E. Reybold, Chief of Engineers, and myself, to discuss the proposition suggested by General Reybold which was the building of a pipe line across Florida, barging the oil up the inland water way in wooden barges and wooden tugs.

I have spoken to Mr. Ickes since the meeting, and he is at work studying the proposition.

(Signed) Donald M. Nelson

Donald M. Nelson

Letter, April 21, Ickes to the President--Original letter returned to the White House.

WAR PRODUCTION BOARD
WASHINGTON, D. C.

OFFICE OF
DONALD M. NELSON
CHAIRMAN

May 2, 1942

Dear Mac:

I am returning the enclosed letter from Mr. Ickes to the President for the President's files, as it has been discussed at the Cabinet Meeting on Friday, April 24.

Sincerely yours,

Donald M. Nelson

Mr. Marvin H. McIntyre
Secretary to the President
The White House
Washington, D. C.

P. S. I am also enclosing copy of my memorandum to the files in this connection.

OFFICE OF

PETROLEUM COORDINATOR FOR WAR

WASHINGTON

[redacted]

JUN - 2 1942

O. F.

Office of Petroleum Coordinator for War

file 71

My dear Mr. President:

With the thought that you may wish to glance through it, I am sending you the enclosed copy of our 100 octane aviation gasoline report for the month of May.

You will note that our 100 octane aviation gasoline production has now been practically doubled over what it was before we undertook the program of expansion, though production is not yet sufficient to meet fully the present demand.

Also, you will see that our program for the development of additional plant capacity -- five times the original capacity -- is practically completed, with plants scheduled to come into production on dates ranging from next month to the latter part of next year.

One of the most encouraging aspects of the undertaking to date has been the way in which our technical forces have, through sheer ingenuity and improvisation, scheduled increased production from existing facilities, so tiding us over the period which otherwise would prove decidedly critical.

Sincerely yours,

Harold L. Ickes

Petroleum Coordinator for War.

x4435

The President,

The White House.

Enclosure 462.

[redacted]

E.O. 11652, Sec. 3(E) and 5(D) or (E)

Interior Dept. Ltr, 11-3-72

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ENCLOSURE 462

DEPARTMENT OF THE INTERIOR

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OFFICE OF
PETROLEUM COORDINATOR FOR WAR
Washington

41

May 29, 1942

[redacted]

100 OCTANE AVIATION GASOLINE

REPORT TO THE WAR PRODUCTION BOARD

This report presents to the War Production Board the monthly report of the Office of Petroleum Coordinator For War on the status of the 100 octane aviation gasoline program. The production program for this product has had to be planned in such a manner as takes into account four changes in the specifications, and each such change has or will have the effect of modifying the actual number of barrels which can be produced from the plants built, building, or authorized as a part of the program. It is imperative that the various figures herein be read in the light of the ultimate specifications required - otherwise an entirely erroneous impression of the relation of indicated requirements and indicated production may be received.

The four changes referred to are: -

1. The shift in January 1942 from the use of 3 cc. of tetraethyl lead per gallon to 4 cc. This had the effect of increasing capacity;

2. The shift as of July 1942 to a product meeting a rich mixture specification of S + 1. This would have had the effect of shrinking capacity although the shrinkage has been offset by the newly developed expedient of adding cumene to the gasoline;

3. The shift as of January 1, 1943 to a still "richer" mixture (S + 1.25) which will result in a diminished output, even though cumene is added;

4. An ultimate specification now set by the Aeronautical Board and confirmed to us by the Chairman of the Army and Navy Munitions Board under date of May 26, which will require a still "richer" mixture (S + 2.0) as of July 1944. If adopted literally with respect to all the gasoline it would require a tremendous shrinking in the capacity of our plants to produce product.

When the Aeronautical Board adopted the use of 4 cc. of tetraethyl lead per gallon in order to expand the output of existing plants during a period of extreme shortage it indicated it desired to return to the use

of 3 cc. as soon as possible. Accordingly we shaped our program toward an ultimate specification containing only 3 cc. of lead per gallon and in March secured from the War Production Board an authorization to provide a national productive capacity of 200,000 barrels per day of ultimate rich mixture specification (S + 1.25). We estimated that all of the plants scheduled (Table II) would be required for this, and subsequent careful computation has verified that estimate (See Section V).

However since that time the Aeronautical Board has, through the Army and Navy Munitions Board, given us a new ultimate specification. The continued use of 4 cc. of tetraethyl lead per gallon in the new specification apparently indicates a definite decision to abandon any idea of returning, ultimately, to a gasoline containing less lead. Taken alone, this would eliminate a part of the shrinkage in production otherwise to be anticipated. However the specification also indicates that even richer mixtures will be required, the supplying of which would require much more productive capacity then we have presently scheduled.

This new problem will require time for solution. In the meantime and with respect to this current report the reader should bear in mind that the production forecasts are not based on the ultimate specifications and any indicated surpluses are highly fictitious.

1

FORECAST OF PRODUCTION

A. Indicated Future Production

The report of April 20 presented the production forecast of 100 octane gasoline by months for the year 1942 and for the first six months of 1943, prepared on the assumption that all fuel would be procured to specification AN-VV-F-781 with Amendment 4 (100 octane gasoline containing 4 cc. of tetraethyl lead per gallon). We present herewith the revised production forecast which takes into account the new rich mixture specification to be adopted July 1, 1942, and the more drastic rich mixture specification scheduled for adoption by January 1, 1943, but it does not take into account the lessened ability of the plants to produce a still richer mixture.

MONTH		FORECAST APRIL 20 BARRELS PER DAY	FORECAST MAY 26 BARRELS PER DAY
May	1942	70,700	71,400
June	"	70,700	74,300
July	"	72,700	83,900
August	"	74,800	88,700
September	"	76,000	89,400
October	"	76,000	93,400
November	"	77,000	94,500
December	"	77,000	105,400
January	1943	89,800	139,900
February	"	89,800	143,600
March	"	96,100	145,500
April	"	102,200	168,100
May	"	137,200	179,600
June	"	144,000	187,300

The forecasted figures presented in the report of April 20 have been included in the left hand column for purpose of comparison. The increases shown in the latest forecast over the former forecast are due partly to the good progress made toward the completion of some of the proposed plants, indicating that their output will be available at dates earlier than those previously estimated, and the other more important reason for the increase lies in the progress that has been made in arranging for supplies of cumene in order to take advantage of the recently discovered ability of this product to enhance the rich mixture quality of gasoline without such a great shrinkage of the productivity of the refining units. It has now been possible to schedule some 7,000 barrels a day of cumene production, of which approximately 4,200 barrels a day should be available by July 1 provided a very small amount of construction materials required is made immediately available for this purpose.

B. Revision in Specifications

In the April 20 report proposed Amendment 5 to the Army-Navy 100 octane grade specifications was presented in Appendix A, calling for a rich mixture performance of S + 1.0. This specification has now been formally approved by the Aeronautical Board and issued to industry to take effect July 1, 1942. The Aeronautical Board has further requested that the industry be in a position to meet a specification of S + 1.25 by January 1, 1943. We have, therefore, taken into account in the production forecast the specifications of the fuel which must be supplied in the various periods in question. Finally, as reported above, it is the desire of the Aeronautical Board that a still "richer" fuel be provided at a later date.

II

FORECAST OF REQUIREMENTS

Report of April 20 presented summarized supply and demand forecasts through June 30, 1942. The following tabulation presents the corresponding forecast prepared from the latest reports received and is compared with the corresponding inventory production and requirements presented in the April report:

	APRIL 20 April 1 to June 30	MAY 26 May 1 to June 30
Opening Inventory - 100 Octane*	1,886,000	1,826,000
" " - -100 equivalent) of blending agent)	2,074,000	1,749,000
Total Opening Inventory	3,960,000	3,575,000
Less Working Inventories	1,302,000	1,166,000
Available Supplies	2,658,000	2,409,000
Production	6,433,000	4,313,000
Total Supplies	9,091,000	6,722,000
Indicated Requirements	11,952,000	8,190,000
Indicated Deficiency	(2,861,000)	(1,468,000)

* Does not include A & N Sealed Storage which was 991,000 barrels on May 1st.

The decrease in the indicated supply deficiency as compared with that set forth in the previous report is due to reduction in the shipments and in some cases consumption of 100 octane fuel through coordination of individual requirements by the Aviation Petroleum Products Allocation Committee.

Through the Aviation Petroleum Products Allocation Committee, continuing efforts have been made to project long-range forecasts of requirements which would take into account the expanded plane production program. The individual estimates for the various services and users have now been very nearly completely received and a preliminary forecast has been prepared. The indicated requirements by months through 1943 are set forth below and for the purpose of comparison we have shown a production forecast based, not on any ultimate specification, but on the specification intended for adoption on January 1, 1943.

Month		Requirements Bbls/day	Production Forecast in daily barrels. Assuming use of 4 cc. T.E.L. and rich mixture S + 1.25	Assuming use of 4 cc. T.E.L. and rich mixture S + 2.0	Assuming use of 3 cc. T.E.L. and rich mixture S + 1.25
July	1942	107,100	83,900		
August	"	113,100	88,700		
September	"	124,200	89,400		
October	"	125,400	93,400		
November	"	136,700	94,500		
December	"	138,000	105,400		
January	1943	139,600	139,900		
February	"	152,900	143,600		
March	"	149,600	145,500		
April	"	161,400	168,100		
May	"	165,600	179,600		
June	"	172,400	187,300		
July	"	188,100	223,700		
August	"	188,100	251,200		
September	"	188,100	235,400		
October	"	188,100	253,100	120,000	186,040
November	"	188,100	253,100	120,000	186,040
December	"	188,100	253,100	120,000	186,040

The above estimate of requirements does not provide for the ultimate plane program announced by the President, calling for an air force of 185,000 planes. There are no official requirements estimates as yet predicated upon the larger program but in the absence of other figures this office estimates that such an expansion would increase the requirements for our own forces by approximately 41,500 barrels per day, giving a total ultimate requirement of 230,000 barrels per day. None of the above requirements figures, except the portion allocated to the United Kingdom, takes into account possible losses through sinkings or losses in foreign production which would thereby increase the net requirements to be withdrawn from the continental United States.

III

STEPS TO EXPAND IMMEDIATE OUTPUT BY ADAPTATION OF EXISTING REFINING FACILITIES

A. Cumene

Cumene has recently been discovered to have a highly beneficial effect in improving the rich mixture characteristics of aviation gasoline. The presence of cumene in the gasoline permits us to include larger quantities of base stock than would otherwise be possible and in this way

tends to increase the capacity of some 100 octane units to produce rich mixture gasoline. In our report of April 20 we mentioned the possibility of adapting existing refining facilities to the manufacture of cumene, since this compound is produced by the alkylation of benzene with propylene gas, which is a material readily available in refinery gas streams.

The current production capacity for 100 octane aviation gasoline is approximately 70,000 barrels per day when manufactured to the present 4 cc. specification which does not include a rich mixture requirement. The rich mixture specification to be adopted July 1 would reduce this capacity to approximately 58,000 barrels per day if no added aromatics were available. If, on the other hand, we can anticipate the use of 7,000 barrels a day of cumene, we may anticipate a capacity of 80,000 barrels a day when still meeting the specification of S + 1.0. This represents an addition of some 22,000 barrels a day in production capacity.

Efforts to adapt existing facilities to the manufacture of cumene have given encouraging results. Thirteen plants have now been scheduled, having a total rated capacity of approximately 7,055 barrels a day. One of these plants (Shell, Norco, Louisiana) has been in commercial operation for the past two weeks.

The following tabulation gives the estimated capacity for cumene production which we may anticipate by months through September 1, by which time all of the scheduled plants should be in operation:

June 1	-	1,570	barrels	per	day
July 1	-	4,705	"	"	"
August 1	-	6,355	"	"	"
September 1	-	7,055	"	"	"

Table III attached to this report gives the plants, their capacity, location and approximate completion date. Other projects involving the adaptation of existing facilities to the manufacture of cumene are under consideration, and additional cumene supplies could be developed if sufficient benzol were available.

The Office of the Petroleum Coordinator has been working very closely with the War Production Board in an effort to schedule cumene production in a manner consistent with available benzol supply. Through a preliminary survey prepared by the War Production Board, it has been established tentatively that a maximum of 5,000 barrels a day of benzol may be diverted to the manufacture of aviation gasoline through September 1943. Decision to divert benzol to this use beyond this period will depend on a number of factors, all of which can not be readily evaluated at this time.

Table IV attached presents a preliminary estimate of the benzol available, that required, the amount of cumene produced therefrom, and the amount that would be transferred to stock pile as well as the monthly position of the stock pile. It will be noted that the adoption of the proposed cumene program for 7,000 barrels per day still leaves a stock pile of over 11,000,000 gallons by December 1943, which will be available for the rubber program or for other uses.

B. Catalytic Base Stocks

A continuing effort is being made to convert existing catalytic cracking units to the manufacture of aviation gasoline base stock. With a very small amount of materials required in certain cases, these plants may be converted for the manufacture of a base stock which will require some 20 to 25 per cent of alkylate blending agent. Since plants now in operation use up to 45 per cent of the same blending agent, this corresponds to an increase of approximately six-tenths to seven-tenths of a barrel of 100 octane aviation gasoline per barrel of catalytic cracked base produced. In addition to this benefit, the 100 octane gasoline manufactured from the catalytic base stock will meet the rich mixture requirement, both for July 1 of this year and January 1 of the coming year.

Of approximately fourteen catalytic cracking units currently in operation, it is anticipated that ten will be converted to the manufacture of this base stock by July 1 and that further conversion may be accomplished subsequently. Plants not now producing aviation base stock which are expected to be in production by July 1 represent a total base stock capacity of approximately 8,000 barrels per day, which will correspond to an increase in 100 octane production capacity of approximately 4,000 to 5,000 barrels a day. Insofar as has been possible, the base stock available by the adaptation of these plants has already been taken in account in the forecast of production.

C. Conversion of Polymerization Plants

There is a relatively large number of small catalytic polymerization plants which currently produce a polymer which is blended into motor gasoline. Some, although not all, of these plants can be converted to the manufacture of selective polymer, a product which after hydrogenation is substantially the equivalent of alkylate. The production of a barrel of this material will permit an increase of approximately 2½ to 3 barrels in the production of 100 octane gasoline. The limiting factor in such conversion is the available hydrogenation capacity.

IV

ALLOCATION OF AVAILABLE SUPPLIES

All available supplies of 91 and 100 octane gasoline continue to be subject to careful allocation, under the procedure set up by the Munitions Assignments Board. The Aviation Petroleum Products Allocation Committee has taken steps, in conjunction with the armed forces of this country and other United Nations, to form coordinating committees in each active theater of operations. These committees, each of which is composed of representatives of any United Nations forces operating in the particular theater, as well as advisory members from local oil companies, have the responsibility of informing the Aviation Petroleum Products Allocation Committee of stocks on hand, consumption, and future requirements of petroleum products in their areas. All stocks of aviation petroleum products in their areas come under the supervision of the local coordinating committees, who arrange for distribution of supplies within the area in accordance with strategic and tactical needs.

As a result of the formation of these committees, the Aviation Petroleum Products Allocation Committee is kept currently informed of the supply situation insofar as aviation products are concerned and is able to arrange for distribution of production from U. S. sources in a manner which will assure that each theater of operations receives currently its proper quota of available supplies.

Allocation of supplies of 91 and 100 octane gasoline to nonmilitary users is continued along the lines described in the April 20th report to the War Production Board. To date, 543 allocation requests have been acted upon by the Committee, covering requirements up to June 30, 1942, of 303 companies in the civilian purchaser classification. As of May 4, 1942, the following quantities of fuels have been allocated:

(Bbls. U. S. 42 gal)

	April	May	June	Total
100 Octane	432,109	424,004	238,275	1,094,388
91 Octane	373,840	401,803	349,969	1,125,612

The response of aircraft engine builders and aircraft manufacturers to the Allocation Committee's recommendations in regard to revised procedure for engine testing has been most gratifying. Application of this procedure has resulted in a reduction of 157,396 barrels of 100 octane fuel consumption during the quarter ending June 30th, with an increase of only 98,632 barrels of 91 octane, according to information so far received by the Committee. It is believed that, when complete data are available, they will reveal a reduction in 100 octane fuel consumption for these purposes of at least 60%.

V

STATUS OF PLANT EXPANSION PROGRAM

The status of the plant expansion program is shown in Table II of this report. The table shows the location of each refinery involved, and the present productivity on the basis of rated capacity, scheduled increments of expansion, estimated completion dates and total rated capacities.

Whereas in former reports we have shown all proposed new facilities, regardless of whether or not contracts had been signed, priorities granted, or whether such expansion was permissible under the authorized program: in this report Table II is confined to plants built, building, or contracted for either by formal contract or letter of intent. No proposed plants are included except those which have a definite part in the program submitted by us in our April 20 report. There are other desirable proposals which may be included in the program later.

Thus Table II in this report is in the nature of a semi-final summary of the actual expansion program now scheduled and authorized. While it has been necessary to express a good many details concerning the program in the terms used in the contracts, i. e., on the basis of the gasoline specification used in 1941 -- the truly significant figures are expressed in the two right hand columns. These show the estimated capacities of the individual plants to produce rich mixture gasolines containing 3 cc. and 4 cc., respectively, of tetraethyl lead per gallon. Data upon which to estimate the effect of imposing the rich mixture specification (S + 1.25) upon the capacity of the individual plants has only recently become available.

In our April 20 report we stated that in order to manufacture 200,000 barrels per day of rich mixture gasoline containing only 3 cc. of tetraethyl lead per gallon we estimated that it would be necessary to increase the plant expansion program, to allow for expected shrinkage of capacity, to such a point that the units required would be the same as those needed to produce 240,000 barrels per day of the old (1941) specification. This is illustrated by the last three columns of Table II. The plants included in the program can produce 236,480 barrels of the old (1941) specification but when the rich mixture requirement is imposed on them their productive capacity is reduced to about 186,000 barrels. On the other hand, if 4 cc. of tetraethyl lead per gallon is used instead of 3 cc., the same plants can produce 255,000 barrels per day.

The Board is already advised from our prior reports that one of the expedients by which we have been able to expand the production of existing plants has involved a cutting across the lines of individual manufacturing programs and blending all of the components available from all

of the plants in such a manner as to eke out the greatest possible number of barrels of product. This same principle is applicable to the whole program although, obviously, the effect of blending components not presently existent from plants not yet built falls in the category of general prediction rather than close estimate.

The great advantage of cumene in expanding the output of rich mixture 100 octane gasoline has been discussed elsewhere in this report. The present plan calls for the manufacture and use of cumene through September 1943 but not thereafter because of an indicated shortage of benzol from which cumene is made. While final recommendation will be reserved for a later report it appears that the use of cumene in 100-octane gasoline has such great advantages in the ultimate program, as well as during the period of greatest shortage, that some provision should be made to have it available throughout the war. For example, if 500 barrels per day of cumene were available on the West Coast, throughout the war, 100 octane production in that area would be enhanced by 8,500 barrels per day. If 2,000 barrels per day of cumene were available at certain inland points, 100 octane production would be enhanced by 15,000 barrels per day. (The above figures are based on gasoline containing 4 cc. of tetraethyl lead per gallon and refer to the situation after all the projected plants are completed).

Finally lest it be thought that the balancing of any of the capacity figures shown in Table II against the requirements forecast indicates a surplus of manufacturing facilities, it should be noted that the Air Force desires to adopt a still richer specification which will have the effect of shrinking the capacity of our plants. Under date of May 26 Mr. F. Eberstadt, Chairman of the Army and Navy Munitions Board advised us of the desire of the Aeronautical Board

> "that sufficient capacity be established to provide 200,000 barrels per day of ultimate specification fuel by July 1, 1944"

and the specification therein stated involves the use of 4 cc. of tetraethyl lead per gallon and a rich mixture specification of "S + 2". The capacity of all of our plants in the presently authorized program would be insufficient to produce 200,000 barrels per day of such a fuel - in fact we estimate that they would produce only about 120,000 barrels per day.

It is probable that further work will reveal some expedients by which the capacity to produce such a fuel may be raised somewhat and it is possible that the use of such a "rich mixture" might be confined to only a part of the planes involved. We shall reserve detailed recommendation on this matter for a subsequent report.

VI

FOREIGN SITUATION

We report below the present capacities and planned increments of expansion of all 100 octane aviation gasoline plants of the United Nations, except Russia, outside of the continental United States and Aruba. The capacity figures are reported on the same basis used in the domestic production forecast - i.e. - rich mixture gasoline (S + 1.25) containing 4 cc. of tetraethyl lead per gallon.

	Present Capacity	Authorized Increase	Estimated Completion Date	Total Planned Capacity	Other Possible Capacity
CANADA					
Montreal	0	____	_____	____	560
Sarnia	0	____	_____	____	700
Calgary	0	720	Sept. '42	720	
BRITISH WEST INDIES					
Trinidad	2,300			2,300	
DUTCH WEST INDIES					
Curacao	1,600	2,700	Jan. '43	3,300	
UNITED KINGDOM					
Heysham	2,300			2,300	
Stanlow	2,400			2,400	
ORIENT					
Abadan	5,000	8,500 6,000	Jan. '43 Oct. '43	19,500	
Bahrein	____		Oct. '43	____	4,200
	13,600			30,520	5,460

~~SECRET~~

E.O. 11652, Sec. 5(E) and 5(D) or (E)
Interior Dept ltr, 11-3-72
MAR 21 1973

TABLE 1

ESTIMATED DAILY PRODUCTION OF 100 OCTANE AVIATION GASOLINE

TO END 1943

TOTAL U.S.A. AND ARUBA, N.W.I.

(AR-93-F-761 with Acc's of Tetra Ethly Lead per U.S. gallon to July 1, quality increased to 91 / 1.0 July to Jan.1, and 91 / 1.25 thereafter)

Office of Petroleum Coordinator for War
Refining Division

	1942												1943											
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
EAST COAST																								
Atlantic (Philadelphia, Pa.)	-	-	-	-	-	-	-	-	-	-	-	-	1,100	1,100	1,100	1,100	1,100	1,100	4,800	4,800	4,800	4,800	4,800	4,800
Socony-Vacuum (Paulsboro, N.J.)	1,900	3,700	5,200	4,300	2,900	2,900	2,900	3,800	3,800	5,100	5,100	5,100	5,100	5,100	5,100	-	-	-	-	-	-	-	-	-
Standard -New Jersey (Baltimore, Md.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
" " " (Bayway, N.J.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,100
Sun (Marcus Hook, Pa.)	-	-	2,600	5,500	5,700	8,300	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Total East Coast	1,900	3,700	10,800	9,800	8,600	11,200	12,900	13,800	13,800	15,100	15,100	15,100	16,200	16,200	16,200	17,500	17,500	17,500	21,200	21,200	21,200	21,200	21,200	21,300
					Total East Coast twelve months 1942					4,024,800			Total East Coast Year 1943									6,953,300		
					Average B/D					11,026			Average B/D									19,049		
PACIFIC COAST																								
General Pet. (California)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Mohawk (Bakersfield, California)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500	500	500	500	500	500	500
Richfield (Watson, California)	1,600	2,000	2,100	2,100	2,100	2,100	2,300	2,300	2,300	2,300	2,300	2,300	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400
Shell (Martinez, California)	900	1,000	1,100	1,100	1,100	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,000	1,000	1,000	1,000
" (Wilmington, California)	2,900	3,100	3,100	3,000	3,500	3,500	3,900	3,900	3,900	3,900	3,900	3,900	5,500	5,500	5,500	5,500	5,500	5,500	12,500	10,500	10,500	10,500	10,500	10,500
S.O. Cal. (El Segundo, California)	1,700	3,800	3,000	4,200	4,400	4,400	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
" " (Richmond, California)	2,800	2,500	3,000	3,600	4,400	4,400	4,400	8,300	8,300	8,300	8,300	8,300	8,300	8,300	8,300	8,300	8,300	8,300	8,300	8,300	6,500	6,500	6,500	6,500
Texas (Wilmington, California)	1,900	1,200	1,500	1,500	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	700	700	700	700
Tidewater (Avon, California)	2,900	3,000	2,800	2,700	2,700	2,700	3,000	3,000	3,700	3,700	3,700	3,700	3,700	3,700	3,700	5,100	5,100	5,100	5,100	2,300	2,300	2,300	2,300	2,300
Union (Wilmington, California)	700	800	800	900	900	900	900	900	900	900	900	900	900	900	900	900	2,900	2,900	2,900	2,900	2,900	2,900	2,900	2,900
Wilshire (Los Angeles, California)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,200	3,200	3,200	3,200	3,200
Total West Coast	15,400	17,400	17,600	19,100	20,700	21,000	22,000	25,900	26,600	26,600	26,600	28,200	30,300	30,300	30,300	34,700	36,700	37,200	44,200	36,100	36,100	36,100	36,100	36,100
					Total Pacific Coast twelve months 1942					8,128,400			Total Pacific Coast 1943									12,949,300		
					Average B/D					22,269			Average B/D									35,477		
GULF COAST AND ARUBA, N.W.I.																								
Continental (Lake Charles, La.)	-	-	-	-	-	-	-	-	-	-	-	-	600	600	600	600	600	600	600	600	600	600	600	600
Abercrombie (Houston, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,400	6,400	6,400	6,400	6,400	6,400
Atlantic (Atreco, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,200	4,200	4,200	4,200	4,200	4,200
Cities Service (St. Rose, La.)	-	2,000	1,600	2,100	2,100	2,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
" " (Lake Charles, La.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17,700	17,700	17,700
Crown Central (Houston, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,400	2,400	2,400	2,400	2,400
Eastern States (Houston, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,400	2,400	2,400	2,400	2,400
Gulf (Port Arthur, Texas)	2,700	2,100	-	1,400	-	-	-	-	-	-	-	-	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200
Humble (Baytown, Texas)	6,800	7,900	9,300	5,400	7,400	7,400	9,400	9,400	9,400	9,400	10,500	10,500	13,200	13,200	13,200	13,200	13,200	13,200	12,000	12,000	12,000	12,000	12,000	12,000
" (Inglaside, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Lago Oil (Aruba, N.W.I.)	3,500	3,400	3,000	3,000	3,000	3,000	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	7,800	7,800	7,800	7,800	7,800	7,800	7,800	7,800	7,800
Magnolia (Beaumont, Texas)	3,200	1,900	500	1,700	3,900	3,900	3,900	3,900	3,900	3,700	3,700	3,700	3,700	3,700	3,700	12,400	12,400	12,400	12,400	12,400	12,400	12,400	12,400	12,400
Pewsler (Cotton Valley, La.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,700	1,700	1,700	1,700	1,700
Pure (Heiderland, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,000	3,000	3,000	3,000	3,000	3,000
Panam (Texas City, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	2,000	2,000	2,000	2,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Republic (Texas City, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,700	2,700	2,700	2,700	2,700	2,700
Shell (Houston incl. Norco)	6,100	6,700	5,500	5,300	6,000	6,000	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	3,700	3,700	3,700	3,700	3,700
Sinclair (Houston, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600
Southport (Texas City, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,100	3,100	3,100	3,100	3,100	3,100
S. C. La. (Baton Rouge, La.)	7,400	7,800	6,600	7,400	7,500	7,500	9,500	9,500	9,500	12,400	12,400	12,400	15,100	15,100	15,100	17,100	17,100	17,100	17,100	17,100	17,100	17,100	17,100	17,100
Terminal (Corpus Christi, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Texas (Port Arthur, Texas)	3,800	5,000	4,000	5,200	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	7,700	7,700	7,700	7,700	7,700	7,700	15,000	15,000	15,000	15,000	15,000	15,000
Great Southern (Corpus Christi, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,400	2,400	2,400	2,400	2,400	2,400
Total Gulf Coast and Aruba	33,500	36,800	30,300	31,500	36,000	36,000	37,300	37,300	37,300	40,000	41,100	41,100	63,000	63,000	63,000	78,300	82,300	83,300	111,400	121,200	116,500	134,200	134,200	134,200
					Total Gulf Coast and Aruba twelve months 1942					13,205,900			Total Gulf Coast and Aruba 1943									36,181,300		
					Average B/D					36,180			Average B/D									99,126		
INLAND																								
Associated Refinery	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,300	4,300	4,300	4,300	4,300
Champlain (Enid, Oklahoma)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Cities Service (East Chicago, Ill.)	-	-	-	-	-	-	-	-	-	-	-	-	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Ashland (Ashland, Ky.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300
Continental (Ponca City, Oklahoma)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,000	5,000	5,000	5,000	5,000	5,000
Frontier (Cheyenne, Wyoming)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,100	1,100	1,100	1,100	1,100
National (Coffeyville, Kansas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,600	1,600	1,600	1,600	1,600	1,600
Pennzoil (Oil City, Pa.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,500	1,500	1,500	1,500	1,500	1,500
Phillips (Borger, Texas)	3,500	2,600	3,200	2,100	2,900	2,500	2,700	2,700	2,700	2,700	2,700	2,700	8,700	8,700	8,700	8,700	8,700	8,700	8,700	8,700	8,700	4,300	4,300	4,300
" (Lap & Oklahoma City, Okla.)	770	1,400	1,400	1,100	1,300	1,300	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	700	700	700	700
" (Kansas City, Kansas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,900	1,900	1,900	1,900	1,900	1,000	1,000	1,000	1,000
Root (Eldorado, Ark.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,000	2,000	2,000	2,000
Shell (Wood River, Illinois)	2,700	3,200	3,300	3,400	3,600	3,400	2,400	2,600	2,600	2,600	2,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400
Sinclair (Parko, Wyoming)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,600	2,600	2,600	2,600	2,600
" (East Chicago, Ill.)	-	-	-	-	-	-	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Socony-Vacuum (Lab.)(E. Chicago, Ill.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,700	1,700	1,700	1,700	1,700
S.O. Indiana (Whiting, Ind.)	700	500	-	-	-	-	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700
S. O. Ohio (Toledo, Ohio)	200	400	900	900	900	900	900	900	900	900	900	2,200	2,200	2,200	2,200	2,200	2,200	2,200	3,800	3,800	3,800	3,800	3,800	3,800
Texas Co. (Lockport, Ill.)	-	-	-	-	-	-	-	-	-	-	-	-	2,000	2,000	2,000	2,000	2,000	2,000	2,000	1,300	1,300	1,300	1,300	1,300
Utah (Salt Lake City, Utah)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,900	2,900	2,900	2,900	2,900
Total Inland	7,870	8,100	8,800	7,500	8,100	8,100	11,700	11,700	11,700	11,700	11,700	21,000	30,400	34,100	36,000	37,600	43,100	47,300	53,900	64,600	61,600	61,600	61,600	61,600
					Total Inland twelve months 1942					3,903,770														
					Average B/D					10,693														
Total U.S. & Aruba, N.W.I.	58,670	66,000	67,300	67,900	71,400	74,300	83,900	88,700	89,400	93,400	94,500	105,400	139,900	143,600	145,500	168,100	179,600	187,300	223,700	251,200	235,400	253,100	253,100	253,100
					Total U.S. & Aruba twelve months 1942					29,262,870			Total U.S. and Aruba Year 1943									74,166,900		
					Average B/D					80,172			Average B.D.									203,197		

TABLE II

198562

STATUS OF PLANT EXPANSION PROGRAM
for
100 Octane Aviation Gasoline Production
Barrels (42 gallon) per Calendar Day
Basis: Continental United States and Aruba, D. W. I. May 25, 1942
Plants Now Included In Program

[redacted]

COMPANY and LOCATION	Estimated Capacities to Produce Fuel Based on Specification Used in Contracts (3 cc. T.E.L. per gallon- No "Rich Mixture" Requirement)					Total Estimated Capacity to Produce "Rich Mixture" Fuel (S + 1.25)	
	Present Facilities	Status of Additional Facilities: Construction Phase	Engineering Phase	Estimated Completion date	Total	Using 3 cc. T.E.L. per gallon	Using 4 cc. T.E.L. per gallon
EAST COAST REFINERIES							
Atlantic (Philadelphia, Pa.)		1,850	2,350	Jan.'43 Jul.'43	4,200	3,140	4,800
Standard of New Jersey (Baltimore, Md. and Bayway, N.J.)		3,300		Apr.'43	3,300	2,600	6,400
Sun (Marcus Hook,Pa.)		10,000		Jan.'43	10,000	6,000	10,000
EAST COAST TOTALS		15,150	2,350		17,500	11,740	21,200
WEST COAST REFINERIES							
Mohawk (Bakersfield, Cal.)			960	Jul.'43	960	400	500
General Petroleum (Torrance Cal.)		2,500		Apr.'43	2,500	2,500	3,000
Richfield (Watson,Cal.)	1,750	2,050		Jan.'43	3,800	1,800	2,000
Shell (Martinez,Cal.)	500				500	500	1,000
" (Wilmington-Dominguez, Cal.)	2,500	1,000	6,000	Dec.'42 Aug.'43	9,500	6,800	10,500
Standard of California (El Segundo,Cal.)	3,500	1,000		Aug.'42	4,500	3,800	4,500
Standard of California (Richmond,Cal.)	3,200	2,300		Aug.'42	5,500	5,400	6,500
Texas (Wilmington,Cal)	1,300				1,300	600	700
Tide Water Associated (Avon,Cal.)	1,435	850	1,650	Sept.'42 Apr. '43	3,935	1,900	2,300
Union(Wilmington,Cal.)	700	4,600		May '43	5,300	2,550	2,900
Wilshire (Norwalk,Cal.)			1,876	Sep.'43	1,876	1,850	2,200
WEST COAST TOTALS	14,885	14,300	10,486		39,671	28,100	36,100
GULF COAST REFINERIES							
Continental (Lake Charles, La.)	850	150		Oct.'42	1,000	450	600
Gulf (Port Arthur,Tex)	2,016	2,820		Jan.'43	4,836	4,650	5,200
Humble(Baytown,Tex.)	5,700	5,650		Jan.'43	11,350	7,600	12,000
Lago (Aruba,N.W.I.)	2,600	4,400		Jan.'43	7,000	6,000	7,800
Magnolia(Beaumont,Tex.)	4,500	4,500		Jan.'43	9,000	6,250	12,400
Shell (Houston,Tex. & Norco, La.)	4,000	400		Jul.'42	4,400	3,100	3,700
Standard of Louisiana (Baton Rouge, La.)	5,040	9,300		Oct.'42 to Apr.'43	14,340	11,900	17,100
Texas (Port Arthur, Tex.)	2,940	3,810	6,875	Jan.'43 Jun.'43	13,625	11,100	15,000
Abercrombie-Harrison (Sweeney,Tex.)			6,560	Jul.'43	6,560	4,850	6,400
Atlantic (Atreco,Tex.)			3,645	Jul.'43	3,645	2,500	4,200
Cities Service (Lake Charles,La.)			14,000	Oct.'43	14,000	9,500	17,700
Crown Central (Houston, Tex.)			2,550	Aug.'43	2,550	1,800	2,400
Eastern States (Houston, Tex.)			1,800	Aug.'43	1,800	1,700	2,400
Great Southern (Pontiac) (Corpus Christi,Tex.)			2,710	Jul'43	2,710	1,900	2,400
Humble (Ingleside,Tex)		1,100		Jan.'43	1,100	900	1,500
Pan American (Texas City,Tex.)		1,800 3,000		Jan.'43 May'43	4,800	4,100	6,000
Premier (Cotton Valley, La.)			2,285	Sep.'43	2,285	1,500	1,700

COMPANY and LOCATION	Estimated Capacities to Produce Fuel Based on Specification Used in Contracts (3 cc. T.E.L. per gallon- No "Rich Mixture" Requirement)					Total Estimated Capacity to Produce "Rich Mixture" Fuel (S / 1.25)	
	Present Facilities	Status of Additional Facilities				Using 3 cc. T.E.L. per gallon	Using 4 cc. T.E.L. per gallon
		Construction Phase	Engineering Phase	Estimated Completion date	Total		
GULF COAST REFINERIES (CONTINUED)							
Pure (Nederland,Tex.)			1,800	Jun.'43	1,800	1,400	3,000
Republic (Texas City, Texas)			2,558	Jul.'43	2,558	2,700	2,700
Sinclair (Houston,Tex)		3,400		Jan.'43	3,400	2,050	3,600
Southport (Texas City, Tex.)			3,030	Jul.'43	3,030	1,650	3,100
Terminal (Corpus Christi,Tex.)			2,984	Aug.'43	2,984	1,950	3,300
GULF COAST TOTALS	27,646	40,330	50,797		118,773	102,250	134,200
INLAND REFINERIES							
TEXAS - OKLAHOMA- ARKANSAS							
Phillips (Borger,Tex.)	2,500	3,100		Jan.'43	5,600	2,500	4,300
" (Okla.City & Lep, Okla.)	1,000				1,000	350	700
(Champlin (Enid (Okla.)			2,400	Apr.'43	2,400	1,200	1,600
(Anderson-Prichard ((Cyril,Okla.)							
Continental (Ponca City,Okla.)			3,830	Jul.'43	3,830	3,400	5,000
ASSOCIATED REFINERIES, INC.(Duncan, Okla.)			4,050	Aug.'43	4,050	3,500	4,300
Anderson-Prichard (Cyril)							
Bell (Granfield & Ardmore)							
Cosco (Wynnewood)							
LaSalle (Burkburnett)							
Panhandle (Wichita Falls)							
Rock Island (Duncan)							
Waggoner (Electra)							
Root (El Dorado,Ark)			1,480	Jul.'43	1,480	1,400	2,000
TEXAS - OKLAHOMA - ARKANSAS TOTALS	3,500	3,100	11,760		18,360	12,350	17,900
KANSAS							
National (Coffeyville,Kans.)			1,170	Jul.'43	1,170	1,100	1,600
Phillips (Kansas City, Kans.)		1,360		Mar.'43	1,360	500	1,000
KANSAS TOTALS		1,360	1,170		2,530	1,600	2,600
PENNSYLVANIA -KENTUCKY							
Ashland (Ashland,Ky.)			3,080	May '43	3,080	2,400	3,300
Pennzoil (Oil City,Pa.) (Cooperative with Berry, Wolf's Head and Anderton)			1,236	Jun.'43	1,236	1,100	1,500
PENNSYLVANIA -KENTUCKY TOTALS			4,316		4,316	3,500	4,800
GREAT LAKES REGION							
Cities Service (E.Chicago,Ind.)		1,350		Jan.'43	1,350	1,200	1,400
Sinclair (E.Chicago, Ind.)	850				850	550	1,600
Standard of Ind. (Whiting,Ind.)	1,210	2,570	3,150	May '43 Jun.'43	6,930	5,000	7,500
Standard of Ohio	490		2,510	Aug.'43	3,000	2,000	3,800
Socony (E.St.Louis & Augusta,Kans.)			3,000	Feb.'43	3,000	2,200	3,700
Texas (Lockport,Ill.)		1,650		Jan.'43	1,650	1,200	1,300

COMPANY And LOCATION	Estimated Capacities to Produce Fuel Based on Specification Used in Contracts (3 cc. T.E.L. per gallon- No "Rich Mixture" Requirement)					Total Estimated Capacity to Produce "Rich Mixture" Fuel (S / 1.25)	
	Present Facilities	Status of Additional Facilities			Total	Using 3 cc. T.E.L. per gallon	Using 4cc. T.E.L. per gallon
		Construction Phase	Engineering Phase	Estimated Completion date			
INLAND REFINERIES							
GREAT LAKES REGION (Continued)							
Shell (Wood River, Ill.)	3,000	1,000	6,000	Jul.'43 Dec.'42	10,000	9,000	10,400
GREAT LAKES REGION TOTALS	5,550	6,570	14,660		26,780	21,150	29,700
ROCKY MOUNTAINS							
Frontier (Cheyenne, Wyo.)			1,500*	Sept.'43	1,500	800	1,100
Sinclair (Parco, Wyo)			2,750	Aug.'43	2,750	2,350	2,600
Utah (Salt Lake City, Utah)			4,300*	Aug.'43	4,300	2,200	2,900
ROCKY MOUNTAINS TOTALS			8,550		8,550	5,350	6,600
INLAND TOTALS	9,050	11,030	40,456		60,536	43,950	61,600
GRAND TOTALS	51,581	80,810	104,089		236,480	186,040	253,100

* These plants are still in initial development phase; detailed engineering not yet commenced. Not included in Engineering Phase totals.

TABLE III

ESTIMATED PLANT CAPACITY FOR PRODUCTION OF CUMENE

COMPANY	LOCATION	BARRELS/DAY APPROXIMATE RATED CAPACITY	ESTIMATED COMPLETION DATE
Atlantic Refining	Philadelphia, Pa.	1,200	July 1
Atlantic Refining	Atreco, Texas	735	" "
Globe Oil & Refining	Lemont, Illinois	250	July 15
Mid-Continent Petroleum	West Tulsa, Okla.	300	August 15
Ohio Oil Company	Robinson, Illinois	250	July 1
Pan American	Texas City, Texas	1,100	July 15
Richfield Oil Company	Watson, California	300	August 1
Shell Oil Company	Norco, Louisiana	320	Operating
Shell Oil Company	Wood River, Illinois	800	June 1
Standard Oil (Ohio)	Toledo, Ohio	450	May 30
Standard Oil (N. J.)	Baton Rouge, Louisiana	400	August 15
Wilshire Oil Company	Los Angeles, Calif.	250	July 1
Texas Company	Port Arthur, Texas	700	July 1
Total now scheduled --		7,055	

Indicated Capacity	June 1	1,570
"	July 1	4,705
"	August 1	6,355
"	Sept. 1	7,055

TABLE IV

BENZOL SUPPLIES AS RELATED TO CUMENE PRODUCTION

	Benzol Available BPCD	Benzol Required	Cumene Produced	To Stock Pile	Stock Pile M Barrels
May - 1942	6,420	570	800	+ 5,850	181
June	6,190	2,000	2,800	+ 4,190	307
July	6,030	2,900	4,050	+ 3,130	403
August	5,950	3,700	5,180	+ 2,250	473
September	5,950	4,400	6,170	+ 1,550	520
October	5,330	5,000	7,000	+ 330	530
November	4,700	5,000	7,000	- 300	520
December	4,700	5,000	7,000	- 300	510
January - 1943	3,840	5,000	7,000	- 1,160	474
February	3,680	5,000	7,000	- 1,320	437
March	3,840	5,000	7,000	- 1,160	401
April	3,840	5,000	7,000	- 1,160	366
May	3,990	5,000	7,000	- 1,010	335
June	4,070	5,000	7,000	- 930	307
July	3,680	5,000	7,000	- 1,320	266
August	3,760	4,000	5,600	- 240	259
September	1,100	2,500	3,500	- 1,400	217
October	860	1,000	1,400	- 140	213
November	1,020	-	-	+ 1,020	244
December	1,100	-	-	+ 1,100	278

Stock Pile December 31 - 1943 - 11,650,000 gallons.

Filed by Mrs Beasley 9/16/42

OFFICE OF
PETROLEUM COORDINATOR FOR WAR
WASHINGTON

C. F.
Office of Petroleum Coordinator for War

[redacted]

SEP 14 1942

file

My dear Mr. President:

The letter attached addressed to me by Geoffrey Lloyd, Esquire, M. P., the British Secretary for Petroleum, describes the origin and purpose of the "Petroleum Warfare Department". I believe that you would find it interesting reading.

Sincerely yours,

Harold L. Ickes

Petroleum Coordinator for War.

x4435

The President,
The White House.

Enclosure 407.

x56
x48
x4675

REGRADED
UNCLASSIFIED
CLASSIFIED
E.O. 11652, Sec. 3(E) and 5(D) or (E)

Petroleum Warfare Department
~~Petroleum Department,~~
Dean Stanley Street,
Millbank, S.W.1.

~~Secret~~ and
Personal

12th August, 1942.

Hankey Mr Lucas x4010.

We have been very glad to welcome over here Mr. Russell of N.D.R.C. who has been examining the up-to-date developments achieved here in the use of oil as an offensive and defensive weapon of war.

I originated this work just after the fall of France when this country was denuded of orthodox weapons because the equipment of the British Army had been left on the Continent. I had of course heard of Molotov Cocktails and it occurred to me that in our extremity it might be possible to utilise the incendiary qualities of petroleum in massive quantities as an improvised defence and particularly an improvised defence against tanks. I consulted Lord Hankey with whom I had worked closely on many matters since the beginning of the war and who had of course a life-time of experience in military policy, and found that his mind was also moving in the same direction. Those days of course were days of extremely rapid action. I got into touch with the Quarter-Master-General with whom I was naturally on close terms in regard to the fuel supplies of the Army, and arranged for Lord Hankey and myself, accompanied

by petroleum engineers, to visit the Army on the Channel coast. Two days later we held a conference with the Divisional General in the Royal Marine barracks at Deal and then inspected the anti-tank line, with the result that certain ideas began to take concrete shape and I instructed the Petroleum Board to instal the first experimental apparatus in one of the defiles running up through the low cliff of that part of the coast. In two days there was installed in the woody hill-side a small oil tank from which pipes ran for the purpose of producing suddenly an intense oil fire across the whole breadth of the defile - as an anti-tank obstacle. During the two days that it took to instal this first apparatus we had thought of several other ideas which were demonstrated to a party of officers and oil engineers who assembled for what was the first Petroleum Warfare demonstration. This time the Corps Commander, General Thorne, came in addition to the Divisional General and both Generals were much impressed with the possibilities of burning oil as a weapon. I telephoned immediately after the experiment to arrange a meeting with prominent generals at the War Office for the next morning; and immediately thereafter Lord Hankey and I approached the Prime Minister. As a result I set up the Petroleum Warfare Department which I placed under the control of Brigadier Sir Donald Banks and which was composed partly of military officers and partly of oil engineers.

Thereafter practical progress was rapid. The generals in Kent carried out a quick reconnaissance of suitable sites for the defile

flame traps and on my instructions the Petroleum Board installed them, actually succeeding in putting in quite a large number within three weeks of the first experiment. In the succeeding months some hundreds were installed in suitable parts of the country and the Flame Fougasse - a static, one shot oil weapon - was approved by the Army and also installed in large quantities in suitable areas. This work absorbed all our energy in the months immediately after Dunkirk, but as time passed and the invasion did not take place I gave the word that the Petroleum Warfare Department must turn to the intensive study of mobile weapons of offence, the whole work to be placed on an increasingly professional basis from both a military and petroleum engineering point of view.

This was done and as a result of very much work and many ups and downs we are now in possession of a range of mobile flame throwing weapons of considerable interest. I will not go into detail upon this subject, and indeed Mr. Russell has been shown everything that we have, has been given all relevant documents and also our films, though since these films were made a good deal more progress has taken place. Similarly since Petroleum Warfare work has been started in the United States the authorities there have given us all their results which we have been extremely interested and grateful to have. Their work upon the incendiary gels has of course been particularly noteworthy. I very much hope that the intimate collaboration which has been begun between those engaged on this work on both sides

of the Atlantic and which has been so much strengthened by Mr. Russell's visit here will be continued and developed in the future. Everybody over here has been delighted by Mr. Russell's visit both from the technical and personal point of view. It has been very useful to us and we have liked him very much.

You will of course appreciate that this work is quite separate from the petroleum supply side of my activities and it is for that reason that I have kept the two departments completely separate and organised under separate official heads. I have also arranged with the Minister of Supply an intimate tie-up between the Petroleum Warfare Department and the Weapon Research and Development section of his Ministry and also the War Office.

I thought that you would be interested to know something of these developments since they depend so much upon the use of oil and have owed so much to the technical contribution which the oil industry and oil engineers were alone in a position to give.

Yours ever,
Geoffrey Lloyd

The Rt. Hon. Harold L. Ickes.

~~SECRET~~ AND PERSONAL.

The Hon. Harold L. Ickes,

United States Department
of the Interior.

Washington.

By hand

GL

C. F.

Office of Petroleum Coordinator for War

November 7, 1942

x56-B

My dear Mr. Ickes:

I am naturally concerned at the contents of your letter of October 19, 1942, because unless adequate supplies of 100 octane gasoline are available, the operations of our aircraft will suffer.

You are cognizant, of course, of the critical situation of steel and certain other key materials needed in your program. This has been due to the impact of many urgent and competing programs and has been aggravated by the inadequacies of the priorities system. I am advised that vigorous efforts are being made by the War Production Board to cure this situation. All construction not contributing directly to the war effort, whether of a public or private character, even including that of the Army and Navy, is, with my approval, being restricted by the War Production Board to what is absolutely essential for the prosecution of the war. Additional amounts of critical materials should become available for urgent needs as a result of these measures. x445

To improve the flow of materials to those programs that are most urgent, the War Production Board expects shortly to substitute for the present priorities system a much tighter control of critical materials. I understand that you were present at the meeting of the Board yesterday, at which this procedure was explained, and that your people are presently engaged in scheduling out your program with WPB in relation to the rubber and other urgent programs, so that you may be able to avail yourself promptly of the advantages of the new system of materials distribution.

The combined effect of increasing the availability of materials through restriction of all unessential projects, and the adoption of a system whereby your program may be assured of materials when and in the amount needed, should go far toward removing the hindrances to which you refer.

I understand that recently the priority ratings of the entire 100 octane program have been raised and that your people have been requested to bring any particular choke-points

to the attention of the War Production Board for special priority assistance. I am informed that this recent increase in rating is satisfactory to your people and that there are presently no requests by them before the War Production Board which have not been granted.

The War Production Board has, I am sure, every disposition to afford the maximum assistance essential to your program and has assured me that, when you are prepared to present the projects to meet the new and increased requirements, they will be given immediate consideration.

Sincerely,

(signed) Franklin D. Roosevelt

The Honorable Harold L. Ickes
Petroleum Coordinator for War

x4435

WAR PRODUCTION BOARD
WASHINGTON, D. C.

OFFICE OF
DONALD M. NELSON
CHAIRMAN

October 28, 1942

My dear Mr. President:

I enclose herewith for your signature a suggested reply to Mr. Ickes' letter of October 19, 1942 regarding the 100 octane gasoline program.

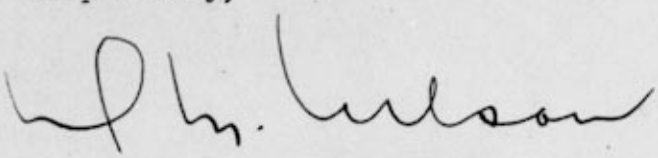
I believe you will be interested in knowing that WPB in February approved the requests then made for an ultimate expansion in U. S. 100 octane capacity to 200,000 barrels per day. Plants are under construction that will increase output to over 300,000 barrels daily of the S / 1.25 fuel specified for 1943, or to over 244,000 barrels per day when producing the higher quality product, S / 2.0 grade, specified for 1944. This capacity will be over six times our output in September, 1941 and, as you will note, is somewhat in excess of the authorization. This program alone costs about $500,000,000.

Since early in July my office has repeatedly sought from both OPC and the Air Forces up-to-date estimates of their probable maximum future needs of this fuel. Prior to that time, those directly concerned with this program had estimated that the 185,000 plane objective would not require more than about 240,000 barrels per day. As these estimates had been made many months earlier, I felt that it would be prudent to resurvey the situation, and was sufficiently concerned to send one of my men to London in September with the Military Mission that was then reworking the estimates. The Mission returned at the beginning of this month, but those upon whom we must depend for authoritative statements of requirements have not to date made their report or submitted a program upon which we can act.

I am given to understand informally, however, that requests will shortly be made for an expansion program to increase U. S. output to between 375,000 and 400,000 barrels per day by the middle of 1944. This is almost double the amount of previously indicated ultimate needs. The production, transportation and storage of this quantity of gasoline are major undertakings, involving as much gasoline as all motor cars in District I (our Eastern states) will use under rationing and a third more than current United Kingdom consumption of all petroleum products. I make these comments only to illustrate the magnitude of the program.

We in WPB are making strenuous efforts to accelerate the completion of the existing 100 octane program and have given all projects a higher priority rating to accomplish this end. We await the submission of additional necessary projects for appropriate and prompt action. I need not point out that any substantial expansion program will take large quantities of the very critical materials used in the shipbuilding, synthetic rubber and other essential projects. It is our objective to have this program integrated with other vital and related programs, so that the entire war effort can be carried out on time and in proper balance. I assure you that we will do all in our power to provide sufficient fuel to service adequately the planes that will be in operation.

Respectfully,



×4735

The President,

The White House

6.7.

Office of Petroleum Coordinator for War

MEMORANDUM FOR THE FILES:

Letter from Hon. Harold L. Ickes, Petroleum Coordinator for War, 10/19/42, to the President, marked "confidential", attached to which is confidential report of 10/15/42 on "100 Octane Aviation Gasoline Report to the War Production Board", on which is notation "D. Nelson To prep. reply for my sig. FDR".

10/26/42.
hm

x249 official

OFFICE OF

PETROLEUM COORDINATOR FOR WAR

WASHINGTON

D Nelson
To see reply
to my
letter

OCT 19 1942

My dear Mr. President:

I believe that I should call to your attention in a special way our 100 octane aviation gasoline report of October 15, attached.

This records the serious effect upon our construction program of the failure to obtain in priority competition the materials necessary to complete our plants. Delays in material deliveries to plants that are already scheduled will have resulted in a loss of over 8,000,000 barrels of 100 octane gasoline by December 31, 1942. This furnishes some idea of the critical aviation gasoline shortage that we have to face in the near future if the delays that we are now experiencing continue.

I also call your attention to the new requirement figures which result from the forecasting of future demand in collaboration with the military authorities here and the British authorities in London. According to these figures, by July 31, 1944 we will need 137,200 barrels more 100 octane capacity then is now scheduled. Our actual production today is 107,000 barrels daily, with plants well advanced in construction that will bring this production to 244,000 barrels daily. The production and requirements forecasts are recorded on page six of the report.

All this is before the War Production Board, the Army, the Navy, and the aeronautical authorities. But I think that you should know that the competing demands for materials have placed this production in a subordinate position. It is difficult for me to accept a delayed aviation program, however, and I want to focus attention upon it and to do everything in my power to prevent it.

Sincerely yours,

Harold L. Ickes

Petroleum Coordinator for War.

The President,

The White House.

[redacted]

E

[redacted]

E.O. 11652, Sec. 3(E) and 5(D) or (E)
Interior Dept Ltr, 11-3-72
MAR 21 1973

[redacted]

October 15, 1942

100 OCTANE AVIATION GASOLINE

REPORT TO THE WAR PRODUCTION BOARD

29

This is the report of the Office of Petroleum Coordinator for War to the War Production Board on the present status of the 100 octane aviation gasoline program.

I

SPECIFICATIONS

A meeting of representatives of the Army, the Navy, the Office of Petroleum Coordinator, and engine manufacturers was held October 8 to formulate a specification for the ultimate type of fuel to be required, and whereas formal approval of the Aeronautical Board has not yet been obtained, it was agreed that this fuel should be manufactured to a specification calling for S + 2 rich mixture and that no other octane requirement should be imposed. For simplicity in future reference to these specifications, the following terminology has been adopted:

Effective Date	Rich Mixture Requirement	Grade
Present	S + 1.0	125
January 1, 1943	S + 1.25	130
July 1, 1944	S + 2.0	140

Adoption of Grade 130 by January 1, 1943 should have no effect on production capacity because of the availability of cumene. However, adoption of Grade 140 specification will have the effect of reducing production capacity by approximately 20 percent, based upon the present scheduled program.

[redacted]

The Aeronautical Board has requested that aviation fuel meeting the ultimate specification be provided as soon as practically possible in order to satisfy engines which will be in production. It has been indicated by the Aeronautical Board that 28.5 percent of the present Army Air Forces' engine production now requires Grade 140 fuel for optimum operational performance and that this percentage will be increased to 60 by July of 1943. In view of this rapid development of engines capable of utilizing the higher quality fuel (S + 2 rich mixture - Grade 140), this Office is showing the estimated capacity after July 1943 in terms of Grade 140 as well as Grade 130.

It has been estimated that full utilization of Grade 140 fuel will permit approximately 10 percent increase in power output or 3 percent increase in range as compared with the use of Grade 130.

II

FORECAST OF PRODUCTION AND REQUIREMENTS

A. 100 Octane Production

A revised forecast of production has been prepared to reflect modifications in the quantities of fuel which it is expected will be produced over the balance of this year and for the year 1943 as well as for the first six months of 1944. The following table shows the month by month production as estimated in the September report compared with our present estimate of future production:

Barrels per Day

	Estimated September 10 Grade 125 (S + 1.0)		Estimated October 15 Grade 125 (S + 1.0)		Increase (Decrease) Grade 125 (S + 1.0)
October 1942	119,800		107,060		(12,740)
November	134,400		119,900		(14,500)
December	142,100		128,125		(13,975)
	Grade 130 (S + 1.25)	Grade 140 (S + 2.0)	Grade 130 (S + 1.25)	Grade 140 (S + 2.0)	Grade 130 (S + 1.25)
January 1943	271,900		151,525		(20,375)
February	174,000		165,225		(8,775)
March	175,100		168,985		(6,115)
April	194,800		183,485		(11,315)
May	215,300		195,285		(20,015)
June	246,900		221,265		(25,635)
July	269,400		250,055	212,500	(19,345)
August	285,700		265,855	225,100	(19,845)
September	267,400		260,245	208,200	(7,155)
October	285,700	217,000	269,675	216,000	(16,025)
November	285,700	217,000	284,735	238,000	(965)
December	285,700	217,000	301,335	240,800	15,635
First 6 months in 1944	285,700	217,000	304,735	244,000*	19,035
Decrease October 1 to December 31, 1942					(1,263,165)
Decrease January 1 to June 30, 1943					(2,795,855)
Decrease July 1 to December 31, 1943					(1,470,580)
Increase first six months 1944					3,445,335

A detailed monthly forecast of production by plants is presented in Table I attached.

A very serious loss in indicated future production is shown in the above forecasts as compared with that presented in the previous report. It has become increasingly evident that the plants already scheduled cannot be completed without extreme delays under the present priority ratings which have been granted. The production forecast indicates a decrease of over 5.5 million barrels of gasoline through December 31, 1943. This reflects only the loss in production due to the delays which have been

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* Capacity estimated because of lack of extensive data on Grade 140 manufacture.

experienced to date and does not take into consideration any future losses in 100 octane production if this situation is not immediately corrected. The reasons for the delay in the refinery construction program are discussed in considerably more detail in Section IV.

Two other factors contribute to the decrease in production, particularly over the last quarter of 1942. These are the delays involved in putting into effect the conversion of additional catalytic polymerization plants to the manufacture of codimer, due to the delay in obtaining priorities and difficulties in obtaining critical equipment to effect the conversion. The necessity of converting hydrogenation facilities in a step-wise manner only after sufficient codimer plants have been converted and/or codimer inventories have been accumulated to assure a continued supply of codimer has also caused some delay in obtaining ultimate conversion. The other factor contributing to decreased production of 100 octane is the delay experienced in conversion of existing catalytic cracking facilities to the production of aviation gasoline. A part of this delay has been in obtaining materials and a part is due to the necessity for developing suitable working inventories before blending operations are started.

B. 100 Octane Requirements

As pointed out in the September report, a joint meeting of the Aeronautical Board with representatives of the United Kingdom was planned to coordinate requirements for all of the United Nations, based upon the plane production program. It is expected that a formal report will be received from the Aeronautical Board in the immediate future presenting

the results of this ultimate requirements forecast and setting forth the approved method for determining fuel requirements from plane production. Meanwhile, this Office has prepared an estimate of 100 octane gasoline requirements based upon the 8-K aircraft program from preliminary information received from the Aeronautical Board. Whereas these requirements are subject to revision upon compilation of the revised official requirements, it is considered desirable to set them forth at this time as a basis for planned production. Indications are that these requirements will be modified slightly upward when the official figures are released. The following tabulation compares estimated requirements forecasted in the September report with the latest revised estimates prepared by this Office.

	Barrels per Day		
	Estimated September 10	Estimated October 15	Increase
October 1942	146,500	146,500	
November	158,300	158,300	
December	161,200	161,200	
January 1943	154,700	154,700	
February	168,100	178,000	13,900
March	161,400	176,000	14,600
April	164,700	190,500	25,800
May	167,700	202,000	34,300
June	174,000	226,000	52,000
July	198,800	250,500	51,700
August	198,800	267,000	68,200
September	198,800	290,000	91,200
October	198,800	297,500	98,700
November	198,800	318,500	119,700
December	198,800	321,500	122,700
January 1944	198,800	339,700	140,900
February	198,800	360,200	161,400
March	198,800	357,200	158,400
April	198,800	372,200	173,400
May	198,800	371,200	172,400
June	198,800	381,200	182,400

Increase October 1 to December 31, 1942	--
Increase January 1 to June 30, 1943	4,239,100 barrels
Increase July 1 to December 31, 1943	16,907,300 "
Increase January 1 to June 30, 1944	29,815,900 "

It will be noted that the new estimated requirements to June 30, 1944, exceed the earlier estimates by 50,962,300 barrels.

C. Comparison of Production and Requirements Forecasts.

To make a direct comparison of the newly estimated production schedule and the newly estimated requirements schedule for 100 octane aviation gasoline, the following tabulation is given:

	Barrels per Day		Short (Long)
	Requirements	Production	
		(Grade 125)	
October 1942	146,500	107,060	39,440
November	158,300	119,900	38,400
December	161,200	128,125	33,075
		(Grade 130)	
January 1943	154,700	151,525	3,175
February	178,000	165,225	12,775
March	176,000	168,985	7,015
April	190,500	183,485	7,015
May	202,000	195,285	6,715
June	226,000	226,265	(265)
July	250,500	250,055	445
August	267,000	265,855	1,145
September	290,000	260,245	29,755
October	297,500	269,675	27,825
November	318,500	284,735	33,765
December	321,500	301,335	20,165
January 1944	339,700	304,735	34,965
February	360,200	304,735	55,465
March	357,200	304,735	52,465
April	372,200	304,735	67,465
May	371,200	304,735	66,465
June	381,200	304,735	76,465
Deficiency -- October - December 1942			3,399,965
January - June 1943			1,084,255
July - December 1943			3,442,580
January - June 1944			10,641,665
		Total	18,568,465

It will be noted that the presently estimated production based on production of Grade 130 to the end of June 1944 is 18,568,465 barrels short of presently estimated requirements.

If Grade 140 is adopted by July 1, 1943, the shortage is aggravated, totaling 38,493,000 barrels to the end of June 1944.

D. 91 Octane Situation.

The supply and demand situation on 91 octane gasoline has not changed appreciably from the information presented in the report issued August 10. Every effort is being made to conserve 91 octane supplies to the maximum possible extent, and it is expected that a substantial portion of 91 octane requirements will be diverted in the near future to 87 grade, which is considerably less critical. It appears at the present time that no difficulty will be experienced in meeting 91 requirements through December 31, 1942 and that appreciable stocks will be available for use in the manufacture of 100 octane gasoline.

E. Success of "Quick" 100 Octane Program

This Office is continuing its efforts to convert existing refinery equipment to the manufacture of catalytic cracked base stock, cumene, and codimer. All of the existing catalytic cracking units suitable for the production of aviation base gasoline now have been converted to this purpose and all of the scheduled cumene plants are now in operation. It is estimated that the present rate of production of cumene is approximately 6,300 barrels per day, as compared to the 7,000 barrels per calendar day which is ultimately expected. Every effort is being made to increase the production to the designated quantity. Our efforts to convert existing polymerization plants (not used for cumene manufacture) to the manufacture of codimer are being continued.

Tabulated below are the total quantities of codimer that it is estimated can ultimately be made available for hydrogenation in existing hydrogenation plants:

	To Baton Rouge, La.	To Richmond, Calif.
Good Prospects for Codimer Conversion	6,975	463
Existing Dimer Plants	1,300	-
Favorable Codimer Proposals	246	241
Favorable Dimer Proposals	491	-
	9,012	704

Total conversion of all available units would thus result in a daily codimer production of 9,716 barrels which would yield 8,650 barrels of hydrocodimer after hydrogenation. This quantity of hydrocodimer is approximately 3,300 barrels per day short of the total available capacity of existing hydrogenation equipment.

Of the total quantity of codimer potentially available, a capacity equivalent to 5,000 barrels a day already has been converted. The production forecast set forth in Table I assumes that of the total potential quantity of codimer, approximately 7,800 barrels per day average will be released by December 1. If all available plants are converted, the net increase in the production forecast would be approximately 4,000 barrels per day of 100 octane gasoline.

Efforts are also being made to install new polymerization plants, largely through the use of existing refinery equipment. While it is a little early to take these plants into consideration in the production forecast, several such plants show considerable promise and are being encouraged as rapidly as possible.

III

ALLOCATION OF CRITICAL AVIATION FUELS

Production of 100 octane number fuel in September was approximately 1,500,000 barrels short of total requirements of the United Nations Forces for supply during the month from U. S. sources and Aruba. This necessitated drastic reductions in allocations for all areas. The problem was referred to the Combined Chiefs of Staff and authorization secured to limit allocations to 50 percent of requirements ex U. S. West Coast refineries and 60 percent ex other U. S. refineries.

The action taken has resulted in the tapping of slender reserves in all theatres to maintain vital operations. The indicated shortage of 100 octane fuel for October is again approximately 1,500,000 barrels and will undoubtedly require similar action. The supply position on 91 and 87 octane number fuels is adequate to permit the allocation of all essential requirements.

Due to the extreme urgency of conserving all 100 octane number fuel for urgent military needs, the Joint Army and Navy Aeronautical Board is reviewing the test and inspection procedures of all aircraft engine manufacturers and sponsoring a plan to effect the saving of approximately 40 percent of the 100 octane fuel now being consumed in these plants. The Aviation Petroleum Products Allocation Committee is initiating action to the end that U. S. Army and U. S. Navy aircraft based in Continental United States operate on grades lower than 100 octane number, wherever possible, and that changes in procedure be ordered to permit cruising of bombers at training stations and patrol aircraft on active duty at 75 percent of rated horsepower with 91 octane fuel, the use of 100 octane being limited to take-off and other circumstances when full power is required.

IV

STATUS OF PLANT EXPANSION PROGRAM

The status of the plant expansion program is shown in Tables II and III attached to this report. In order to present a more up-to-date and realistic picture of the expansion program, Tables II and III now show the rated capacities of the various plant increments in terms of Grade 130, the 1943 specification (S + 1.25 "Rich Mixture" with 4 cc. T.E.L.).

A. Changes in Plant Expansion Program.

The following plant expansions have been completed during the past month:

	BBLs./CD S + 1.25 "Rich"
*Standard of Cal. (El Segundo, Cal)	3,400
Tide Water Associated (First Increment, Avon, Cal.)	500

*Through inadvertance this increment was formerly shown in Tables II and III as an increment under construction at Richmond, California.

During the past month twelve additional plants have progressed from the engineering to the active construction phase.

Further study of the detailed plans for the Defense Plants included in the program has resulted in additional increases in design capacity on the basis of the 1943 specification, Grade 130 (S + 1.25 "Rich"), as follows:

Company	Increase (Bbls./Cd)
Champlin Refining Co. (Enid, Okla.)	1,900
Frontier-Bay (Cheyenne, Wyo.)	300
Utah (Salt Lake City, Utah)	1,500
Total	3,700

B. Estimated Completion Dates

The petroleum refinery construction program for the manufacture of 100 octane aviation gasoline and aviation lubricating oil has run into serious difficulties. The erectors of each of the projects which carry an AA-3 rating report that they are unable to secure delivery of many items necessary for plant completion on ratings below AA-1. The projects carrying AA-4 ratings have been even more seriously affected for the reason that many factories even refuse to accept their orders for numerous items on the ground that it would be impossible for them to secure materials necessary to fill the orders on an AA-4 rating.

As a result of this situation, it has been necessary to completely revise completion dates to account for delays which have already occurred. In making this revision, the assumption has been made that materials and equipment would be made available from this time on. Under the present priority ratings, however, there is not any assurance that the materials needed will be secured in sufficient time to meet even this revised schedule. Because of this situation, we are at the present time securing complete data with relation to each project in which we are listing the material that cannot be secured for that project under its present rating. We are applying for a higher rating on these particular items. These applications are subject to the approval of a board in Mr. J. A. Krug's office, War Production Board. However, because of the time required to secure approval, we have requested a blanket directive by which the recommendations of this Office may be acted upon promptly in order to attempt to restore the flow of materials and equipment necessary for the completion of these plants.

It is not considered that the above procedure is more than a stop-gap solution to this problem. It is felt that a satisfactory solution will only come when a firm schedule of all equipment and materials has been established, the requirements frozen, and the distribution allocated.

We are continuing to show in Table III the detailed construction data on all plants in the program. However, the estimated completion dates reflect the conditions set forth above, as will be clearly evident from a comparison of the dates shown in the last two columns of this table.

As indicated in our previous report, the matter of re-rating a number of projects from Block AA-4 to Block AA-3, particularly on the Pacific Coast, has been under consideration in order to speed up as much as possible the completion of these plants. These re-ratings have now been approved by the Army and Navy Munitions Board but not by the War Production Board. The various changes in ratings required to accomplish this result are shown in the following tabulation:

TO RECEIVE AN AA-3 RATING

Name of Company	Location
Wilshire Oil Company	Norwalk, California
General Petroleum Corp.	Torrance, California
Mohawk Petroleum Company	Bakersfield, California
Standard of California (2nd Increment)	El Segundo, California
Tide Water Associated Oil Co. (2nd Increment)	Avon, California

RATING TO BE LOWERED FROM AA-3 TO AA-4

The Texas Company (2nd Increment) Port Arthur, Texas

Atlantic Refining Company (2nd Increment) Philadelphia, Pa.

RATING TO BE LOWERED FROM AA-4 TO A-1-a

Terminal Refining Company Corpus Christi, Texas.

While, under present regulations, it has been necessary to drop a number of plants from Block AA-3 and Block AA-4 to lower ratings to compensate for those raised from AA-4 to AA-3, it is most strongly urged that the recommendations made above for a more effective system of providing the necessary construction materials, be approved to permit all of the scheduled plants to be completed not later than their originally scheduled dates. In the meantime we believe it is imperative to re-rate the West Coast plants as above indicated to alleviate the extremely severe West Coast shortage.

C. Composition of Present Authorized 100 Octane Program

In view of the rapidly expanding requirements for 100 octane aviation gasoline, we believe it to be appropriate at this time to review the elements constituting the presently authorized program. The following tabulation lists the major increments of capacity constituting this program in terms of the ultimate 100 Octane Specification (S + 2):

Element	Capacity B/CD
1. Major program as finally established by W.P.B. authorization dated February 17, 1942.	200,000
2. Projects subsequently added with W.P.B. approval primarily because needed to produce feed stock for plants in permanent rubber program:	
Gulf - Port Arthur, Texas	2,630
Pure - Smith's Bluff, Texas	1,380
3. Projects added with W.P.B. approval due to favorable factors of early completion dates, relatively low material requirements, and geographical location:	
Standard of California - El Segundo, Calif.	1,600
Continental Oil Company - Wichita Falls, Texas	280
4. Defense plants increasing originally rated capacities through changes in design:	3,500
Total	209,390

In addition to the above-authorized increases in capacity, the War Production Board allocated material to the conversion of existing refinery equipment for the production of codimer, base stock, and other components in the shortest possible time. The combination of these factors, together with improvements in blending procedures and elimination of bottlenecks in existing plants has resulted in an increase of rated capacity of approximately 25,000 to 30,000 barrels per day to the Grade 140 specification, giving a total authorized capacity, including increments obtained from existing facilities, of approximately 240,000 barrels a day.

The requirements for June 1944, estimated from the preliminary transmittal of the Aeronautical Board, indicate a requirement of 381,200 barrels per day by June 1944, as compared with a scheduled capacity of 244,000 barrels per day to the Grade 140 specification. In the ultimate planned program, therefore, it will be necessary to schedule 137,200 barrels per day of additional capacity in order to meet the indicated future requirements.

It is apparent, therefore, that on the basis of the newer requirements, even the 50,000 barrel per day expansion recommended by the Petroleum Coordinator on August 11, if authorized, will not be sufficient to meet the demands of the expanded aircraft program.

V

FOREIGN SITUATION

The production of 100 octane aviation gasoline in foreign plants is a continuing strategic contribution of high importance. All such production adds materially to the overall availability, but that produced in the Middle East and the United Kingdom makes this fuel available to the fighting forces without the precarious ocean tanker voyages required to move the gasoline from the North American Continent.

Therefore special handling has continued in the matter of priorities and material deliveries for the important extensions at Abadan. This must be intensively continued to insure completion of these projects on the dates scheduled in our report for July, 1942. (Section VI)

The fact that recent Army and Navy Munitions Board Directives establishing AA priorities did not provide for foreign projects, is resulting in serious delays in completing the Calgary and Curacao projects. It is also continuing to delay the active pursuit of the 100 octane gasoline

project at Montreal. Early and satisfactory completion of these projects depends entirely upon their carrying ratings equal to those granted domestic plants.

Priority rating for existing facilities for production of 180 barrels per day of cumene at Montreal (Shell) was granted under WPB Program Determination No. 1 (Amendment No. 1) of August 31, 1942. A rating for similar conversion at Sarnia for production of 300 barrels per day of cumene is being requested under this Determination.

Consideration of proposals for installation of facilities at Bahrein, Persian Gulf, and Sarnia, Canada, and for additional extensions to Curacao, D.W.I., and Heysham, England are under consideration but have not yet been presented as projects.

VI

INFORMATION EXCHANGES

Steps are being taken rapidly by our Process Section to implement the provisions of Recommendation 48 in effecting a free flow of information between all parties concerned with the design, development, construction and operation of the various unit processes contributing to the 100 octane program. To this end, a series of meetings, under the auspices of this Office, have been held and are scheduled in the near future for the exchange of all pertinent information concerning isomerization of butane to isobutane; manufacture of 2,3 dimethylbutane; manufacture of benzene from petroleum; and manufacture of synthetic catalysts for use in catalytic cracking operations. Additional meetings and other effective forms of information exchanges will continue to be promoted to the end that all possible means shall be explored to assure successful operation of all the 100 octane plants when they are completed.

It is noteworthy that all industry representatives and other individuals who have been asked to participate have done so and have extended most satisfactory cooperation in every case.

[redacted]

DECLASSIFIED
E.O. 11652 Sec. 3(E) and 5(D) or (E)
Interior Dept ltr, 11-3-72
MAR 21 1973

TABLE I

ESTIMATED DAILY PRODUCTION OF 100 OCTANE AVIATION GASOLINE

TO END 1943

TOTAL U.S.A. AND ARUBA, N.W.I.

Office of
Petroleum Coordinator for War
Refining Division

Barrels 42's.

(AS-VV-P-781 with Aco's of Tetra Ethyl Lead per U.S. gallon to July 1, quality increased to Grade 125 ($B_1 + 1.0$) July to Jan. 1, and Grade 130 ($B_1 + 1.25$) thereafter)

	1942												1943											
	January	February	March	April	May	June	July *	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
EAST COAST																								
Atlantic (Philadelphia, Pa.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,800	4,800	4,800	4,800
Socony-Vacuum (Paulsboro, N.J.)	1,900	3,700	5,200	4,300	4,600	4,400	4,100	3,800	4,180	6,000	8,330	8,000	6,700	6,700	6,700	6,700	6,700	6,700	6,700	6,700	6,700	6,700	6,700	6,700
Standard - New Jersey (Baltimore, Md.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Standard - New Jersey (Bayway, N.J.)	-	-	-	-	-	-	-	-	-	-	-	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Sun (Marcus Hook, Pa.)	-	-	5,600	5,500	5,700	7,600	6,300	8,200	8,500	6,810	13,100	13,600	19,700	21,300	21,300	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
Total East Coast	1,900	3,700	10,800	9,800	10,300	12,000	10,400	12,000	12,680	12,810	21,430	26,600	31,400	33,000	33,000	36,700	36,700	38,100	38,100	38,100	42,900	42,900	42,900	42,900
WEST COAST																								
General Pet. (California)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,800	2,800	2,800	2,800	2,800	2,800
Mohawk (Bakersfield, California)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,020	1,020	1,020
Richfield (Watson, California)	1,600	2,000	2,100	2,100	2,300	2,100	900	2,900	3,000	3,850	3,850	3,850	5,080	5,080	5,080	5,080	5,080	5,080	5,080	5,080	5,220	3,220	3,220	3,220
Shell (Martinez, California)	900	1,000	1,100	1,100	1,200	1,300	1,300	1,200	1,300	1,450	1,450	1,450	1,450	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,170	1,170	1,170	1,170
Shell (Wilmington, California)	2,900	3,100	3,100	3,000	3,500	2,800	4,000	4,000	4,300	4,800	4,800	4,800	6,615	6,615	6,615	6,615	6,615	6,615	6,615	6,615	4,225	4,225	8,300	8,300
S.O. Cal. (El Segundo, California)	1,700	3,800	3,000	4,200	4,200	4,200	4,400	4,400	4,630	8,180	8,180	8,180	8,180	8,180	8,180	8,180	8,180	11,300	11,300	11,300	9,840	9,840	9,840	9,840
S.O. Cal. (Richmond, California)	2,800	2,500	3,000	3,600	4,300	4,200	5,800	4,100	3,720	4,790	4,790	4,790	4,790	4,790	4,790	4,790	4,790	4,790	4,790	4,790	3,200	3,200	3,200	3,200
Texas (Wilmington, California)	1,900	1,200	1,500	1,500	1,400	1,600	1,700	1,600	1,350	1,865	1,865	1,865	1,865	1,865	1,865	1,865	1,865	1,865	1,865	1,865	1,045	1,045	1,045	1,045
Tide Water (Avon, California)	2,900	3,000	2,800	2,700	2,700	2,800	2,800	2,900	1,670	4,310	4,310	4,310	4,855	4,855	4,855	4,855	5,855	5,895	5,895	5,895	3,000	3,000	3,000	3,000
Union (Wilmington, California)	700	800	800	900	900	1,000	800	900	900	1,400	1,400	1,400	1,400	1,400	1,400	1,400	7,200	7,200	7,200	7,200	5,175	5,175	5,175	5,175
Wilshire (Los Angeles, California)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,500	4,500	4,500	4,500
Total West Coast	15,400	17,400	17,400	19,100	20,500	20,000	21,700	22,000	20,870	30,645	30,645	30,645	34,235	34,485	34,485	35,485	41,325	44,445	47,245	47,245	36,175	37,195	41,270	41,270
GULF COAST AND ARUBA, N.W.I.																								
Abercrombie (Sweeney, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,400	6,400	6,400	6,400	6,400
Atlantic (Atreco, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,200	4,200	4,200
Cities Service (St. Rose, Louisiana)	-	2,000	1,600	2,100	2,000	1,400	2,100	2,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cities Service (Lake Charles, Louisiana)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16,600
Continental (Lake Charles, Louisiana)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crown Central (Houston, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,000	3,000	3,000	3,000
Eastern States (Houston, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,700	1,700	1,700	1,700
Great Southern (Corpus Christi, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Gulf (Port Arthur, Texas)	2,700	2,100	-	1,400	400	600	-	-	-	-	-	-	-	3,100	5,600	5,600	5,600	5,600	10,300	10,300	10,300	10,300	10,300	10,300
Humble (Baytown, Texas)	6,800	7,900	9,300	6,300	8,500	7,700	8,800	10,800	12,000	12,000	17,600	17,100	15,650	16,020	14,060	14,060	13,970	17,870	17,870	17,870	17,870	17,870	17,870	17,870
Lago Oil (Aruba, N.W.I.)	3,500	3,600	3,000	3,000	3,100	4,100	4,300	3,600	3,200	3,200	3,200	3,200	4,200	4,200	4,200	4,200	4,200	10,200	10,200	10,200	10,200	10,200	10,200	10,200
Magnolia (Beaumont, Texas)	3,200	1,900	500	1,700	1,400	2,400	1,700	1,600	2,000	4,345	4,595	6,400	6,400	6,400	6,400	11,400	11,400	12,830	12,830	12,830	12,830	12,830	12,830	12,830
Pandamerican (Texas City, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,800	1,800	1,800	1,800	6,800	6,800	6,800	6,800	6,800	6,800
Premier (Cotton Valley, Louisiana)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,700	1,700	1,700	1,700	1,700	1,700	1,700
Pure (Nederland, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Republic (Texas City, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,700	2,700	2,700	2,700	2,700
Shell (Houston incl. Norco)	6,100	6,700	5,500	5,300	5,100	6,200	8,000	7,500	8,150	9,900	9,900	9,900	9,830	9,830	9,830	9,830	9,830	9,830	9,830	9,830	4,730	4,520	3,425	3,425
Sinclair (Houston, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600
Southport (Texas City, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,100	3,100	3,100	3,100
S.O. La. (Baton Rouge, Louisiana)	7,400	7,800	6,400	7,400	6,000	7,700	5,100	8,200	11,000	14,000	14,600	16,500	15,800	20,600	20,600	25,400	25,300	23,300	23,300	23,300	21,300	21,300	23,330	23,330
Terminal (Corpus Christi, Texas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Texas (Port Arthur, Texas)	3,800	3,000	4,000	3,300	3,100	3,200	3,500	3,100	4,850	4,450	4,000	4,000	12,500	13,500	13,500	12,500	13,500	13,500	20,000	20,000	17,000	17,000	17,000	17,000
Total Gulf Coast and Aruba	33,500	36,800	30,300	32,400	29,600	35,300	36,500	39,300	43,200	47,895	53,895	57,100	64,380	76,230	78,590	88,390	88,200	105,630	122,830	129,230	126,630	133,620	134,555	151,155
INLAND																								
Ashland (Ashland, Ky.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,300	3,300	3,300	3,300	3,300	3,300
Associated (Dunoman, Oklahoma)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,050	4,050	4,050
Champlin (Enid, Oklahoma)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,500	3,500	3,500	3,500	3,500	3,500	3,500
Cities Service (East Chicago, Indiana)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,400	1,400	1,400	1,400	1,400	1,400	2,200	2,200	2,200
Continental (Ponca City & Wichita Falls)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,100	5,100	5,100	5,100
Frontier (Cheyenne, Wyoming)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,400	1,400
National (Coffeyville, Kansas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,600	1,600	1,600
Pennzoil (Oil City, Pennsylvania)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,900	1,900	1,900	1,900	1,900	1,900
Phillips (Borger, Texas)	3,500	2,600	3,200	2,100	2,900	3,000	3,200	1,800	2,640	2,410	3,330	3,380	7,100	7,100	7,100	7,100	7,100	7,100	7,100	7,100	4,450	4,450	4,450	4,450
* (Lay & Oklahoma City, Oklahoma)	770	1,400	1,400	1,100	1,200	2,500	1,200	1,000	1,140	1,300	1,300	1,100	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	600	600	600	600
* (Kansas City, Kansas)	-	-	-	-	-	-	-	-	-	-	-	-	1,850	1,850	1,850	1,850	1,850	1,850	1,850	1,850	1,000	1,000	1,000	1,000
Root (El Dorado, Arkansas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,000	2,000	2,000	2,000
Shell (Wood River, Illinois)	2,700	3,200	3,300	3,400	3,700	4,400	4,600	4,500	6,710	6,700	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	10,300	10,300	10,300	10,300	10,300	10,300
Sinclair (Parco, Wyoming)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,600	2,600	2,600	2,600
Sinclair (East Chicago, Indiana)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,250	1,250	1,250	1,250
Socony-Vacuum (E. St. Louis & Augusta,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,650	1,650	1,650	1,650	4,120	4,120	4,120	4,120
S.O. Indiana (Whiting, Indiana)	700	500	-	-	-	-	500	500	-	500	500	500	500	500	500	500	5,000	5,000	8,620	8,620	8,620	8,620	8,620	8,620
Socony-Vacuum (Trenton, Michigan)	-	-	-	-	-	-	-	-	-	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	-	-	-	-
S.O. Ohio (Toledo, Ohio)	200	400	900	900	700	900	600	300	700	400	400	400	400	400	400	400	400	900	900	900	2,000	2,000	2,000	2,000
Texas Company (Lockport, Illinois)	-	-	-	-	-	-	-	-	-	-	-	-	2,100	2,100	2,100	2,100	2,160	2,100	2,100	1,420	1,420	1,420	1,420	1,420
Utah (Salt Lake City, Utah)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,600	4,600	4,600
Total Inland	7,870	8,100	8,800	7,500	8,500	10,800	10,100	8,100	11,190	13,710	13,930	13,780	21,510	21,510	22,910	22,910	29,060	33,090	41,880	51,280	54,540	55,960	66,010	66,010
Total U.S. & Aruba, N.W.I.	58,670	66,000	67,300	68,800	68,900	78,100	77,700	81,400	87,860	107,060	119,900	128,125	151,525	165,225	168,985	183,485	195,285	221,265	250,055	265,855	260,245	269,675	284,735	301,335
																					* Terminal (Houston) Jan. 1944			3,400
																								304,735

October 15, 1942.

TABLE II
STATUS OF PLANT EXPANSION PROGRAM
for
100 Octane Aviation Gasoline Production
Barrels (42 gallon) per Calendar Day
Basis: Continental United States and Aruba, D. W. I.
Plants Now Included in Program

October 15, 1942

COMPANY and LOCATION	Estimated Capacities to Produce Fuel Based on "Rich Mixture" Specification ($ @ 1.25 - Ave. T.E.L. per gallon)					ESTIMATED NEW INVESTMENT				TYPE OF PLANT (See Code on last page).
						Privately Owned Plants		Government Owned Plants		
	Present Facilities	Construction Phase	Engineering Phase	Estimated Completion Date (As of Oct. 1, '42)	Total	Estimated Cost of New Facilities	Maximum Amount to be loaned by Government at 2%	Estimated Cost of new Facilities	Maximum Amount to be invested by Government	
EAST COAST REFINERIES										
Atlantic (Philadelphia, Pa.)		1,300		Jan. '43						Alk (Sulf)
Socony-Vacuum (Paulsboro, N.J.)	6,700		3,500	Sep. '43	4,800 6,700	$ 9,655,000	$ 7,241,250			CC (FR) Alk (Sulf) CC (HR)(Blending Agents from Refin. Conv. Prog.)
Standard of New Jersey (Baltimore, Md. and Bayway, N.J.)		6,400		Dec. '42 to Jun. '43	6,400	50,000,000	14,400,000			Alk (Sulf), CC (F), FS
Sun (Marcus Hook, Pa.)		22,335		Feb. '43	25,000	11,000,000	5,500,000			Alk (HF), CC(HR)
EAST COAST TOTALS	6,700	30,035	3,500		42,900					
WEST COAST REFINERIES										
General Petroleum (Torrance, Cal.)		2,800		Jul. '43	2,800	$ 6,800,000	$ 4,400,000			Alk (HF), CC (TR)
Mohawk (Bakersfield, Calif.)			1,020	Oct. '43	1,020			$ 2,553,000	$ 2,786,300	Alk (HF), Isom, T.Ref.Nat.I-C_5 Recov.
Richfield (Watson, Cal.)	2,270	950		Jan. '43	3,220	3,000,000	2,100,000			Alk (Sulf), Isom.
Shell (Martinez, Cal.)	900	270		Jan. '43	1,170					Alk (Sulf)
(Wilmington-Dominguez, Cal.)	3,450	4,850		Nov. '43	8,300	17,500,000	11,625,000			Alk (Sulf) Alk (Sulf), HAO, CC (F)
Standard of California (El Segundo, Cal.	7,820					No new investment				Alk (Sulf), CC (HR)
Standard of California (Richmond, Cal.)	3,200		2,020	Jun. '43	9,840 3,200	900,000	none No new investment			Alk (Sulf), Isom. Alk (Sulf), Hydrof.
Texas (Wilmington, Cal.)	1,045				1,045		No new investment			Alk (Sulf)
Tide Water Associated (Avon, Cal.)	2,500	500		Apr. '43	3,000	1,350,000 1,750,000	none			Alk (Sulf) Alk (Sulf), Isom.
Union (Wilmington, Cal.)	750	4,425		May '43	5,175	11,700,000				Alk (Sulf), Isom. T. Cr.
Wilshire (Norwalk, Cal.)		2,500		Sep. '43	2,500			4,874,600	5,362,060	Alk (HF), Isom. CC(F)
WEST COAST TOTALS	21,935	16,295	3,040		41,270					
GULF COAST REFINERIES										
Abercrombie-Harrison (Sweeney, Tex.)		6,400		Aug. '43	6,400			$ 13,850,000	$ 14,542,000	Alk (HF), CC(FR), FS, T. Ref.
Atlantic (Atreco, Tex.)			4,200	Oct. '43	4,200	9,040,000	6,774,000			Alk (HF), CC(FR)
Cities Service (Lake Charles, La.)			16,600	Dec. '43	16,600	50,000,000	40,000,000			Alk (Sulf), Isom. CC (FR)
Continental (Lake Charles, La.)	630	280		Nov. '43	(2)	298,231				Alk (Sulf)
Crown Central (Houston, Tex.)			3,000	Oct. '43	3,000			5,600,000	6,160,000	Alk (Sulf), Isom. CC (TR)
Eastern States (Houston, Tex.)		1,700		Sep. '43	1,700			5,182,000	5,700,200	Alk (HF), Isom. CC (F)
Great Southern (Pontiac)(Corpus Christi,Tex)		2,400		Jun. '43	2,400			8,430,000	9,273,000	Alk (HF),Dehyd. T. Ref., Nat. C_4 Recov., Nat. I-C_5 Recov.
Gulf (Port Arthur, Tex.)	2,100	3,500		Feb. '43		8,000,000	6,000,000			Alk (Sulf), CC (H)
			4,700	Jun. '43	10,300	5,100,000	3,825,000			CC (TR)
Humble (Baytown, Tex.)	11,000	6,870		Nov. '42	17,870	Included in Standard of New Jersey above.				Alk (Sulf), SF
Lago (Aruba, N.W.I.)	3,200	7,000		Jun. '43	10,200	Included in Standard of New Jersey above.				Alk (Sulf), CC (F), HCD
Magnolia (Beaumont, Tex.)	5,700	7,130		Apr. '43	12,830	12,000,000 Refinery 4,500,000 1,500,000 Pipeline				Alk (Sulf), Cc (HR), CC (T)
Pan American (Texas City, Tex.)		1,800		Mar. '43						
		5,000		Jun. '43	6,800	14,300,000	9,600,000			Alk (Sulf), CC (F), FS

1- This plant now makes 100 ON from Hi-octane base stock and blending agents produced in Refinery Conversion Program

(2) - Total of 910 bbl. included in Sun total above

[redacted]

TABLE II
STATUS OF PLANT EXPANSION PROGRAM
for
100 Octane Aviation Gasoline Production
Barrels (42 gallon) per Calendar Day
Basis: Continental United States and Aruba, D. W. I.
Plants Now Included In Program

October 15, 1942

COMPANY and LOCATION	Estimated Capacities to Produce Fuel Based on "Rich Mixture" Specification (S.A.E. 1.25 - 4 cc. T.E.L. per gallon.)					ESTIMATED NEW INVESTMENT				TYPE OF PLANT (See Code on last page).
	Present Facilities	Status of Additional Facilities			Total	Privately Owned Plants		Government Owned Plants		
		Construction Phase	Engineering Phase	Estimated Completion Date		Estimated Cost of New Facilities	Maximum Amount to be loaned by Government at 3%	Estimated Cost of New Facilities	Maximum Amount to be Invested by Government	
GULF COAST REFINERIES (CONTINUED)										
Premier (Cotton Valley, La.)		1,700		Jun. '43	1,700			$ 4,276,900	$ 5,132,280	Alk (HF), Dehyd.
Pure (Nederland, Tex.)		2,000		Jun. '43				2,885,740	3,462,888	Alk (Sulf), Hydrof.
" "			2,000	Jun. '43	4,000	$ 2,300,000	None			CC (TR)
Republic (Texas City, Tex.)		2,700		Sep. '43	2,700			6,482,760	7,130,000	Alk (HF), CC(F), T. Ref.
# Shell (Houston, Tex. & Norco, La.)	4,730				3,425					Alk (Sulf), Isom.
Sinclair (Houston, Tex.)		3,600		Feb. '43	3,600 [3]	8,000,000	$ 6,000,000			Alk (Sulf), CC(HR)
Southport (Texas City, Tex.)		3,100		Sep. '43	3,100			5,326,000	5,858,600	Alk (HF), CC (HR)
Standard of Louisiana (Baton Rouge, La.)	7,400	15,930		Oct. '42 to Apr. '43	23,330	Included in Standard of New Jersey above.				HCD,Hyd. Rare, Alk (Sulf), CC (F), PS
Terminal (Corpus Christi, Tex.)		3,400		Jan. '44	3,400			6,220,000	6,842,000	Alk (HF),CC (HR) T. Ref., PS, T. Cr.
Texas (Port Arthur, Tex.)	4,000	4,000		Jun. '43						Alk (Sulf), Isom.
" " " "		9,000		Jul. '43	17,000	29,000,000	21,625,000			Alk (Sulf), CC (TR)
GULF COAST TOTALS	36,760	87,510	30,500		159,555					
INLAND REFINERIES TEXAS - OKLAHOMA - ARKANSAS										
Associated Refineries, Inc. (Duncan, Okla.) Anderson-Prichard (Cyril) Bell (Granfield & Ardmore) Cosco (Wynnewood) LaSalle (Burkburnett) Panhandle (Wichita Falls) Rock Island (Duncan) Waggoner (Electra)			4,050	Nov. '43	4,050			$ 9,329,000	$ 10,498,000	Alk (HF), CC (TR)
@(Cheaplin (Enid, Okla.) (Anderson-Prichard (Cyril, Okla.)		3,500		Jun. '43	3,500	$ 3,600,000	$ 2,700,000	250,000	250,000	Alk (HF), Isom. HR Recov.
Continental (Ponca City, Okla.)		4,700		Aug. '43	4,700			10,116,380	11,057,785	Alk (HF), Isom. CC (TR)
" (Wichita Falls, Tex.)		400		Nov.-Dec. '42	400	250,000	None			Alk (HF)
Phillips (Borger, Tex.)	2,100	2,800		Jan. '43	4,450 [4]	9,078,500-Refinery				Alk (HF), Neohexane, HCD
" (Okla. City & Lepanto, Okla.)	600				600	4,335,000-Pipeline	10,000,000			HCD
Root (El Dorado, Arkansas)		2,000		Sep. '43	2,000			3,501,400	3,501,400	Alk (HF), Isom. CC (F)
TEXAS - OKLAHOMA - ARKANSAS TOTALS	2,700	13,400	4,050		19,700					
KANSAS										
National (Coffeyville, Kan.)		1,600		Oct. '43	1,600			$ 2,853,000	$ 3,135,000	Alk (HF), CC (F), T. Cr.
Phillips (Kansas City, Kan.)		1,000		Jan. '43	1,000	Included in Phillips above.				Alk. (HF)
KANSAS TOTALS		2,600			2,600					
PENNSYLVANIA - KENTUCKY										
Ashland (Ashland, Ky.)		3,300		Jul.'43	3,300			6,099,000	6,700,000	Alk (HF), Isom, CC (TR)
Pennzoil (Oil City, Pa.) (Cooperative with Berry, Wolf's Head and Anderton)		1,900		Jul. '43	1,900	$ 1,295,100		2,491,000	2,491,000	Alk (HF), CC(F)
PENNSYLVANIA - KENTUCKY TOTALS		5,200			5,200					

3 - 1305 bbls/day included in Sun total above.
4 - 450 " " " " " "

TABLE II
STATUS OF PLANT EXPANSION PROGRAM
for
100 Octane Aviation Gasoline Production
Barrels (42 gallon) per Calendar Day
Basis: Continental United States and Area, D. W. I.
Plants Now Included In Program

October 15, [illegible]

COMPANY and LOCATION	Estimated Capacities to Produce Fuel Based on "Rich Mixture" Specification ($ / 1.25 - 4 cc. T.E.L. per gallon.) Present Facilities	Status of Additional Facilities: Construction Phase	Engineering Phase	Estimated Completion Date	Total	ESTIMATED NEW INVESTMENT: Privately Owned Plants: Estimated Cost of New Facilities	Privately Owned Plants: Maximum Amount to be loaned by Government at 2%	Government Owned Plants: Estimated Cost of New Facilities	Government Owned Plants: Maximum Amount to be Invested by Government	TYPE OF PLANT (See Code on last page).
INLAND REFINERIES (CONTINUED)										
UPPER LAKES REGION										
@Cities Service (E. Chicago, Ind.)		2,200		Mar. '43	2,200	$ 2,000,000	$ 1,700,000			Alk (Sulf), Isom.
Shell (Wood River, Ill.)	2,700	7,600		Aug. '43	10,300	15,000,000	11,250,000			Alk (Sulf), RAO
#Sinclair (E. Chicago, Ind.)	1,250				1,250	No new investment				Alk (Sulf) [illegible] (HX) from Socony
Standard of Indiana (Whiting, Ind.)	1,240	3,760 3,620		May '43 Jul. '43	8,620	12,890,000	6,000,000			Alk (Sulf), HCD N. Isom, Hydrof.
Standard of Ohio	400	600 1,000		Apr. '43 Oct. '43	2,000	7,104,000	5,325,000			Alk (Sulf), CC (HX)
Socony (E. St. Louis, Ill. & Augusta, Kans.)		1,640 2,480		May '43 Oct. '43	4,128	6,131,000	4,598,000			Alk (HF), CC (HX)
Texas (Lockport, Ill.)		1,420		Jan. '43	1,420	4,000,000	3,000,000			Alk (Sulf), Isom. Hydrof.
GREAT LAKES REGION TOTALS	5,590	24,320			29,910					
ROCKY MOUNTAINS										
Frontier (Cheyenne, Wyo.) (Ray (Denver, Colo.)		1,400		Nov. '43	1,400			$ 3,640,177 124,375	$ 4,004,000 136,800	Alk (HF), Isom, CC (F), PH, T. R ef.
Sinclair (Parco, Wyo.)		2,600		Oct. '43	2,600	9,000,000	6,750,000			Alk (Sulf), CC (FH), Isom.
Utah (Salt Lake City, Utah)			4,600	Nov. '43	4,600			11,132,500	12,245,750	Alk (Sulf), CC (F), Isom, N. Isom.
ROCKY MOUNTAINS TOTALS		4,000	4,600		8,600					
INLAND TOTALS	8,290	49,820	8,650		66,010					
GRAND TOTALS	75,685	183,360	45,690		304,735					
Total Amount in Signed Contracts						$514,378,600	$196,913,250	$115,197,632	$126,266,063*	
Total Amount in Program as Listed Above						327,276,831	196,913,250	115,197,632	126,266,063*	
Total Amount of All New Facilities in Program (Privately and Government Owned).								$442,474,663		
Maximum Amount of Government Commitments for Program (Loans and Defense Plant Investment).								323,179,313		

Contracts not as yet signed
* Escrow-type Contract

Defense Plant Corporation contracts usually provide upset limit on Government investment 10% higher than estimated investment to allow for contingencies.

CODE FOR CLASSIFICATION OF TYPE OF PLANT

Alk (Sulf)	Sulfuric Acid Alkylation	Hydrof.	Hydroformate
Alk (HF)	Hydrofluoric Acid Alkylation	HF	Super fractionation
HCD	Hydrocodimer	Hyd. Base	Hydrogenated Base
RAO	Rich Acid Octane	Isom	Butane Isomerization
CC (F)	Fluid Cat. Crack. -One Pass	N. Isom	Naphtha "
CC (FR)	" " " -Retreat	Dehyd.	Butane Dehydrogenation
CC (K)	Kendry " " -One Pass	PH	Pipe Stilling (new Installation)
C C(KR)	" " " -Retreat	T. Cr.	Thermal Cracking " "
CC (T)	Thermofor Cat. Crack. -One Pass	T. Ref.	" Reforming " "
C C(TR)	" " " -Retreat	Nat. Gs Recov.	Natural Butane Recovery
		Nat. Ga Recov.	" Isopentane "

CON[redacted]

DECLASSIFIED
E.O. 11652, Sec. 5(E) and 5(D) or (E)
Interior Dept ltr, 11-3-72
MAR 21 1973

TABLE III
STATUS OF PLANT EXPANSION PROGRAM
for
100 Octane Aviation Gasoline Production

ESTIMATED COMPLETION DATES

October 15, 1942

COMPANY AND LOCATION	Block Priorities	Rated Capacity Barrels per Calendar Day 3 # 1.25 cc. "Rich Mixture" 4 cc. T.E.L.		PROGRESS OF CONSTRUCTION STATUS AS OF OCTOBER 1, 1942.					ESTIMATED COMPLETION DATES		
		Construction Phase	Engineering Phase	Engineering Design %	Purchasing %	Fabrication %	Construction %	Steel Plate Delivered %	[1] Date Used in Contract	Date Given in OPC's Report of Sep. 9, 1942 to WPB	Date Used by OPC in Current Production Forecast
EAST COAST REFINERIES											
Atlantic (Philadelphia, Pa.)	AA-3	1,300		90	98	87	66	77	Jan. '43	Jan. '43	Jan. '43 *
" " "	AA-4		3,500	90	35	0	0	0	May '43	Sep. '43	Sep. '43 *
Standard of New Jersey (Baltimore, Md. and Bayway, N. J.)	AA-4	6,400		98 100	68 100	77 80	20 34	90 99	Mar. '43	Jan. '43	Jun. '43 * Dec. '42 *
Sun (Marcus Hook, Pa.)	AA-3	22,335		85	90	55	21	-	Feb. '43	Jan. '43	Feb. '43 *
WEST COAST REFINERIES											
General Petroleum (Torrance, Cal.)	AA-3	2,800		75	95	25	5	33.7	Jun. '43	May '43	Jul. '43
Mohawk (Bakersfield, Cal.)	AA-3		1,020	13	17	1	0	0	Jul. '43	Jul. '43	Oct. '43 *
Richfield (Watson, Cal.)	AA-3	950		92	96	59	43	99	Apr. '43	Dec. '42	Jan. '43 *
Shell (Wilmington-Dominguez, Cal.)	AA-3	270		97	97	98	79	99		Dec. '42	Jan. '43 *
" " " "	AA-3	4,850		40	50	3	1	0.1	Aug. '43	Aug. '43	Nov. '43
Standard of California(El Segundo, Cal.)	AA-3		2,020	9	2	0	0	0		Mar. '43	June. '43 *
Tide Water Associated (Avon, Cal.)	AA-3	500		60	70	20	15	20	Jun. '43	Apr. '43	Apr. '43 *
Union (Wilmington, Ca.)	AA-3	4,425		38	95	40	10	80		May '43	May '43 *
Wilshire (Norwalk, Cal.)	AA-3	2,500		30	60	5	1	0	Sep. '43	Jul. '43	Sep. '43 *
GULF COAST REFINERIES											
Abercrombie-Harrison (Sweeny, Tex.)	AA-4	6,400		77	64	15	12	14	Apr. '43	Jun. '43	Aug. '43
Atlantic (Atreco, Tex.)	AA-4		4,200	90	31	0	0	0	Jul. '43	Sep. '43	Oct. '43 *
Cities Service (Lake Charles, La.)	AA-4		16,600	13.7	41.1	2	0.5	0	Oct. '43	Oct. '43	Dec. '43
Continental (Lake Charles, La.)	AA-3	280		99	99	99	90	100		Oct. '42	Nov. '42 *
Crown Central (Houston, Tex.)	AA-4		3,000	15	20	0	0	0	Apr. '43	Aug. '43	Oct. '43
Eastern States (Houston, Tex.)	AA-4	1,700		25	70	-	10	-	Jul. '43	Jun. '43	Sep. '43
Great Southern(Pontiac)(Corpus Christi,Tex.)	AA-4	2,400		65	80	15	10	-	Mar. '43	Jun. '43	Jun. '43
Gulf (Port Arthur, Tex.)	AA-3	3,500		98	99	70	60	90	Jan. '43	Jan. '43	Feb. '43 *
" " " "	AA-4		4,700	15	10	0	0	0	Jun. '43	Apr. '43	Jun. '43 *
Humble (Baytown, Tex.)	AA-3	6,870		99	99	83	71	98.5	Mar. '43	Feb. '43	Nov. '42 *
Lago (Aruba, N. W. I.)	AA-3	7,000		85	90	60	-	91	Mar. '43	Jun. '43	Jun. '43
Magnolia (Beaumont, Tex.)	AA-3	7,130		86	85	62	35	47.5	Mar. '43	Apr. '43	Apr. '43 *
Pan American (Texas City, Tex.)	AA-3	1,800		81	71	48	8	89	Jan. '43	Jan. '43	Mar. '43 *
	AA-3	5,000							May '43	Jun. '43	Jun. '43 *

TABLE III

STATUS OF PLANT EXPANSION PROGRAM
for
100 Octane Aviation Gasoline Production

ESTIMATED COMPLETION DATES

October 15, 1942.

COMPANY AND LOCATION	Block Priorities	Rated Capacity Barrels per Calendar Day S + 1.25 "Rich Mixture" 4 cc. T.E.L.		PROGRESS OF CONSTRUCTION STATUS AS OF OCTOBER 1, 1942.					ESTIMATED COMPLETION DATES		
		Construction Phase	Engineering Phase	Engineering Design %	Purchasing %	Fabrication %	Construction %	Steel Plate Delivered %	Date Used in Contract. [1]	Date Given in OPC's Report of Sept. 9, 1942 to WPB	Date Used by OPC in Current Production Forecast
GULF COAST REFINERIES (Continued)											
Premier (Cotton Valley, La.)	AA-4	1,700		75	95	15	15	0	Mar. '43	Jun. '43	Jun. '43
Pure (Nederland, Tex.)	AA-3	2,000		75	75	85	10	10	Mar. '43	Apr. '43	Jun. '43
" " "	AA-4		2,000	15	10	0	0	0	Apr. '43	May '43	Jun. '43
Republic (Texas City, Tex.)	AA-4	2,700		70	60	15	8	1	Jul. '43	Jul. '43	Sep. '43
Sinclair (Houston, Tex.)	AA-3	3,600		85	95	35	27	92	Apr. '43	Jan. '43	Feb. '43 *
Southport (Texas City, Tex.)	AA-4	3,100		(70	80	10	0)	-	Apr. '43	Jul. '43	Sep. '43
				(45	62	35	15)				
Standard of Louisiana (Baton Rouge, La.)	AA-3	15,930		97	88	77	31	92	Mar. '43	Oct. '42 to Apr. '43	Oct. '42 to Apr. '43
Terminal (CorpusChristi, Tex.)	A-1-a	3,400		40	80	10	30	-	Apr. '43	Jul. '43	Jan. '44
Texas (Port Arthur, Tex.)	AA-3	4,000		99	99	60	25	98	Jan. '43	Dec. '42	Jan. '43 *
" " " "	AA-4	9,000		45	55	10	2	6	Jul. '43	Jun. '43	Jul. '43 *
INLAND REFINERIES TEXAS - OKLAHOMA - ARKANSAS											
Associated Refineries, Inc. (Duncan, Okla.) Anderson-Prichard, (Cyril) Bell (Granfield & Ardmore) Cosco (Wynnewood) LaSalle (Burkburnett) Panhandle (Wichita Falls) Rock Island (Duncan) Waggoner (Electra)	AA-4		4,050	50	35	4	0	0	Jul. '43	Aug. '43	Nov. '43
(Champlin (Enid, Okla.) (Anderson-Prichard (Cyril, Okla.)	AA-4	3,500		75	50	10	2	14	Apr. '43	Apr. '43	Jun. '43 *
Continental (Ponca City, Okla.)	AA-4	4,700		30	20	2	3	-		Jun. '43	Aug. '43
" (Wichita Falls, Tex.)	AA-3	400		100	-	100	82	-		Oct. '42	Nov.-Dec. '42*
Phillips (Borger, Tex.)	AA-3	2,800		100	99.5	95	75	-	Mar. '43	Nov. '42	Jan. '43 *
Root (El Dorado, Ark.)	AA-4	2,000		70	70	15	8	-	Jul. '43	Jul. '43	Sep. '43
KANSAS											
National (Coffeyville, Kan.)	AA-4	1,600		33	73	7	3	0	Mar. '43	Sep. '43	Oct. '43 *
Phillips (Kansas City, Kan.)	AA-3	1,000		100	98	60	25	38.9	Mar. '43	Nov. '42	Jan. '43 *
PENNSYLVANIA - KENTUCKY											
Ashland (Ashland, Ky.)	AA-4	3,300		23	16	5	1	-	Jun. '43	May '43	July '43
Pennzoil (Oil City, Pa.) (Cooperative with Berry, Wolf's Head and Anderton)	AA-4	1,900		40	83	7	6	-	Mar. '43	Jun. '43	July '43

TABLE III

STATUS OF PLANT EXPANSION PROGRAM
for
100 Octane Aviation Gasoline Production

ESTIMATED COMPLETION DATES

COMPANY AND LOCATION	Block Priorities	Rated Capacity Barrels per Calenday Day S + 1.25 "Rich Mixture" 4 cc. T.E.L.		PROGRESS OF CONSTRUCTION STATUS AS OF OCTOBER 1, 1942.					ESTIMATED COMPLETION DATES		
		Construction Phase	Engineering Phase	Engineering Design %	Purchasing %	Fabrication %	Construction %	Steel Plate Delivered %	Date Used in Contract [1]	Date Given in OPC's Report of Sept. 9, 1942 to WPB	Date Used by OPC in Current Production Forecast
INLAND REFINERIES (Continued)											
GREAT LAKES REGION											
Cities Service (East Chicago, Ind.)	AA-3	2,200		100	93	45	37	46.2		Jan. '43	Mar. '43 *
Shell (Wood River, Ill.)	AA-4	7,600		60	70	15	2	-	May '43	Jun. '43	Aug. '43
Standard of Indiana (Whiting, Ind.)	AA-3	3,760		87	87	32	6	63	May '43	May '43	May '43 *
" " " " "	AA-4	3,620		40	51	12	7	21	Jun. '43	Jun. '43	July '43
Standard of Ohio	AA-3	600		100	95	15	45	70		Jan. '43	Apr. '43 *
" " "	AA-4	1,000		60	70	-	3	-	Aug. '43	Jul. '43	Oct. '43
Socony (E. St. Louis, Ill. & Augusta, Kan.)	AA-3	1,640		62	82	50	15	-		Feb. '43	May '43
" " " " " " "	AA-4	2,480		-	-	0	0	0	Aug. '43	Jul. '43	Oct. '43
Texas (Lockport, Ill.)	AA-3	1,420		99	99	75	30	98	Jan. '43	Dec. '42	Jan. '43 *
ROCKY MOUNTAINS											
(Frontier (Cheyenne, Wyo.) (Ray (Denver, Colo.)	AA-4	1,400		10	25	1	1	0	Sep. '43	Sep. '43	Nov. '43
Sinclair (Parco, Wyo.)	AA-4	2,600		34	45	2	1	0	Aug. '43	Sep. '43	Oct. '43
Utah (Salt Lake City, Utah)	AA-4		4,600	15	17.3	0	0	0	Sep. '43	Sep. '43	Nov. '43

1 - For Privately Owned Facilities - Date used is that stated in Defense Supplies contracts.
For Defense Plants - Date used is that stated in Construction contracts.

* Latest date forecast by Refiner
Dates not marked with asterisk represent forecast of OPC.

PSF

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Petroleum Administration for War

H
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F D R
5-10-43

7

DEPARTMENT OF STATE
WASHINGTON

May 1, 1943

My dear Mr. President:

I refer to your directive to arrange for the construction of a 100-octane aviation gasoline plant and certain related facilities for Mexico, and desire to inform you of the progress that has been made to date in connection with this proposal.

x56-13
x146

x896

On February 18, 1943, we instructed Ambassador Messersmith to invite representatives of the Mexican Government to confer with us on this project and on March 19, 1943, Senor Don Efrain Buenrostro, the head of Petroleos Mexicanos, and three principal assistants, arrived in Washington and were presented to the Department by the Mexican Ambassador. Immediately thereafter discussions began with representatives of this Department and Senor Buenrostro and his assistants. During these discussions a plan was outlined which, briefly, provided for:

(a) the employment by Petroleos Mexicanos, on a usual fee basis, of some reputable and experienced American consulting firm of experts for all refinery operations,

(b) the design and erection of the plants by reputable American firms specializing in this field, on a usual fee basis,

(c) supervision of all technical aspects of the work by the Petroleum Administration for War,

(d) financing of the dollar investment by this Government, with repayment by sale of products back to this Government,

(e) a staff

The President,

The White House.

x4435

(e) a staff of skilled American operators to operate the plants, to be supplied and supervised by the consulting firm, and

(f) approval by appropriate agencies of this Government of all contracts and of design, construction and operation as required to safeguard both investment and output.

This plan was reviewed with Secretary Ickes before it was discussed with the Mexican representatives and approved by him personally with the single qualification that you may have had in mind that this Government itself would build and operate the plant. We had no such understanding of your wishes, however, and such a course would have introduced difficult political problems and would not have been in harmony with the broader plans for collaboration on which satisfactory progress is now being made.

After further conversations extending over several days between representatives of this Department and Senor Buenrostro and his assistants they proposed a plan in harmony with the one outlined above. Their proposal included the employment of Universal Oil Products Company, an American corporation having a world-wide reputation, and which has done considerable work for Petroleos Mexicanos in the past as consultants on all refinery work. (They had already employed the firm of DeGolyer and McNaughton, equally reputable and well known, as consultants on all producing work.) Both these firms were selected by Petroleos Mexicanos on its own initiative. This Department of course made clear that it would approve any well established and reputable firms selected by Petroleos Mexicanos. This Department indicated its approval in a note to the Mexican Embassy, and the Mexican representatives thereafter were introduced to the Petroleum Administrator for technical consultations. It is understood that the Office of the Petroleum Administrator still has under consideration the technical aspects of the entire proposal.

At a meeting between representatives of Petroleos Mexicanos and members of the Petroleum Administration, the Mexican representatives were requested to prepare a detailed description of their entire project as proposed, as a necessary preliminary to further action by the Petroleum Administration for War. Pursuant to this request the

Mexican

Mexican representatives are now working with their consultants and with various American refinery engineering concerns in the preparation of these data.

With a view to exploring the possibility of financing the project through an Export-Import Bank loan secured by an arrangement through which an agreed upon quantity of finished products would be purchased from Petroleos Mexicanos by this Government and the proceeds of this transaction assigned to the Export-Import Bank as a means of repayment, the Mexican representatives were introduced to Mr. Warren Pierson, the President of the Export-Import Bank. After some discussion Mr. Pierson stated that he saw no technical difficulties in arranging a loan on the general basis outlined and said that he would be very glad to draw up a draft form of contract for further study at any time we were in a position to state the amount of money which would be required and furnish other necessary data in preliminary form, which will be in Mr. Pierson's hands by May 1. It is believed that the financial arrangement can be worked out with the Export-Import Bank without difficulty once we are in a position to determine the amount of money involved in the whole transaction. x 971

It is my understanding that the relatively large amounts of critical materials and parts necessary for the construction and operation of this 100-octane plant and auxiliary facilities necessary for its operation will be difficult to obtain in view of their urgent requirement for the war effort here in the United States and elsewhere. As soon as full agreement has been reached with the Mexican Government and in order to insure the prompt scheduling of the necessary materials required to meet our commitment for the construction of this plant, we may find it necessary to appeal to you for appropriate directives to the War Production Board and other interested agencies of our Government.

Faithfully yours,

S/ CORDELL HULL

x 20

(721)
hm

THE WHITE HOUSE
WASHINGTON

C. F.
Petroleum Administrator for War

March 5, 1943.

MEMORANDUM FOR

HON. DONALD M. NELSON x4735

FOR YOUR INFORMATION.

F.D.R.

Transmitting copy of letter which the President received from Hon. Sumner Welles, Under Secretary of State, 3/1/43, advising that arrangements are being made for the initiation in the very near future of the conversation between representatives of this Govt. and of the Mexican Government leading to the establishment in Mexico of a 100 octane gasoline plant. Original letter retained for our files.

x146
x56-73

DEPARTMENT OF STATE
WASHINGTON

March 1. 1943

Dear Mr. President:

In accordance with your instructions, arrangements are being made for the initiation in the very near future of the conversations between representatives of this Government and of the Mexican Government leading to the establishment in Mexico of a 100 octane gasoline plant. It is anticipated that the representatives of the Mexican Government will arrive in Washington within the next few days.

The Department, in agreement with the Petroleum Administrator for War, envisages a contract between the Mexican Government's petroleum organization and an American concern of recognized standing, experienced in the design and operation of similar refining plants. Financing can presumably be arranged through the Export-Import Bank. The entire project, from the technical point of view, will have the benefit of review by the Petroleum Administrator and also by the

The President,

The White House.

X4435

by the War and Navy Departments to ensure a maximum correlation with military requirements. The contract will presumably include a clause giving this Government control over the marketing of the exportable surplus of products to be produced by the new plant during the life of the financing.

As soon as full agreement has been reached with the Mexican Government, it will undoubtedly be necessary for you to send a directive to the War Production Board in order to ensure the prompt scheduling of the necessary materials for the construction of the proposed plant. As you are aware, these materials are in extremely short supply and, if the commitment which we plan to make to the Mexicans is to be promptly and efficiently implemented, there is no doubt that an expression of your interest in the matter will be imperatively required.

Faithfully yours,

x20

(645)

THE WHITE HOUSE

WASHINGTON

February 19, 1943.

MEMORANDUM FOR

THE SECRETARY OF THE INTERIOR

x6

FOR YOUR INFORMATION

F. D. R.

Transmitting copy of letter which the President received from Hon. Sumner Welles under date of 2/17/43, and copy of the President's memorandum of 2/19/43 to the Under Secretary of State, in re high octane gas from Mexico.

C. F.

Petroleum Administration for War

February 19, 1943.

MEMORANDUM FOR

THE UNDER SECRETARY OF STATE x20 x146

I don't think this high octane gas from Mexico is at all in a difficult situation. Nor do I think that the construction of 100-octane gasoline plant requires decisions in regard to any other oil matters. Surely by now the Mexican Government has the ownership and control of some oil well or oil wells. What is more simple ahan for the Mexican Government to buy at cost or to rent the necessary equipment for 100-octane production, to hire somebody to set it up, and to hire some American company's management to turn out the gasoline?

Frankly, I think that on that basis there would not be a single voice raised in Mexico against that kind of deal. The octane gasoline desired is solely for war purposes. The United Nations need it. They ought to have it.

I cannot see the relationship between this immediate need and the "clarification of general petroleum policy". I don't agree either with you or Mr. Ickes in this regard.

If you don't want any 3rd party on this production, get the Interior engineers to do it.

F. D. R.

F. D. R."

No papers accompanied the original of this memorandum to the Under Secretary of State.

x56-B
x56
x4435

THE UNDER SECRETARY OF STATE
WASHINGTON

February 17, 1943

My dear Mr. President:

I have just received your memorandum of February 16 with regard to the construction of a 100-octane gasoline plant in Mexico.

I have also received a copy of the letter which Secretary Ickes wrote to you on the same subject under yesterday's date.

The memorandum of December 7 which you sent me indicated your desire that this 100-octane gasoline plant be constructed at once. On December 14 the Petroleum Administrator for War and the Secretary of Commerce were informed of the readiness of the Department of State to collaborate immediately with them to carry out your wishes.

I know you are fully familiar with every aspect of the bitter controversy between the Mexican Government and private American oil interests which culminated in March 1938 in the expropriation by the Mexican Government of the principal foreign-owned oil properties. You will

The President,

The White House.

remember that it was only after three years of very difficult negotiations that an agreement was finally reached in November 1941 for an evaluation of expropriated United States properties by two commissioners, one appointed by you and the other appointed by the Mexican Government. This resulted in the finding by the two commissioners in April 1942 as to the amount due to the expropriated United States companies.

Although the award brought to an end the intergovernmental controversy created by the expropriation, the more basic question of the terms and conditions under which United States interests would be permitted to participate in the Mexican petroleum industry remained to be solved. The twenty-five years of almost continuous conflict between the Mexican Government and the private companies had created a public opinion that viewed foreign petroleum interests as responsible for a large part of Mexico's difficulties; in fact, the country as a whole was united in the determination that foreign petroleum companies would never again be permitted to operate in Mexico under the previously existing conditions. Indeed, there was and still is a considerable body of opinion in Mexico that believes that the foreign petroleum interests should not be allowed to participate in the Mexican industry in any way. Any Mexican Government, therefore, is dealing with political

dynamite when it agrees even to consider permitting foreign petroleum interests to re-enter Mexico.

It was obviously totally impossible for any overtures to be made to the Mexican Government until after the expropriation issue was settled. This was not until April of last year. Just as soon as I thought there was the slightest hope of the Mexican Government's being willing to discuss this thorny matter, Ambassador Messersmith was instructed to take it up with the Mexican Government. President Ávila Camacho has now intimated to Mr. Messersmith that United States interests may look forward to participation in the Mexican industry, but he has not so far defined the new terms and conditions. I have instructed Mr. Messersmith that above all other duties he should give first place to endeavoring, by consultation with President Ávila Camacho and his assistants, to work out a plan satisfactory to all under which United States interests could again participate in the Mexican oil industry. Mr. Messersmith, who is returning to Mexico City in about another week, will be provided with certain suggestions as to the type of possible satisfactory arrangements, which he can use in an endeavor to reach an agreement in principle with the Mexican Government.

I am sure you appreciate that the popular psychology is so opposed to participation by foreign interests that

the Mexican Government must move with great circumspection. Any attempt to press the Mexican Government to early action might have the reverse effect and delay decision, and a bad misstep might postpone attainment of our objective for a decade. This is t he reason why the Mexican Government may appear to Mr. Ickes not to have been responsive to Ambassador Messersmith's conversations. I am hopeful, however, that reasonably soon after the Ambassador's return we shall know under what conditions American interests may participate.

I observe that Mr. Ickes in his letter of February 16 agrees in principle with the policy that the Department has been pursuing, namely, that there should be prior understanding with Mexico regarding general petroleum policy precedent to undertaking specific developments such as the construction of the 100-octane gasoline plant. I am, if anything, more anxious than Mr. Ickes himself that this clarification take place quickly in order that the way may be cleared for going ahead with several projects which must be carried out concurrently with the construction of the 100-octane gasoline plant.

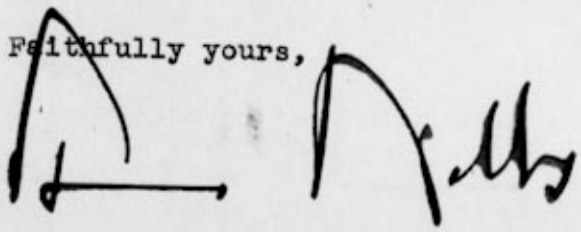
But what we are up against at the present moment is the fact that if we try to force the issue before the Mexican Government feels that it can control its own public opinion, we will in all probability create a situation

which will result in the exclusion of American interests from participation in the Mexican oil industry for many years to come when such participation will be more than ever necessary for our own national interest.

Nevertheless, although it was my hope that the clarification of general petroleum policy could take place prior to the making of arrangements with the Mexican Government for the 100-octane gasoline plant, a procedure in which Mr. Ickes states he concurs, the Chief of the Mexican Petroleum Administration has been invited to come to Washington to negotiate directly with this Government a plan for a plant to be constructed and operated in conformity with the criteria which you established in your memorandum to me of December 7. The Petroleum Administrator for War has been asked to participate in the forthcoming conversations with the Chief of the Mexican Petroleum Administration.

Believe me,

Faithfully yours,



(612) - Hon. Sumner Welles

(624) - The Secretary of the Interior

THE WHITE HOUSE

WASHINGTON

February 16, 1943.

MEMORANDUM FOR

THE UNDER SECRETARY OF STATE

I have heard nothing for a long time about the high octane plant in Mexico and strategically I have to have action and action now. Why the delay?

Please go and see the Secretary of the Interior and let me have a definite action report within a few days.

F. D. R.

No papers accompanied the original of this memorandum to the Under Secretary of State. Copy of this memorandum sent to the Secretary of the Interior in accordance with Mr. Forster's instructions.

(336)
Rm

C. F.
Petroleum Administration for War

THE WHITE HOUSE
WASHINGTON

December 15, 1942

MEMORANDUM FOR

HON. HAROLD L. ICKES

For your information.

F. D. R.

Enclosure

x20

Transmitting copy of the memorandum which the President received from the Secretary of State, 12/14/42, in re negotiations with Mexican Govt. for action with respect to the 100 octane aviation gasoline plant. Original of Mr. Hull's memorandum retained for our files.

ADDRESS OFFICIAL COMMUNICATIONS TO
THE SECRETARY OF STATE
WASHINGTON, D. C.

copy sent Secy Ickes 12/15/42

DEPARTMENT OF STATE
WASHINGTON

December 14. 1942

MEMORANDUM FOR THE PRESIDENT

In accordance with your wishes as stated in your memorandum of December 7, 1942, I am informing the Petroleum Administrator for War and the Secretary of Commerce that this Department will be glad to collaborate with them in negotiating the arrangements at once with the Mexican Government for action with respect to the 100 octane aviation gasoline plant. These negotiations will be undertaken just as soon as a proposal is ready for presentation to the Mexican Government regarding arrangements for the planning, construction, and operation of the plant, and the necessary clearances have been arranged for the relatively large amounts of critical materials involved.

CH

PETROLEUM ADMINISTRATION FOR WAR

WASHINGTON

THE WHITE HOUSE
DEC 14 9 56 AM '42
RECEIVED

December 11, 1942.

My dear Mr. President:

In view of your interest in the proposed 100 octane refinery project for Mexico, I am enclosing a copy of a letter that I have just sent to Secretary Hull.

Sincerely yours,

Harold L. Ickes

Petroleum Administrator for War.

x4435

The President,
The White House.

Enc.

x56-73
x146

DEC 11 1942

PAW

December 11, 1942.

My dear Mr. Secretary:

On August 4, I wrote to you transmitting a proposal for the erection of certain refining and natural gasoline plants in Mexico.

On November 6, I sent you the report of the technical oil mission which had at that time completed its survey of the Mexican oil problem, and offered some suggestions as to how we might progress from that point on.

On November 16, I wrote you further on this subject requesting that you be so good as to inform me of the desires of the State Department.

I have since received from the President a memorandum inquiring as to the status of the refinery project for Mexico and again expressing his desire for action. I note that you received an identical memorandum.

To date I have had no response to my letters to your Department on this subject. In the light of the President's memorandum, I feel that I should move forward with this Mexican project without more delay and, failing to hear to the contrary from you, I shall assume that you do not wish to interpose any objection to the proposals in question as they have been presented to you.

Sincerely yours,

(Sgd.) Harold L. Ickes

Petroleum Administrator for War.

CI:mm

Hon. Cordell Hull,

Secretary of State.

(260)

L. F.

THE WHITE HOUSE
WASHINGTON

Petroleum Administration for War

December 7, 1942

MEMORANDUM FOR

THE SECRETARY OF STATE x20

Yours of November twenty-seventh in regard to the octane plant in Mexico does not really answer the delay in getting the thing going. As I said to Sumner the other day, the simplest way of starting a plant is to hire some management people to build one. We should pay the actual cost of labor and materials and a small fee for management. This gives no American company any future rights but the point is that I really think the project should be put through without further delay.

Can't the State Department in conjunction with the Petroleum Administrator for War and the Secretary of Commerce put this through? x4436 x3

F. D. R.

No papers accompanied the original of this memorandum to the Secretary of State.

x L. F. State
x146
x56-73

DEPARTMENT OF STATE

THE SECRETARY

November 27, 1942

MEMORANDUM FOR THE PRESIDENT

In response to your memorandum of November twenty-third, I enclose for your consideration a memorandum expressing the viewpoint of this Department on the subject.

C H

In April of this year this Government agreed to a proposal advanced by the Mexican Government that a high octane gasoline plant should be constructed in Mexico as soon as the necessary equipment could be spared. Repeated reviews by the competent agencies of this Government, jointly with representatives of Mexico, have shown that our program of 100 octane production for war purposes has not yet made possible the construction of a plant in Mexico, nor is this likely to be possible within the next year. The War and Navy Departments are strongly of this opinion. Moreover, our recent technical mission which, jointly with Mexican engineers, made a survey of the Mexican oil situation has recommended a well planned program of rehabilitation which calls for a number of new plants and additions to old ones before it would be possible to produce 100 octane gasoline. This recommendation confirms our earlier findings and has been endorsed by the Mexicans themselves.

The only other reference to a 100 octane plant of which this Department has knowledge is in a proposal by Mr. E.W. Pauley to undertake the construction and operation in Mexico of several oil plants, including a high octane plant. Mr. Pauley's proposal has had the careful attention of the agencies of this Government concerned, including our Embassy in Mexico, and has been disapproved as not suitable for Mexico's needs.

From the viewpoint of the Department of State Mr. Pauley's entire proposal has nothing to recommend it. Its terms offer nothing of advantage to the Mexicans. On the contrary they suggest an exploitation which might easily invite a repetition of the difficulties which have caused so many problems for our own government in its relations with Mexico. It would be unfortunate if this or any of the other schemes of like nature which have come to the Department's notice were allowed to interfere with a rational development of the cooperative program which is now getting under way.

THE WHITE HOUSE
WASHINGTON

November 23, 1942

MEMORANDUM FOR THE

✓SECRETARY OF STATE
PETROLEUM COORDINATOR FOR WAR
SECRETARY OF COMMERCE

A proposal providing for a 100 octane aviation gasoline plant and some other facilities for Mexico has been pending for some time. In view of its imperative character and our Mexican relations, I would like to see this proposal disposed of, on its merits, with the least possible further delay. I think it should not be allowed to become involved in the expropriation or other extraneous matter. Please expedite quickly

Franklin D. Roosevelt

P. D.

Ed. Pauley had the Pres. sign and is anxious that they go out today. He had no copies

R. D.

THE WHITE HOUSE

WASHINGTON

C.F.

Office of Petroleum Coordinator for War

November 11, 1942.

MEMORANDUM FOR

THE SECRETARY OF THE INTERIOR

×6

FOR YOUR INFORMATION

"F.D.R."

F. D. R.

Transmitting a copy of a memorandum which the President sent to Hon. Jesse H. Jones under date of 11/11/42 in re proposal to build a 100-octane refinery in Mexico.

×146
×56-B

THE WHITE HOUSE

WASHINGTON

November 11, 1942.

MEMORANDUM FOR

HON. JESSE H. JONES x3

I think that for many months I have approved, at intervals, the proposal to build a 100-octane refinery in Mexico and that you have stood ready to do the financing.

What has happened? I was hopeful that it would have gone through sometime ago, for if it had we would be adding to a supply that seriously needs to be augmented quickly and drastically.

"F.D.R."

F. D. R.

No papers accompanied the original of this memorandum to Hon. Jesse H. Jones.

x643

OFFICE OF

PETROLEUM COORDINATOR FOR WAR

WASHINGTON

November 10, 1942.

My dear Mr. President:

For many months now you have approved at intervals the proposal to build a 100-octane refinery in Mexico and Jesse Jones has stood ready to do the financing. If we had gone forward promptly, as I was hopeful that we might be able to do, we would probably be adding to a supply that seriously needs to be augmented quickly and drastically.

Sincerely yours,

Harold L. Ickes

Petroleum Coordinator for War.

x4435

The President,
The White House.

(170)
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P
Y

C. F.
Office of Petroleum Coordinator for War

November 20, 1942.

MEMORANDUM FOR

THE SECRETARY OF THE INTERIOR

I enclose copies of two letters just received from the Secretary of Commerce. You might speak with me about them at your convenience.

F. D. R.

Filed 2882.

Transmitting copy of letter which the President received from the Secretary of Commerce under date of 11/19/42, in reply to the President's letter of 11/10/42 in re Puget Sound Power and Light Company.

Transmitting copy of letter which the President received from the Secretary of Commerce under date of 11/19/42, in reply to the President's memorandum of 11/11, in re 100 octane gasoline operations.

Originals of these letters retained for our files.

THE SECRETARY OF COMMERCE
WASHINGTON

November 19, 1942

Dear Mr. President:

In reply to your memorandum of the 11th, all our 100 octane gasoline operations are upon the recommendation of OPC. The Oil Coordinator's office selects the oil company, and cooperates with RFC agencies in making the contracts, both for building the plants and contracting to buy the products. There has been no delay in making any contracts recommended by OPC, and no lack of cooperation between the two agencies.

We have had no recommendation from OPC for a 100 octane plant in Mexico. I am constantly in touch with Ralph Davies, and he hopes to have a recommendation soon.

Sincerely yours,

Jesse H. Jones
Secretary of Commerce

The President
The White House

x 4403

THE SECRETARY OF COMMERCE
WASHINGTON

C. F.

Office of Petroleum Coordinator for War

November 26, 1942

THE WHITE HOUSE
DEC 3 10 29 AM '42
RECEIVED

Dear Mr. President:

Your memorandum of November 23rd, to the Secretary of State, Petroleum Coordinator for War, and myself, received.

No recommendation has come to us from OPC, and all financing for 100 octane aviation gasoline is done upon the recommendation of the Oil Coordinator.

If and when WPB can make the necessary materials available, RFC, in cooperation with OPC, can employ a reputable engineering firm to build such a plant, and arrange for its operation in a manner acceptable to both our Governments.

I am sending a copy of this suggestion to the Secretary of State and the Oil Coordinator.

Sincerely yours,

Jesse H. Jones x3

The President
The White House

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

x56-B
x4735
x643
x4435

C.F.
Office of Petroleum Coordinator for War

File

F 12/7/42

OFFICE OF

PETROLEUM COORDINATOR FOR WAR

WASHINGTON

November 23, 1942.

THE WHITE HOUSE
RECEIVED
NOV 24 10 08 AM '42

My dear Mr. President:

I have been a warm advocate of the proposal to build a 100-octane aviation gasoline plant in Mexico from the beginning. After I had been convinced of its merits I proposed it at a Cabinet Meeting a number of months ago. Subsequently, I renewed that proposal. I deplore the delay, about which I haven't seemed to be able to do anything. I hope that this project can go forward. This office stands ready to do everything it can.

Sincerely yours,

Harold L. Ickes

Secretary of the Interior.

x56-B
x4435
x146

x6

The President,
The White House.

SPECIAL AVIATION GASOLINE REPORT

FROM

THE PETROLEUM ADMINISTRATION FOR WAR

FRANKLIN D. ROOSEVELT

PETROLEUM ADMINISTRATION FOR WAR

WASHINGTON

March 16, 1943.

My dear Mr. President:

It gives me pleasure to present to you the first copy off the press of a most unusual and interesting report on the aviation gasoline situation. The pertinent facts were collected by technologists of the Petroleum Administration with the assistance and permission of Army, Navy and British authorities. Special consultants employed by the Petroleum Administration translated the highly technical data into more readily understood language and illustrations.

The printing was done under the personal supervision of our own employees in such a manner as to respect all secrecy regulations, and the Petroleum Industry War Council volunteered, "sight unseen", to foot the printing bill as a contribution to the war program. Behind this unusual report lies the hope that it will effectively emphasize the growing importance of providing promptly the construction materials for the completion of needed new facilities in the production of superfuel.

The report tells its own story and I know that you will find it worthwhile. Fifty-one copies have been distributed outside of the Petroleum Administration, each recipient having been cleared as to secrecy by the military authorities. Circulation has been confined to executives of agencies having some direct interest or responsibility with respect to aviation fuel, including, of course, the Commanding Officers of the Army, Navy and Air Forces of the United States of America and of Great Britain and members of their staffs.

Sincerely yours,

Harold L. Ickes

Petroleum Administrator for War.

The President,

The White House.

PPF 305

NAVY SCOUT BOMBERS

THE SITUATION

Gigantic air operations hold a key place in United Nations' grand strategy for 1943 and '44. These plans call for both quantitative and qualitative superiority over the enemy—and they hold neither men nor machines expendable beyond absolute minimum limits.

The nation's factory production and materials allocation are already geared to this program.

Grand Plans of the High Command already revolve around it.

Allocation and training of personnel is already pointed toward it.

BUT—to carry through these aims steps must be taken now to implement existing plans and projects of the Petroleum Administration for War for added production of combat grade aviation gasolines.

Even 1942's heroic expansions of facilities for making these gasolines—plus further expansions now under way—*will not entirely* meet the greatly expanded requirements of plans and planes now under way.

Men and machines held not expendable *will* be expended . . .

Battles that could and should be won *will not* be won . . .

Final victory will be delayed *beyond* where it need be . . .

All this will happen unless more high-grade aviation gasoline—much more—is provided for at once.

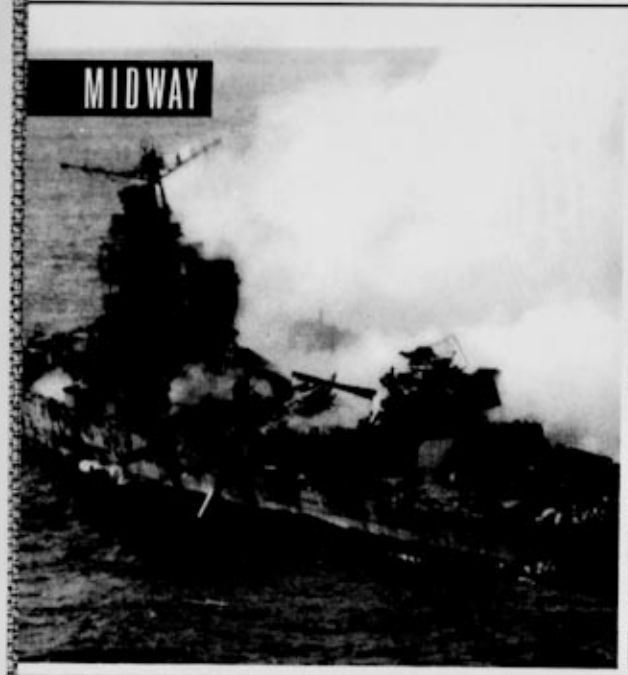
These pages tell why this is true, and how the needed gasoline *can* be got. Technical details are highly complex and the processes involved have been greatly simplified for purposes of illustration.

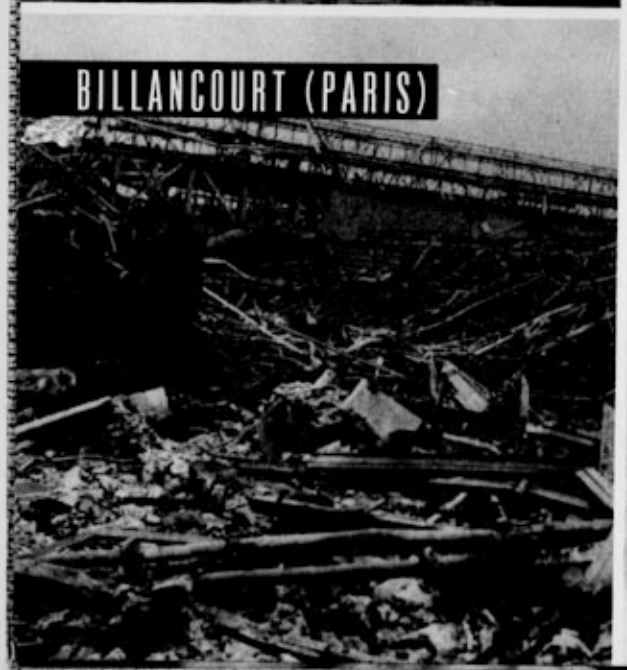
But the crux of the situation is simple and inescapable.

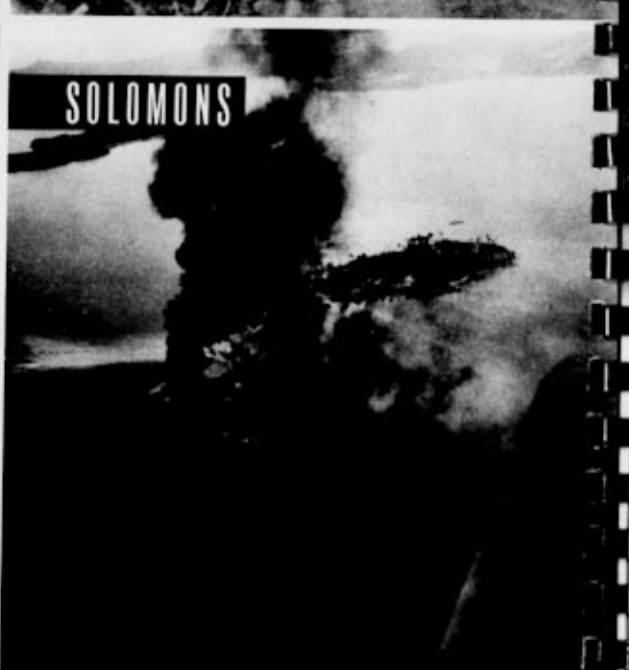
What follows is fact, solemn and inexorable. It is the arithmetic of a bottleneck which *need not* happen but which *will* happen unless it is prevented (as it can be!) now—at once.

These are facts of life—and of death—in United Nations' air warfare for 1943 and '44.

IMPORTANT AIR MISSIONS IN 1942







1942 has been called not even the beginning of the end, but only the end of the beginning. Dramatic as they are, these Air Missions of the past year are only a sample of what has been planned and must be carried through in the months ahead.

Yet even these missions of '42 could not have been on any such scale—carried out with anywhere near such effectiveness—with any such safe return of unexpended men and materiel—without the aviation Super Gasolines with which they were provided.

1943...?

WHAT AVIATION GASOLINE IS...

Chemically, both aviation gasoline and automobile gasoline are mixtures of hydrocarbon compounds derived from petroleum. Functionally, both are used to produce power in internal combustion engines.

But in equipment, method, and knowledge required to produce them they are as different as a tooth extraction is different from a delicate brain operation.

A study of the subject sums up the difference in these words: "The petroleum industry now is producing synthetic organic chemicals to power fighting planes. These fuels, for the sake of convenience and habit, still are termed 'aviation gasoline.' Actually, they are not gasolines at all, but super-fuels produced by rearranging the petroleum hydrocarbon molecules through use of catalysts . . . Even the standard method of octane rating breaks down when applied to these man-made concentrations of chemical power; they are, of course, vastly superior to other gasolines having a '100-octane' rating."

In actual practice, you cannot *begin* to make aviation gasoline with the facilities which make automotive gasoline, for these reasons:

FIRST – Aviation fuel starts with a synthetic *base stock* which is about equal in potential power – and far superior in other qualities – to automobile gasoline that has been doctored to its limit.

SECOND – Aviation fuel requires precisely controlled amounts of hard-to-get synthetic petroleum derivatives, (isopentane, cumene, xylene, neohexane), and others which conventional refining cannot produce.

THIRD – Aviation fuel must be absolutely and completely freed of numerous unwanted natural impurities which are only nuisances in a motor car, but which mean life and death in aircraft.

It is also true that comparison of aviation and automobile gasoline in terms of octane ratings does not tell the story. Although automobile gasoline can be raised to a top of about 87-octane on the regular gasoline scale – *it is not even then the equivalent of 87-octane aviation fuel.*

For this reason, aviation fuels are graded in quality according to U. S. Army performance numbers, which are simplified and corrected expressions of complicated octane gradings.

Those aviation gasolines now in combat use or projected and described as grades 125, 130, and 140 – all exceed "100-octane" aviation gasoline in comparative performance.

Furthermore, it was discovery and development of ways to produce these synthetic gasolines which made possible in the first place the present combat effectiveness of every warplane we make, of every type and size – and also the almost fantastic-seeming, new-type planes which are actually now in or near production for future use.

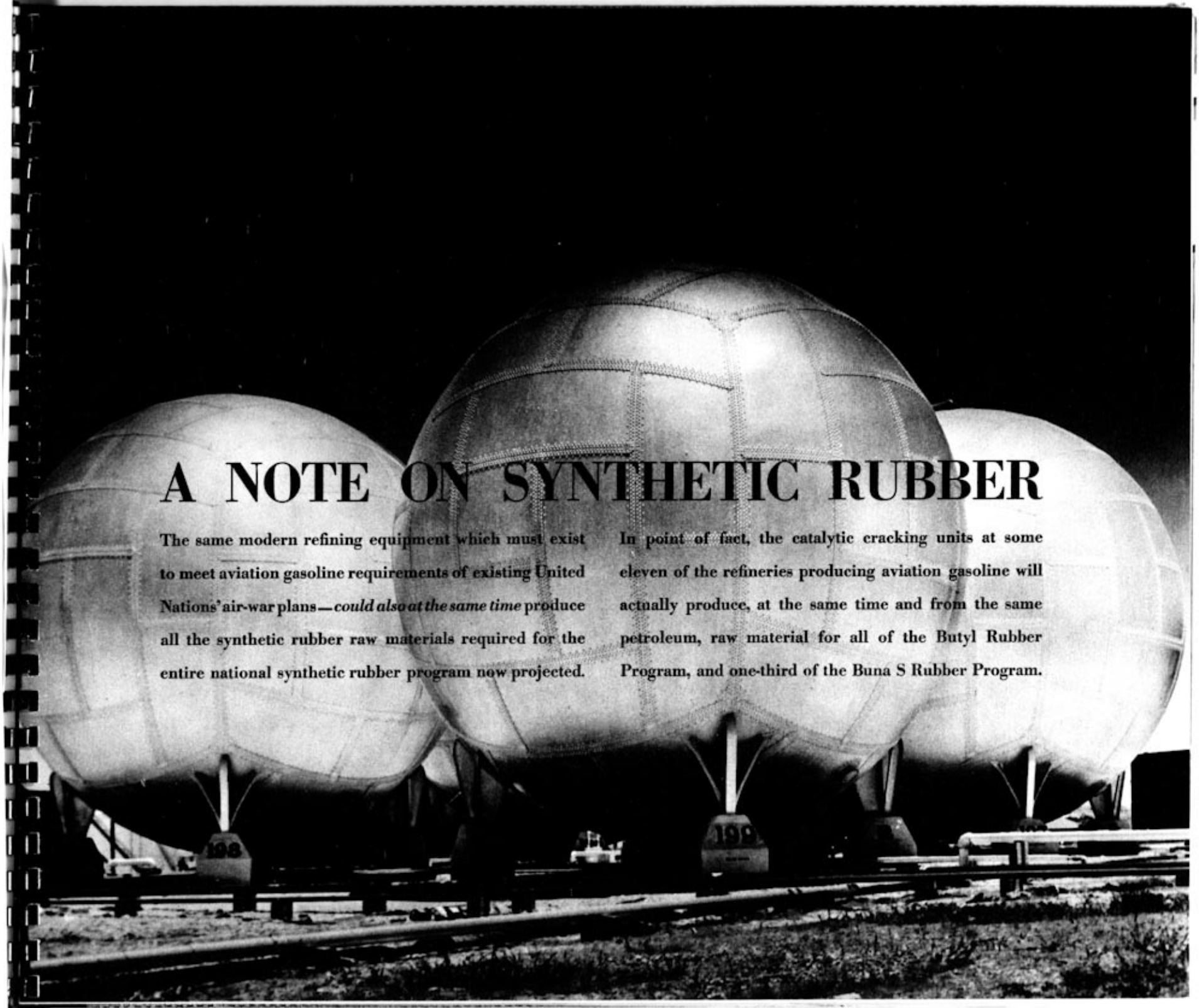
This is because the potential power characteristics of *fuel available* automatically limit what the engine designer can do.

He cannot put into production an engine conceived and designed to deliver better performance than the top limit of the fuel which he knows must be used in service.

And his engine, once produced, *must get the fuel it was designed to use* if it is to operate properly or even operate at all.

All current British-built and American-built engines for combat planes are currently designed for better than 100-octane aviation gasoline.

Combat experience with these planes has already influenced design for better new planes whose fuel requirements reach still farther upward on the performance scale.



A NOTE ON SYNTHETIC RUBBER

The same modern refining equipment which must exist to meet aviation gasoline requirements of existing United Nations' air-war plans—*could also at the same time* produce all the synthetic rubber raw materials required for the entire national synthetic rubber program now projected.

In point of fact, the catalytic cracking units at some eleven of the refineries producing aviation gasoline will actually produce, at the same time and from the same petroleum, raw material for all of the Butyl Rubber Program, and one-third of the Buna S Rubber Program.

WHY SUPER ENGINES MUST HAVE SUPER GASOLINES

Aircraft performance depends basically upon the *engines* in the planes. Engine performance depends basically upon the *quality of gasoline* which the engines consume.

Increases in aircraft performance come primarily with increases in power-to-weight ratio of aircraft engines—*how much power* can be reliably got from *how light an engine.*

In bombers, greater power with relation to weight brings greater speed, range, and load-carrying capacity. In fighters, it brings greater speed, rate of climb, and better altitude performance.

While it is true that improvements in engine performance are continually produced by advances in design and in metallurgical technique—*by far the greatest step-ups in engine power have always been preceded by the development of gasoline of better "anti-knock" properties.*

Along with the basic high resistance to detonation of modern aviation fuels, it is essential that they do not induce vapor lock, gumming of valves, or fouling of spark plugs. And they must possess the stability to resist deterioration in storage or in transit to combat areas.

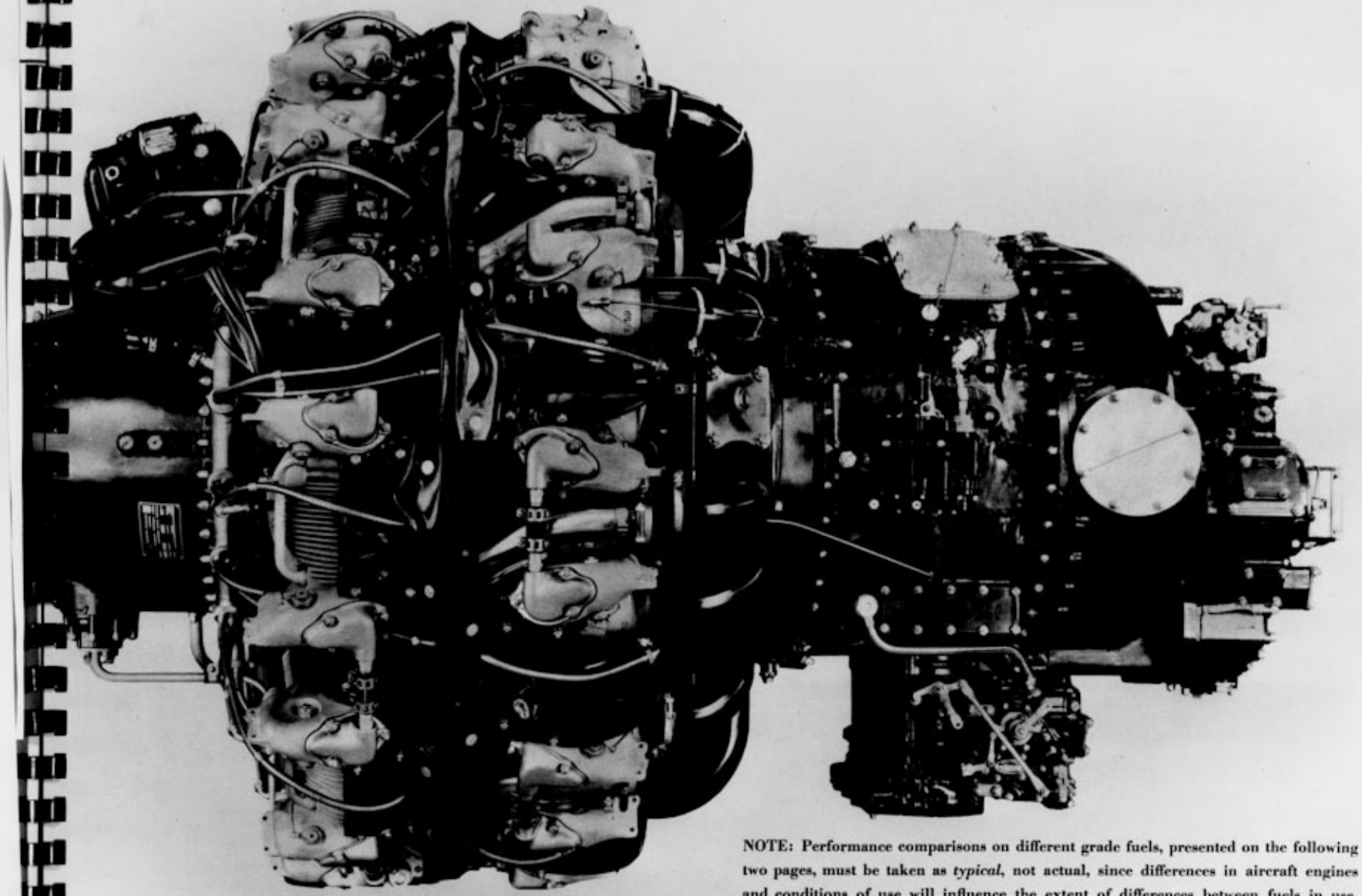
As has been said, our combat planes were designed for, and now require, gasoline superior in quality to that formerly designated as 100-octane.

WITHOUT PROPER GASOLINE, available wherever they must operate, these planes are quite literally without a vital part of the engines about which they were built, and might just as well not have been built, at all.

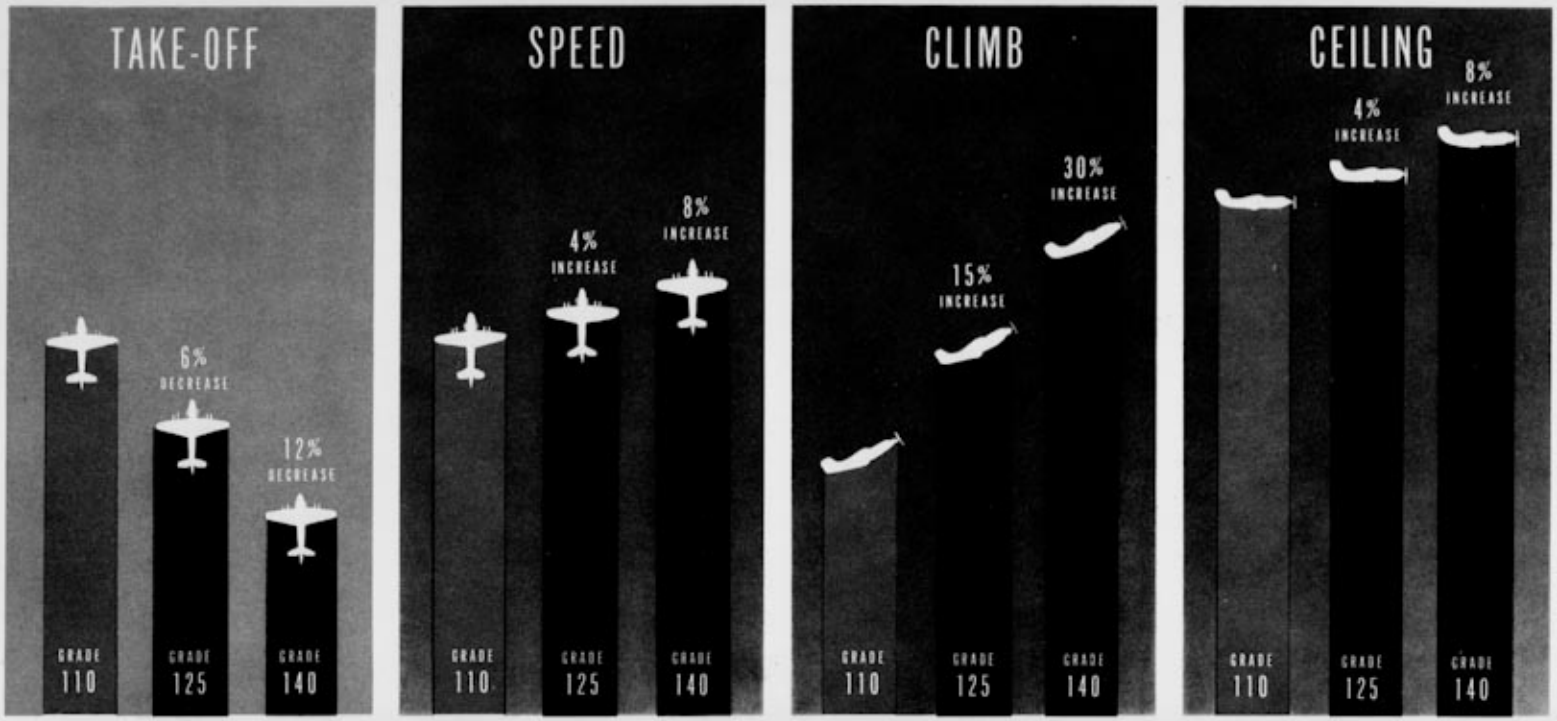
ONLY WITH ADEQUATE SUPPLIES OF PROPER FUEL, can United Nations' Air Commands plan operations with accuracy...

ONLY WITH ADEQUATE SUPPLIES OF PROPER FUEL, can United Nations' pilots get in combat the fighting advantages of equipment designed to be superior to the enemy...

ONLY WITH ADEQUATE SUPPLIES OF PROPER FUEL, can United Nations' air war proceed with maximum effectiveness and minimum expenditure of personnel and materiel.



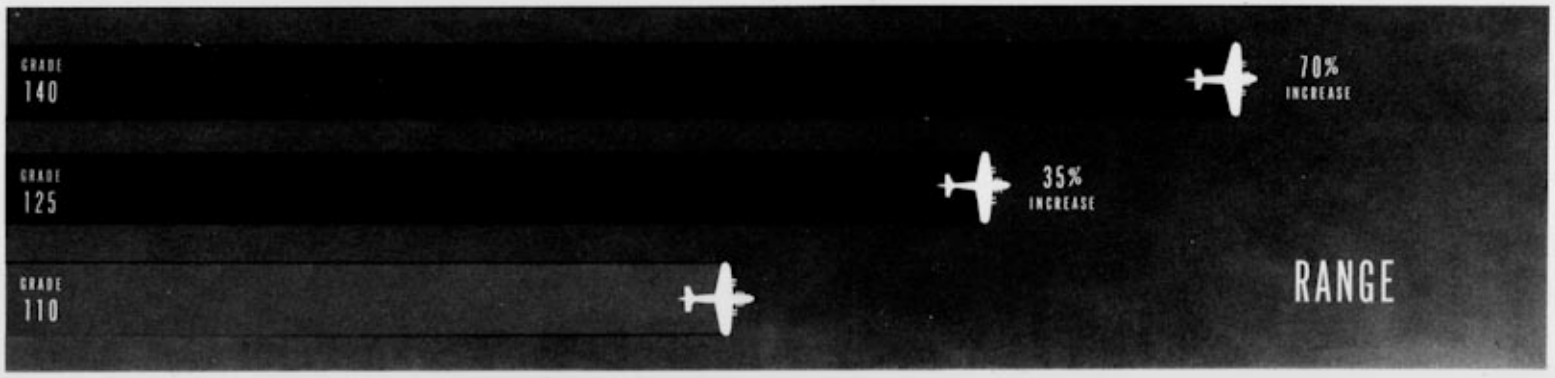
NOTE: Performance comparisons on different grade fuels, presented on the following two pages, must be taken as *typical*, not actual, since differences in aircraft engines and conditions of use will influence the extent of differences between fuels in use. The *general* result, however, is reliably expressed in the following charts, made with the assistance of a leading aircraft engine manufacturer. The Grade 110 represents the quality of fuel prior to July, 1942. Grade 125 represents type of fuel produced from July to December, 1942 (now used in combat areas). Grade 140 represents quality now desired.

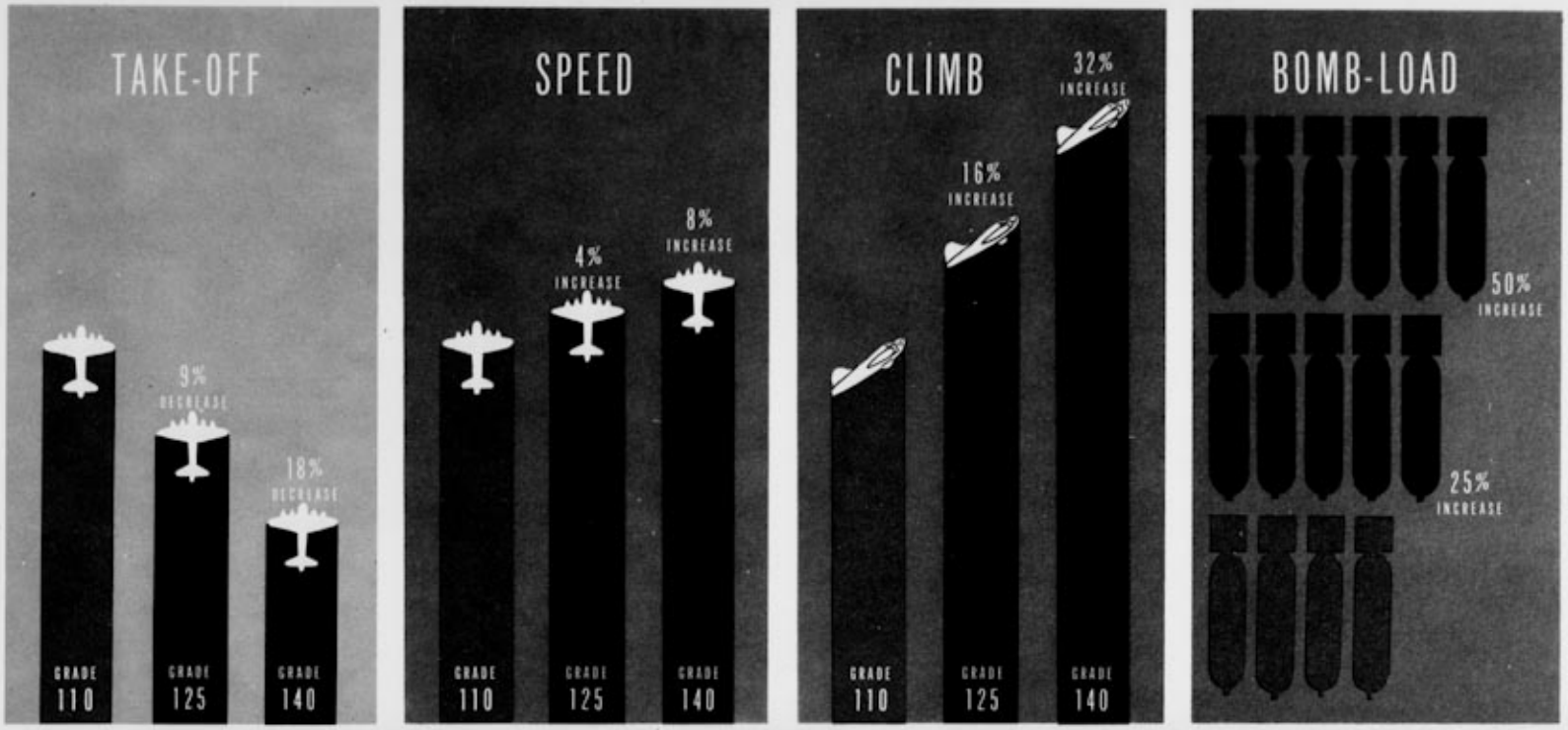


BETTER PERFORMANCE FROM BETTER FUELS IN

PURSUIT AIRCRAFT

Better fuel means greater power, which may be used in either of two ways: (1) To get better engine performance, with the four *simultaneous* results charted above, or (2) to carry more weight in terms of fuel capacity, in which case *range* can be increased as indicated below. Benefits of (1) and (2), of course, cannot be combined.

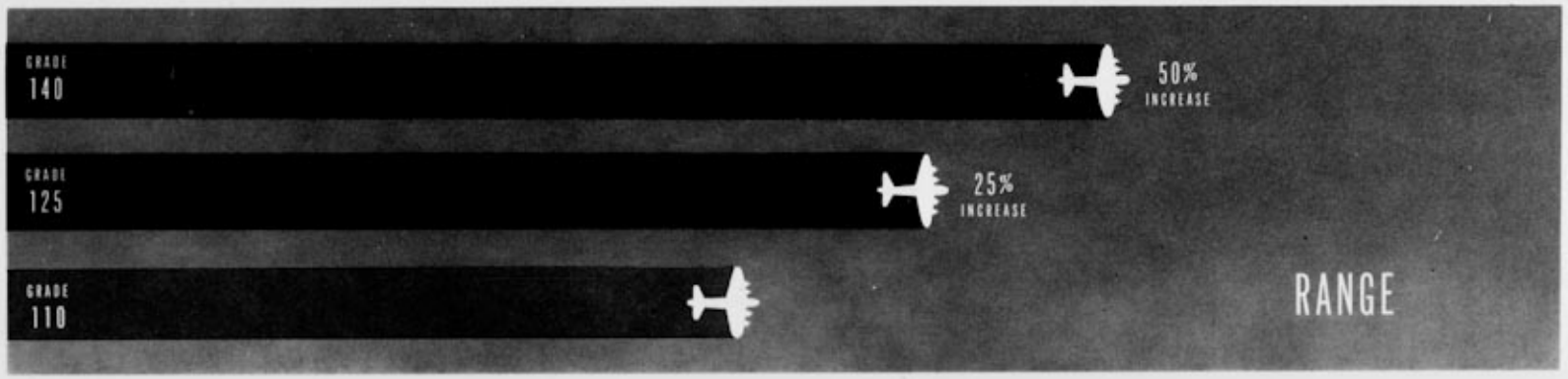




BETTER PERFORMANCE FROM BETTER FUELS IN

BOMBERS

Here again, increased power from higher grade fuel will produce either of two kinds of combat advantage—better engine performance as charted above, or greater range due to greater fuel-carrying capacity, as charted below. In bombers, of course, this extra weight-carrying potential may be used either for greater bomb load or greater range or divided between the two.

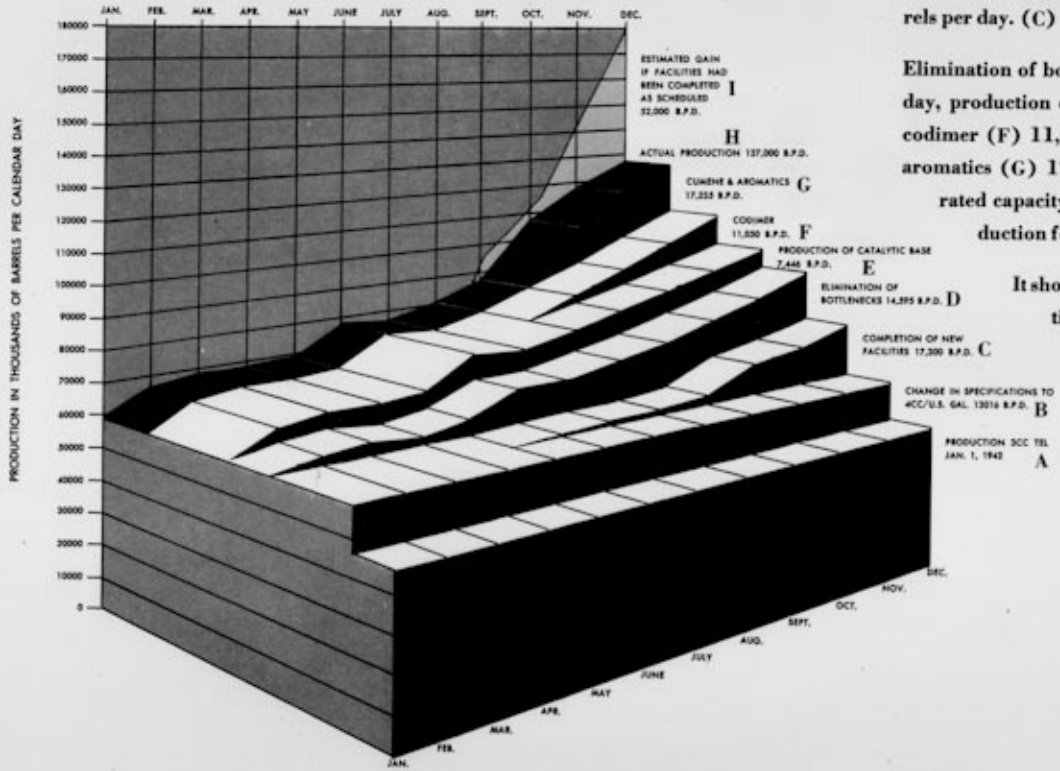


COMBAT GRADE AVIATION GASOLINE PRODUCTION – 1942

Productivity of domestic plants on July 15, 1941 was 40,313 barrels per day. On December 15, 1941, production of combat grade aviation gasoline in continental United States and Aruba totaled 46,508 barrels per day. (A) This combined production contrasted with requirements at that time of 84,900 barrels per day, a deficiency of 38,392 barrels per day.

On November 24, 1941, the Aeronautical Board modified specifications to permit inclusion of 4 c. c.'s of tetraethyl lead, effective January 1, 1942. This expanded our effective production to 59,524 barrels per day. (B)

As our fighting forces grew during 1942, aviation gasoline requirements naturally increased by leaps and bounds, and the deficiency became even more acute. The Petroleum Administration took every possible advantage of existing methods and facilities to bridge the gap.



In making aviation gasoline, increased production and improved quality are closely related. Given enough of the proper high-grade base stocks, quality may be improved by adding tetraethyl lead to raise anti-knock rating; hydrocodimer and cumene for richer mixtures and greater power. The problem is one of raising the quality of enough base stock, and having enough of the additives to do it.

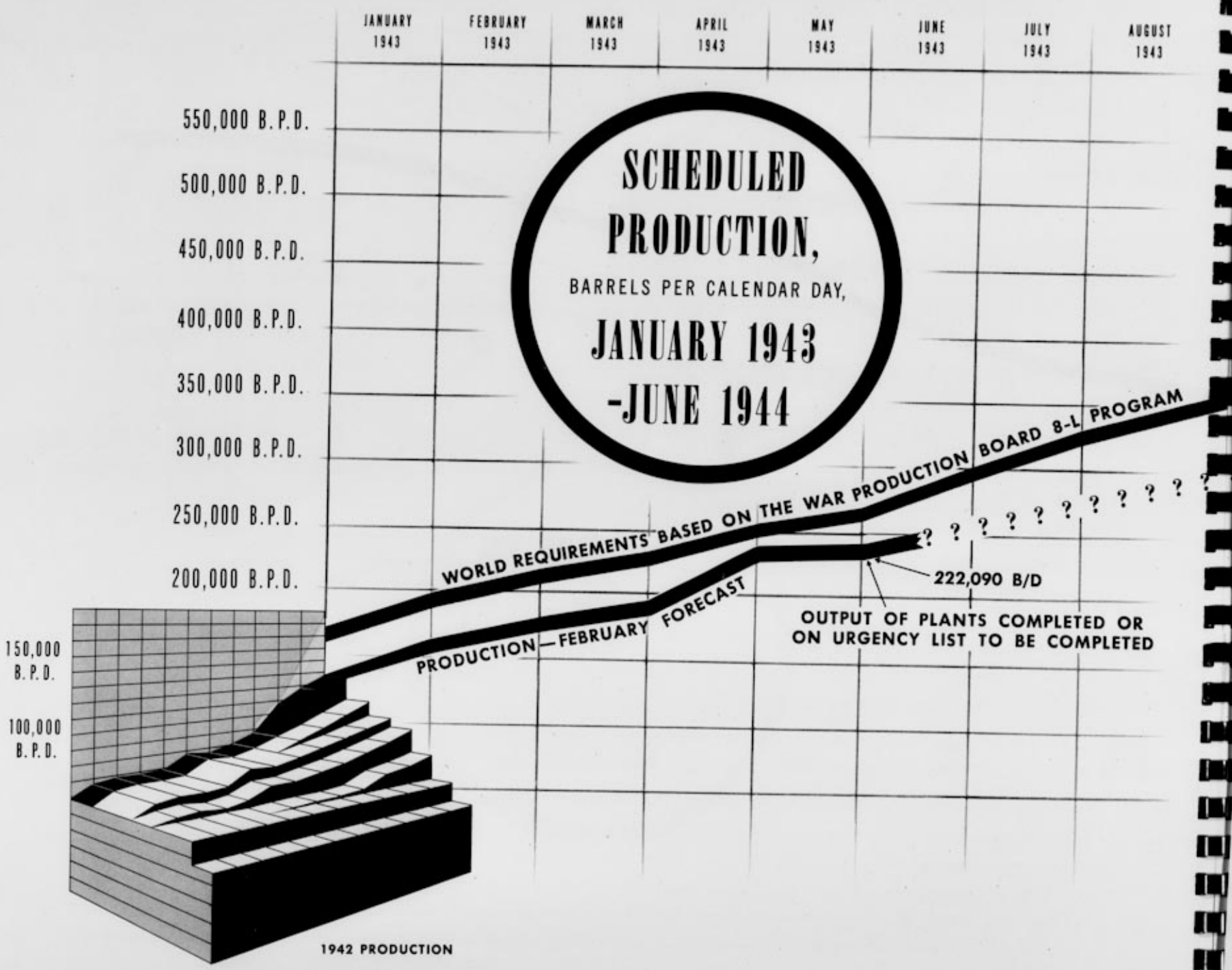
During the year 1942, new facilities were completed having a rated capacity (4 c. c.'s) of 17,300 barrels per day, upping total capacity to 76,824 barrels per day. (C)

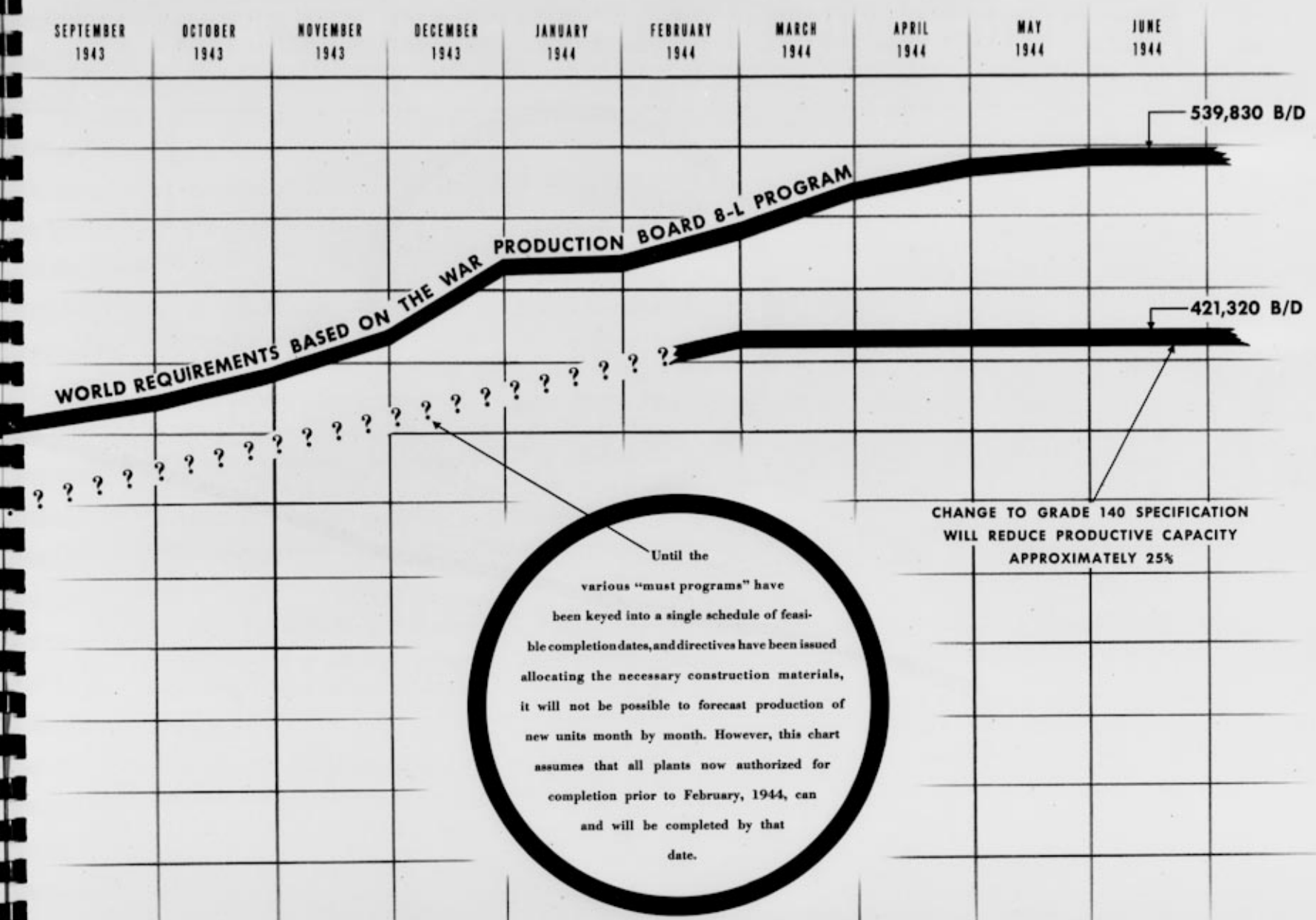
Elimination of bottlenecks in existing plants (D) added 14,593 barrels per day, production of catalytic base (E) 7,446 barrels per day, use of hydrocodimer (F) 11,050 barrels per day and introduction of cumene and other aromatics (G) 17,235 barrels per day. These increases added to previous rated capacity, gave a grand total of 127,150 barrels per day (H) production for December, 1942.

It should be pointed out that the four latter steps all involved additions to existing refinery equipment, a program which has been prosecuted to the limit by the Petroleum Administration.

If all new facilities scheduled for completion in the December, 1941 report had been completed, (I) an additional 52,000 barrels per day of 4 c. c. aviation gasoline would have been in production by January 1, 1943. Delay in allocation of materials to the aviation gasoline plants lost this much-needed production.

The above represents a considerable quantity improvement, obtained through the interim program vigorously pushed by the Petroleum Administration. An additional benefit has accrued to the armed forces—an improvement in quality. Gasoline produced on January 1, 1942 had an average performance rating of Grade 110, which by December 31, 1942 had been increased to Grade 125, corresponding to about 12 per cent gain in permissible power under takeoff conditions. This increase in quality was effected by developing production from existing equipment, and involved no loss in productive capacity.


JANUARY 1943
FEBRUARY 1943
MARCH 1943
APRIL 1943
MAY 1943
JUNE 1943
JULY 1943
AUGUST 1943
550,000 B.P.D.
500,000 B.P.D.
450,000 B.P.D.
400,000 B.P.D.
350,000 B.P.D.
300,000 B.P.D.
250,000 B.P.D.
200,000 B.P.D.
150,000 B.P.D.
100,000 B.P.D.
SCHEDULED PRODUCTION,
BARRELS PER CALENDAR DAY,
JANUARY 1943 -JUNE 1944
WORLD REQUIREMENTS BASED ON THE WAR PRODUCTION BOARD 8-L PROGRAM
? ? ? ? ? ? ? ? ? ?
PRODUCTION—FEBRUARY FORECAST
222,090 B/D
OUTPUT OF PLANTS COMPLETED OR ON URGENCY LIST TO BE COMPLETED
1942 PRODUCTION


SEPTEMBER 1943
OCTOBER 1943
NOVEMBER 1943
DECEMBER 1943
JANUARY 1944
FEBRUARY 1944
MARCH 1944
APRIL 1944
MAY 1944
JUNE 1944
539,830 B/D
421,320 B/D
WORLD REQUIREMENTS BASED ON THE WAR PRODUCTION BOARD 8-L PROGRAM
CHANGE TO GRADE 140 SPECIFICATION WILL REDUCE PRODUCTIVE CAPACITY APPROXIMATELY 25%
Until the various "must programs" have been keyed into a single schedule of feasible completion dates, and directives have been issued allocating the necessary construction materials, it will not be possible to forecast production of new units month by month. However, this chart assumes that all plants now authorized for completion prior to February, 1944, can and will be completed by that date.

HOW AVIATION GASOLINE REQUIREMENTS ARE COMPUTED

Following is a brief version of the agreed Army, Navy and British method of computing long-term production requirements for 100-octane gasoline:

A .... *Number of aircraft of various types now on hand, which require better than 100-octane gasoline ... plus*

B .... *Production and delivery schedules of all types of planes requiring better than 100-octane gasoline, related to ...*

C .... *Gasoline requirements for missions covering a 30-day period, with additional fuel requirements of 10% for contingencies, including take-off and climb ... minus*

D .... *Overall aircraft attrition rate for combat types established by actual experience.*

Navy requirements for aviation gasoline, as well as those of Lend-Lease planes of Army Air Force types, are computed on the same basis as above.

Supply estimates for Ferry and Transport are based on projected mileage and schedules.

The R. A. F. uses its own method of estimating fuel requirements, based on tables of effort and consumption per mission, which are revised periodically in accordance with war experience. To the hourly consumption figures as computed by engine manufacturers, is added 25% allowance for incidental running, faulty manipulation of controls, engine tests, wastage resulting from losses of aircraft, and non-operational flying. Records of sustained effort based on actual operational experience are used to forecast future expenditures in periods of similar intensive effort. To this is added an allowance for stock building, normally 6 months' reserves based on consumption for all theaters.

The flexible R. A. F. method, using data tables which are constantly being revised in line with current experience, is considered most suitable for computing requirements of individual theaters.

However, several comparative calculations, using both American and British methods, showed results within 3.6% of each other, the former being the higher.

HOW THE FORMULA IS APPLIED

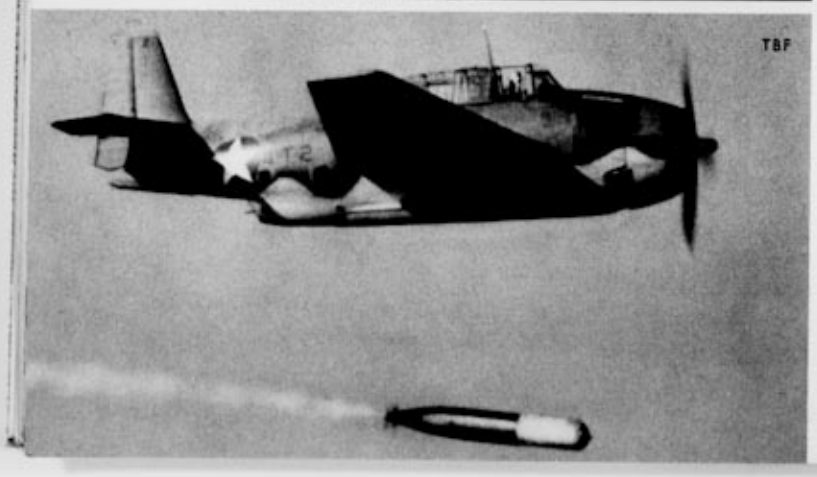
B-17 TYPE *(Flying Fortress)—Multiply the number of missions contemplated by 75% of maximum alternate gas load. Add 10% for take-off and climb. Result: The number of barrels of fuel to be consumed during a 30-day period. For the B-17 type, an average of 8 missions per month will be completed as follows:*

$$75\% \left\{ \begin{array}{c} \text{5 missions x 1,700 max. gas with bombs} \\ \text{plus} \\ \text{3 missions x 2,524 max. gas without bombs} \end{array} \right\} = 12{,}054 \text{ gallons}$$

12,054 + 1,205 (10% for take-off and climb) = 13,259 gallons

$$\frac{13{,}259}{42 \text{ GALLONS PER BARREL}} = 316 \text{ bbls. per month}$$

REQUIREMENTS FOR COMBAT AIRCRAFT SCHEDULED



Heavy Bombers

	JANUARY 1943	FEBRUARY 1943	MARCH 1943	APRIL 1943	MAY 1943	JUNE 1943
BARRELS PER MONTH	621,484	628,924	660,374	717,078	801,644	905,976

4,335,480

TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS

Medium Bombers

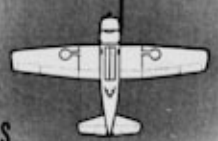
	JANUARY 1943	FEBRUARY 1943	MARCH 1943	APRIL 1943	MAY 1943	JUNE 1943
BARRELS PER MONTH	357,341	341,635	323,048	336,795	361,932	401,754

2,122,505

TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS

Light Bombers

	JANUARY 1943	FEBRUARY 1943	MARCH 1943	APRIL 1943	MAY 1943	JUNE 1943
BARRELS PER MONTH	324,620	377,422	428,916	468,936	501,776	551,582



2,653,252

TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS

TO BE PRODUCED IN THE UNITED STATES

(Based on War Production Board 8L Program)

JULY 1943	AUGUST 1943	SEPTEMBER 1943	OCTOBER 1943	NOVEMBER 1943	DECEMBER 1943	JANUARY 1944	FEBRUARY 1944	MARCH 1944	APRIL 1944	MAY 1944	JUNE 1944
1,038,972	*1,187,940*	*1,342,946*	*1,523,135*	*1,700,601*	*1,862,746*	*2,012,943*	*2,151,961*	*2,257,997*	*2,387,016*	*2,479,054*	*2,561,736*
			8,656,340						*13,850,707*		
			TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS						TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS		

JULY 1943	AUGUST 1943	SEPTEMBER 1943	OCTOBER 1943	NOVEMBER 1943	DECEMBER 1943	JANUARY 1944	FEBRUARY 1944	MARCH 1944	APRIL 1944	MAY 1944	JUNE 1944
446,546	*490,133*	*519,102*	*547,948*	*572,636*	*592,713*	*609,123*	*620,005*	*630,499*	*638,782*	*645,865*	*656,013*
			3,169,078						*3,800,287*		
			TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS						TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS		

JULY 1943	AUGUST 1943	SEPTEMBER 1943	OCTOBER 1943	NOVEMBER 1943	DECEMBER 1943	JANUARY 1944	FEBRUARY 1944	MARCH 1944	APRIL 1944	MAY 1944	JUNE 1944
603,028	*666,401*	*727,349*	*797,107*	*860,653*	*912,270*	*973,840*	*1,018,060*	*1,055,951*	*1,080,611*	*1,110,698*	*1,109,500*
			4,566,808						*6,348,660*		
			TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS						TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS		

REQUIREMENTS FOR COMBAT AIRCRAFT SCHEDULED

Fighters

	JANUARY 1943	FEBRUARY 1943	MARCH 1943	APRIL 1943	MAY 1943	JUNE 1943
BARRELS PER MONTH	629,769	669,974	717,910	797,211	896,384	1,008,989

4,720,237

TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS

Transports

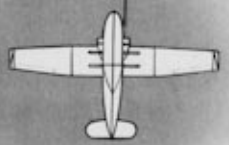
	JANUARY 1943	FEBRUARY 1943	MARCH 1943	APRIL 1943	MAY 1943	JUNE 1943
BARRELS PER MONTH	722,641	787,018	862,323	950,596	1,060,800	1,174,437

5,557,815

TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS

Patrol and Observation

	JANUARY 1943	FEBRUARY 1943	MARCH 1943	APRIL 1943	MAY 1943	JUNE 1943
BARRELS PER MONTH	537,009	712,823	795,310	901,412	1,033,283	1,153,646



5,133,483

TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS

TO BE PRODUCED IN THE UNITED STATES

(Based on War Production Board 8L Program)

JULY 1943	AUGUST 1943	SEPTEMBER 1943	OCTOBER 1943	NOVEMBER 1943	DECEMBER 1943	JANUARY 1944	FEBRUARY 1944	MARCH 1944	APRIL 1944	MAY 1944	JUNE 1944
1,137,296	1,269,903	1,400,911	1,537,958	1,676,799	1,803,388	1,911,171	2,000,417	2,072,662	2,139,265	2,180,389	2,188,048
			8,826,255						12,491,952		
			TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS						TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS		

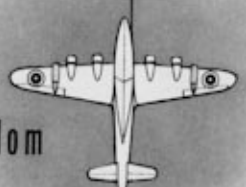
JULY 1943	AUGUST 1943	SEPTEMBER 1943	OCTOBER 1943	NOVEMBER 1943	DECEMBER 1943	JANUARY 1944	FEBRUARY 1944	MARCH 1944	APRIL 1944	MAY 1944	JUNE 1944
1,301,395	1,455,788	1,634,915	1,828,897	2,064,979	2,309,368	3,017,191	2,826,254	3,111,207	3,316,787	3,597,491	3,859,701
			10,595,342						19,728,631		
			TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS						TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS		

JULY 1943	AUGUST 1943	SEPTEMBER 1943	OCTOBER 1943	NOVEMBER 1943	DECEMBER 1943	JANUARY 1944	FEBRUARY 1944	MARCH 1944	APRIL 1944	MAY 1944	JUNE 1944
1,231,962	1,275,321	1,315,065	1,386,346	1,484,481	1,547,750	1,604,575	1,639,869	1,644,981	1,663,324	1,672,029	1,685,016
			8,240,925						9,909,794		
			TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS						TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS		

REQUIREMENTS FOR COMBAT AIRCRAFT SCHEDULED

United Kingdom

	JANUARY 1943	FEBRUARY 1943	MARCH 1943	APRIL 1943	MAY 1943	JUNE 1943
BARRELS PER MONTH	1,532,764	1,384,432	1,532,764	1,483,320	1,532,764	1,483,320

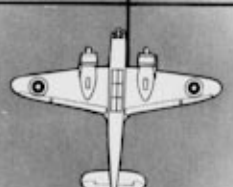


8,949,364

TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS

Canada

	JANUARY 1943	FEBRUARY 1943	MARCH 1943	APRIL 1943	MAY 1943	JUNE 1943
BARRELS PER MONTH	117,800	115,920	125,705	122,130	127,596	124,770

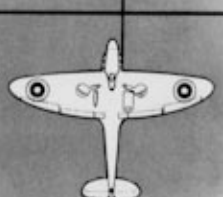


733,921

TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS

Australia

	JANUARY 1943	FEBRUARY 1943	MARCH 1943	APRIL 1943	MAY 1943	JUNE 1943
BARRELS PER MONTH	35,123	29,876	31,403	29,190	30,783	30,210



186,585

TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS

TO BE PRODUCED OUTSIDE THE UNITED STATES*

*Excluding U.S.S.R.

JULY 1943	AUGUST 1943	SEPTEMBER 1943	OCTOBER 1943	NOVEMBER 1943	DECEMBER 1943	JANUARY 1944	FEBRUARY 1944	MARCH 1944	APRIL 1944	MAY 1944	JUNE 1944
1,729,118	1,729,118	1,673,340	1,729,118	1,673,340	1,729,118	1,897,882	1,775,438	1,897,882	1,836,660	1,897,882	1,836,660
			10,263,152						11,142,404		
			TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS						TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS		

JULY 1943	AUGUST 1943	SEPTEMBER 1943	OCTOBER 1943	NOVEMBER 1943	DECEMBER 1943	JANUARY 1944	FEBRUARY 1944	MARCH 1944	APRIL 1944	MAY 1944	JUNE 1944
136,276	148,583	153,540	169,756	171,330	182,063	179,800	193,459	232,500	240,570	264,089	266,580
			961,548						1,376,998		
			TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS						TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS		

JULY 1943	AUGUST 1943	SEPTEMBER 1943	OCTOBER 1943	NOVEMBER 1943	DECEMBER 1943	JANUARY 1944	FEBRUARY 1944	MARCH 1944	APRIL 1944	MAY 1944	JUNE 1944
34,658	37,355	38,190	41,168	41,340	43,865	44,640	42,282	45,787	44,670	46,531	45,210
			236,576						269,120		
			TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS						TOTAL 6 MONTHS AVIATION GASOLINE REQUIREMENTS		

TOTAL ULTIMATE REQUIREMENTS FOR COMBAT AIRCRAFT....

ENGINE TESTING, FLY-AWAY AND FERRY....

ADDITIONAL U. S. S. R. REQUIREMENTS FROM THE U. S. ....

TOTAL ULTIMATE REQUIREMENT....

TOTAL ULTIMATE PRODUCTION *All plants now built, building, or authorized to be built*

GRADE 130....
GRADE 140....

INDICATED DEFICIENCY

GRADE 130....
GRADE 140....

The usual 10% margin for loss from enemy action sabotage, mechanical breakdowns, etc. are not

473,615
BARRELS PER DAY

48,066
BARRELS PER DAY

18,148
BARRELS PER DAY

539,829
BARRELS PER DAY

(421,320)

315,990
BARRELS PER DAY

(118,509)

223,839
BARRELS PER DAY

and losses of production due to included in the above figures.

FORMATION OF TBF's

NECESSITY FOR BUILDING OPERATIONAL RESERVES

Requirements of aviation fuel, as given in this report, are in all cases requirements for consumption. However, in addition to providing for current consumption in each combat area, reserve stocks must be built up and maintained to sustain anticipated operations.

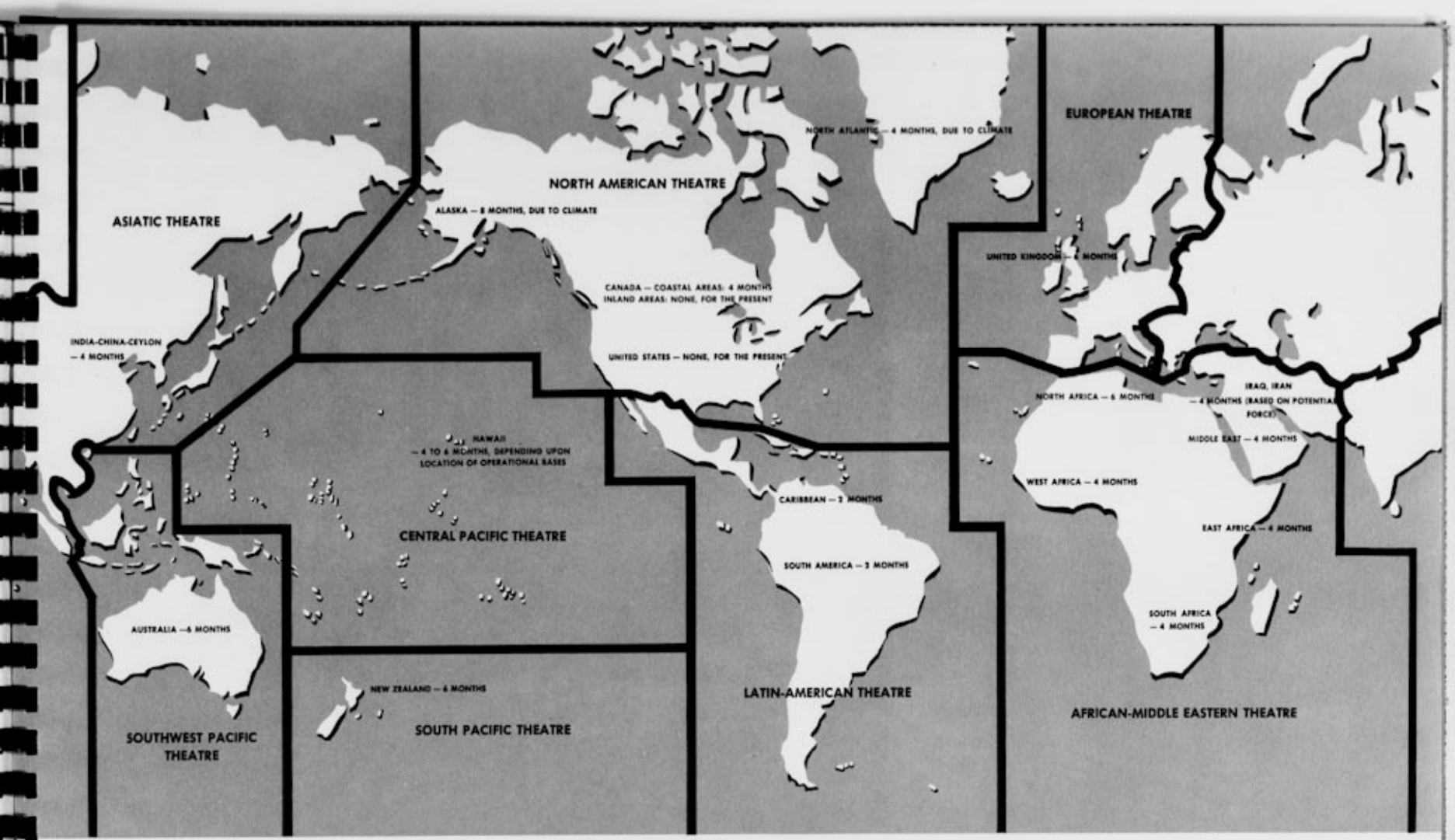
In opening the North African front, for example, it was necessary to send with the initial forces not only enough aviation fuel to carry out the primary mission, but enough to be certain that operations developing from early successes would be assured of air support in spite of losses or possible rupture of supply lines due to enemy action.

The same factors apply in areas of continuous activity. Reserve supplies of fuel must be maintained to compensate for the time element involved in securing replacement of supplies consumed. The scheduling of tankers, voyage time required, difficulties in the disbursement of fuel from ocean terminals to advanced bases in combat areas, losses due to enemy action, delays in normal flow of supplies as a result of weather conditions, every contingency must be taken into account.

There can be no excuse for failure to supply our air forces with the fuel needed for instant action under any and all conditions of combat urgency.

Our men and aircraft must not be made expendable for even momentary lack of operational reserves.

For this reason, the Combined Chiefs of Staff have designated "target" reserves for each area of operations—"target" because they represent goals which cannot now be attained, due to the present shortage of sufficient aviation fuel to cope with current consumption plus reserves. The "target" reserve for each area, therefore, represents a goal to be attained when available supplies at source will permit the allocation of quantities of fuel, not only to off-set current consumption, but to build toward the designated "target."



DESIGNATED "TARGET" RESERVES

These are the "target" reserves, expressed in months of forward estimated consumption, which have been designated by the Combined Chiefs of Staff for operational areas. The reserves do not now exist because present fuel production will not permit the allocation of quantities representing more than current consumption, plus a small margin for reserves. When-and if- supplies are available, the "target" will be achieved in each area to provide for strategic contingencies.

FACTORS AFFECTING AVIATION GASOLINE SUPPLY TO COMBAT AREAS

The fueling of combat aircraft in global warfare is not only a matter of operational needs and reserves in combat areas, but must also deal realistically with such other factors as transportation time, availability of supplies and of tankers, and effects of enemy action.

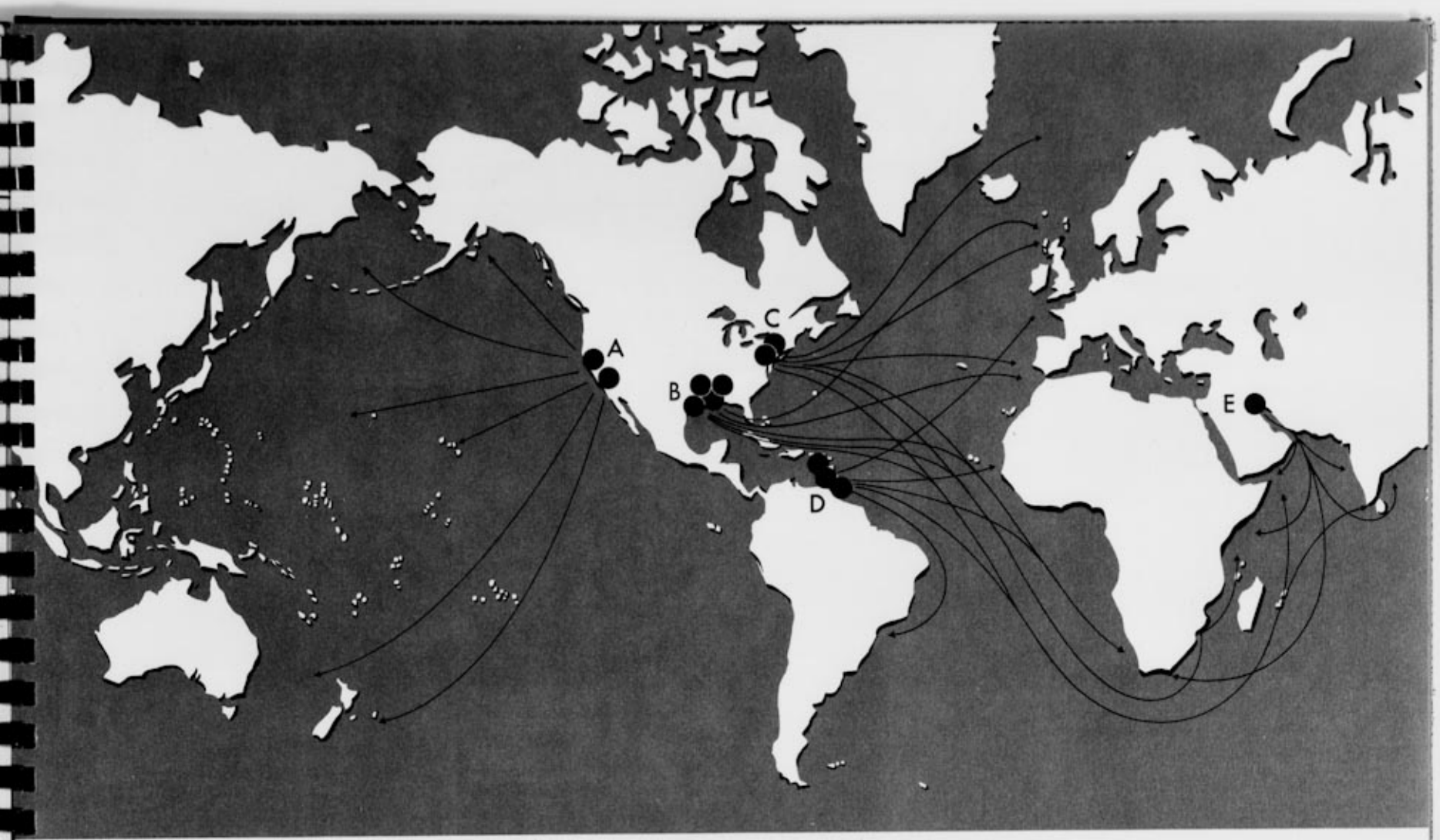
SUPPLIES . . . . Owing to the shortage of supplies there can now be no guarantee that stocks will be available at seaboard, should an emergency make it desirable to ship from any given supply point. Experience shows that a minimum of ten days should be added to voyage times, to accumulate cargo.

TANKERS . . . . It is not safe to assume that these can be secured when and where wanted. A minimum of 21 days should be taken to cover the period necessary for placing a tanker. Of these 21 days, ten — mentioned above — may be assumed to be used in procuring cargo.

EMERGENCY ROUTING . . . . Enemy action in the Caribbean, Bay of Bengal and Atlantic have caused major disruptions of normal shipping routes. It is, therefore, considered that reserves should provide for shipping by abnormal rather than normal routes.

DEGREE OF ACTIVITY . . . . Areas to and through which fuel supplies move are classified as active, potentially active, and dormant; also according to their use for vital communications and training. The scale of effort may be steady or subject to sudden fluctuations. In line with such conditions, reserves may be either readily available or of necessity geographically dispersed.

The various factors set forth above may be converted into a common formula by computing the number of months' reserves to which each area is entitled, considering degree of urgency, and apportioning available supplies on a percentage basis.



VOYAGE TIME UNDER PRESENT CONDITIONS

A *U. S. West Coast*

TO ALASKA – 12 DAYS
TO U.S.S.R. – 30 DAYS
TO HAWAII – 14 DAYS
TO INDIA – 58 DAYS
TO NEW ZEALAND – 27 DAYS
TO AUSTRALIA – 30 DAYS

B *U. S. Gulf Coast*

TO UNITED KINGDOM – 33 DAYS
TO MIDDLE EAST – 82 DAYS
TO SOUTH AFRICA – 55 DAYS
TO EAST AFRICA – 70 DAYS
TO INDIA – 82 DAYS
TO NORTH AFRICA – 35 DAYS

C *U. S. East Coast*

TO UNITED KINGDOM – 22 DAYS
TO MIDDLE EAST – 82 DAYS
TO EAST AFRICA – 66 DAYS
TO NORTH AFRICA – 35 DAYS
TO SOUTH AFRICA – 55 DAYS
TO U.S.S.R. – 40 DAYS

D *Caribbean Area*

TO UNITED KINGDOM – 33 DAYS
TO MIDDLE EAST – 74 DAYS
TO SOUTH AFRICA – 52 DAYS
TO WEST AFRICA – 35 DAYS
TO SOUTH AMERICA – 28 DAYS

E *Abadan*

TO MIDDLE EAST – 18 DAYS
TO EAST AFRICA – 16 DAYS
TO SOUTH AFRICA – 26 DAYS
TO INDIA (EAST) – 16 DAYS
TO INDIA (WEST) – 10 DAYS

HOW AUTOMOTIVE GASOLINE IS MADE . . .

Automotive gasoline is a combination of hydrocarbons which exists naturally in petroleum, mixed with other ingredients.

The purpose of conventional gasoline refining is to get as much as possible out of the crude petroleum.

One, and sometimes two processes are used to do this—thermal distillation, and thermal cracking.

Distillation can get from the crude petroleum just the amount and quality of gasoline which is already there, and no more.

Thermal cracking goes a step farther.

It breaks down the heavier components of the crude petroleum into the more volatile constituents required for automotive gasoline, and then separates these out.

Thermal cracking gets more and better gasoline from the petroleum than distillation does.

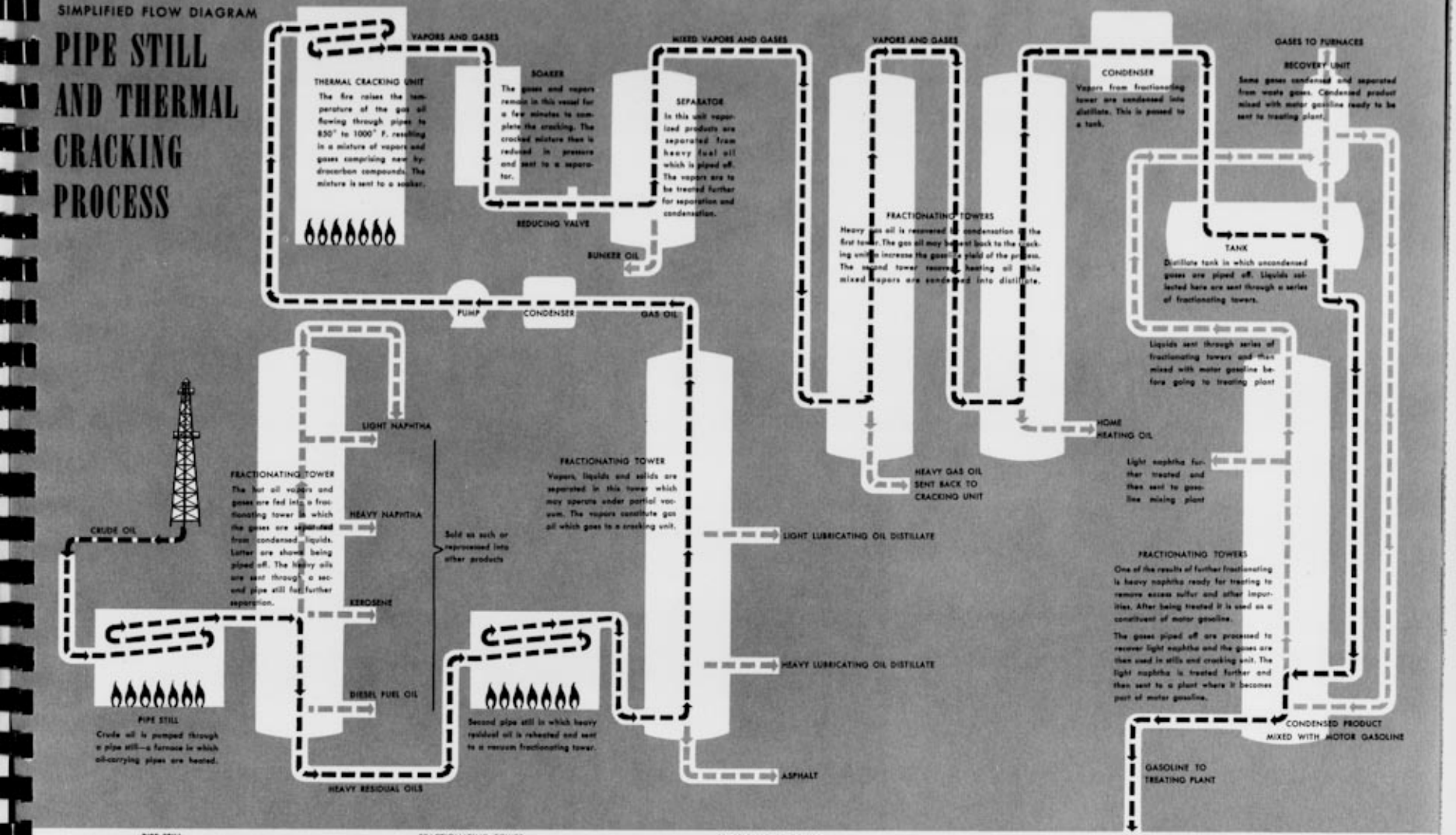
BUT . . . *Neither* process produces a fuel of more than 87-octane rating (on the automotive scale) even after maximum treatment with lead . . .

Neither process separates from the crude petroleum certain ingredients necessary as blending agents for any final step-up to combat grade aviation fuel . . .

Neither process produces gasoline qualified in purity and dependability for the operating demands of modern warplane engines.

SIMPLIFIED FLOW DIAGRAM

PIPE STILL AND THERMAL CRACKING PROCESS



PIPE STILL

FRACTIONATING TOWER

FRACTIONATING TOWER

TREATING PLANT

HOW AVIATION'S SUPER GASOLINE IS MADE

Aviation super gasoline is made by combining, in suitable proportions, synthetic or natural, highly purified components selected for their individual properties.

The requirements that are significant are anti-knock characteristics, volatility, vapor pressure, and rich mixture performance. The ideal component for the manufacture of aviation gasoline is thus a material which is:

(a) High in anti-knock characteristics, so that additional fractions having lower anti-knock characteristics may be absorbed,

(b) Low in vapor pressure, so that higher vapor pressure components from other sources may be absorbed,

(c) Of satisfactory volatility, so as to permit meeting the specification requirements when blended with other available components, and

(d) High in rich mixture performance, so as to permit production of a large volume of finished fuel per unit or component blended.

Practically speaking, it has not thus far been possible to develop in commercial production a single component possessing all of the above properties in the desired degree. Consequently, it is necessary to produce this super gasoline through appropriate blending of the different components, each of which possesses one or more of the above properties.

The components generally blended to produce aviation gasoline – each a contributor to the net result, but none equivalent to it – are the following:

1. SYNTHETIC BLENDING AGENTS

Produced by combining certain refinery or natural gases in the presence of a catalyst . . . Known, depending upon their process of manufacture, as alkylate, hydrocodimer, iso-octane, etc. . . . Used chiefly to produce high anti-knock and low vapor pressure in the finished blend.

2. LIGHT BLENDING AGENTS

Usually iso-pentane, which is present in crude oil and produced by fractionation . . . Can be neo-hexane, or di-isopropyl, produced by synthetic combination of certain gaseous hydrocarbons . . . Used chiefly to produce high anti-knock value . . . Must be limited in use in the finished blend because of their high vapor pressure and volatility.

3. AROMATIC BLENDING AGENTS

Produced by various refinery processes, and also as by-products of coal tar distillation . . . Those now in use are benzene, toluene, xylene, and cumene . . . Used chiefly for high rich mixture response, in which they are superior to any other components of the finished blend . . . Limited in use because of high boiling range.

4. BASE STOCK

The volume ingredients into which the blending agents are introduced . . . The higher the anti-knock value of the base stock, the greater the amount of finished aviation gasoline from a given amount of blending agent . . . Base stocks can be produced, in limited quantity, by conventional refining of crude oil, but these stocks are deficient both in anti-knock value and in rich mixture performance . . . Synthetic base stocks, however, produced by catalytic processes, run higher not only in anti-knock, but also in rich mixture performance because these base stocks contain appreciable quantities of aromatics.

Facilities for making aviation gasoline, therefore, must provide for produc-

tion of synthetic blending agents – production of aromatic blending agents – and production of suitable base stocks.

It is for this reason that new aviation gasoline facilities now scheduled have been designed to include catalytically cracked base stock and alkylate as components of finished fuel.

Catalytic cracking of petroleum to get high-grade synthetic engine fuels is a relatively new basic technique in gasoline refining.

There are three main processes – theHoudry, the Thermofor, and the Fluid Catalytic Process. They differ in their manner of using the catalytic agent.

They are alike in their basic purpose – which is to effect greater internal change in petroleum's natural structure – to take it apart in more detail – to put the parts together again with more precision – than has ever before been possible.

The catalytic cracking processes are complicated in method as petroleum itself is complicated. They are *economical* in result, since a fundamental concept of catalytic cracking is efficient derivation and use of petroleum main products *and* by-products.

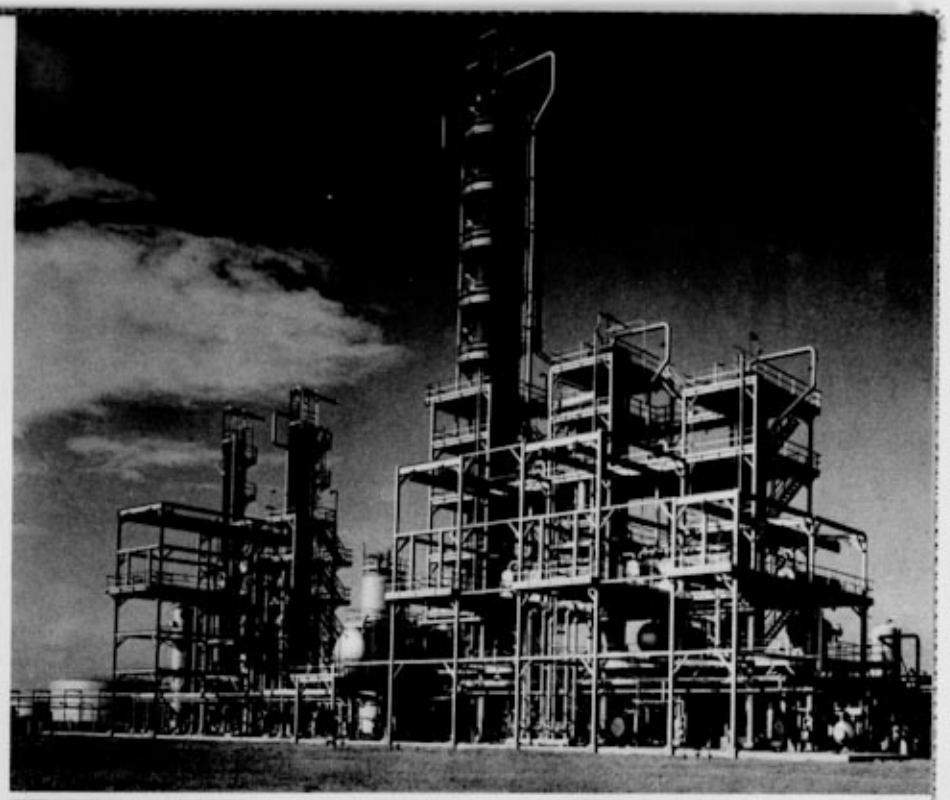
In brief, these processes make possible the doing of four things in a single continuous operation:

They make synthetically from petroleum a basically higher-grade and more powerful gasoline than earlier refining processes can produce.

They separate (from the petroleum) the base stock for aviation fuel.

They remove undesirable constituents which cannot be tolerated in modern aviation engine operation . . .

They produce, at the same time, other petroleum derivatives, raw materials for the manufacture of blending agents. These and other raw materials are also employed in the manufacture of synthetic rubber.



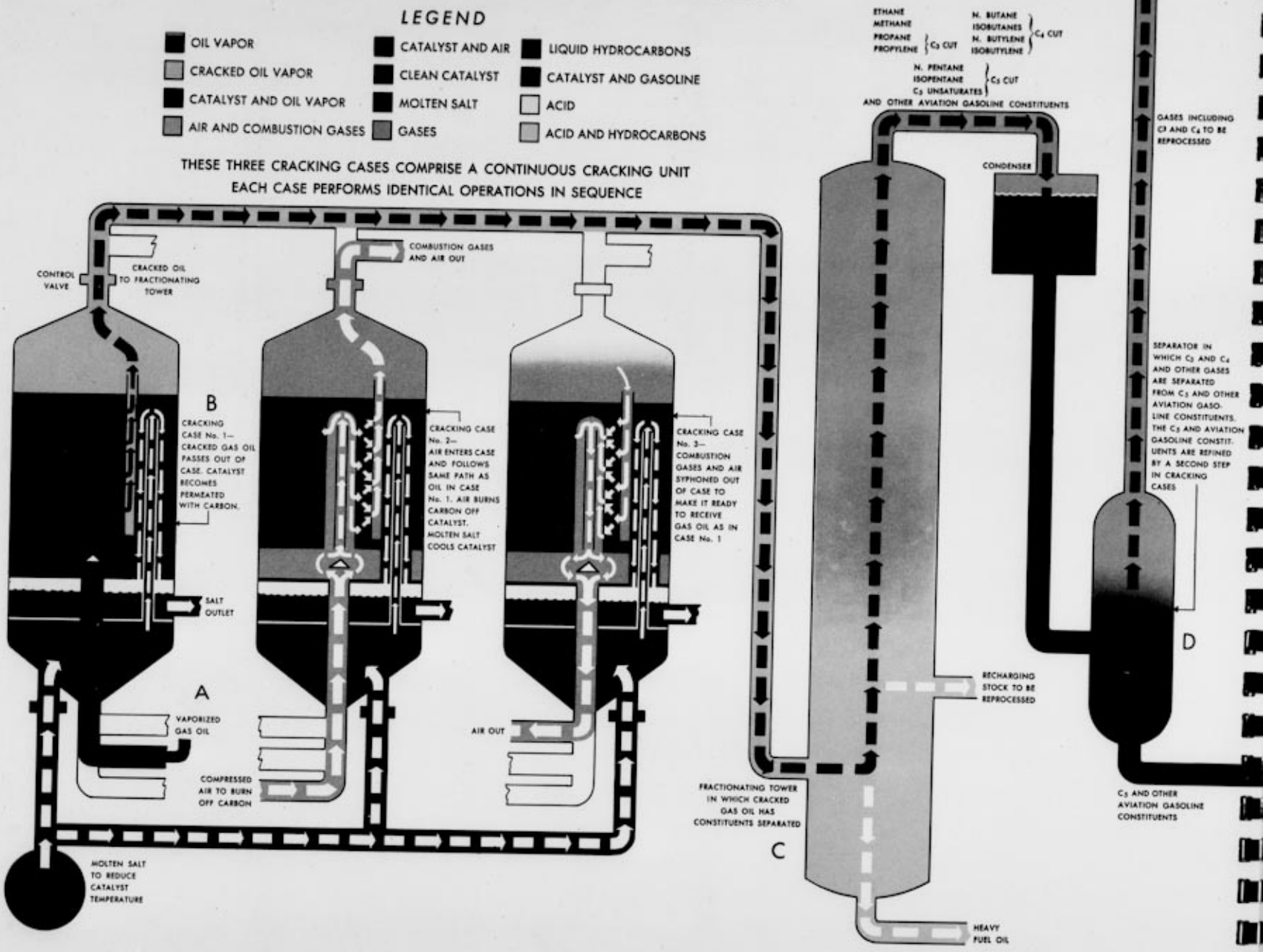
Top photo – Fluid Catalytic Cracking Plant

Lower photo – Houdry Catalytic Cracking Plant

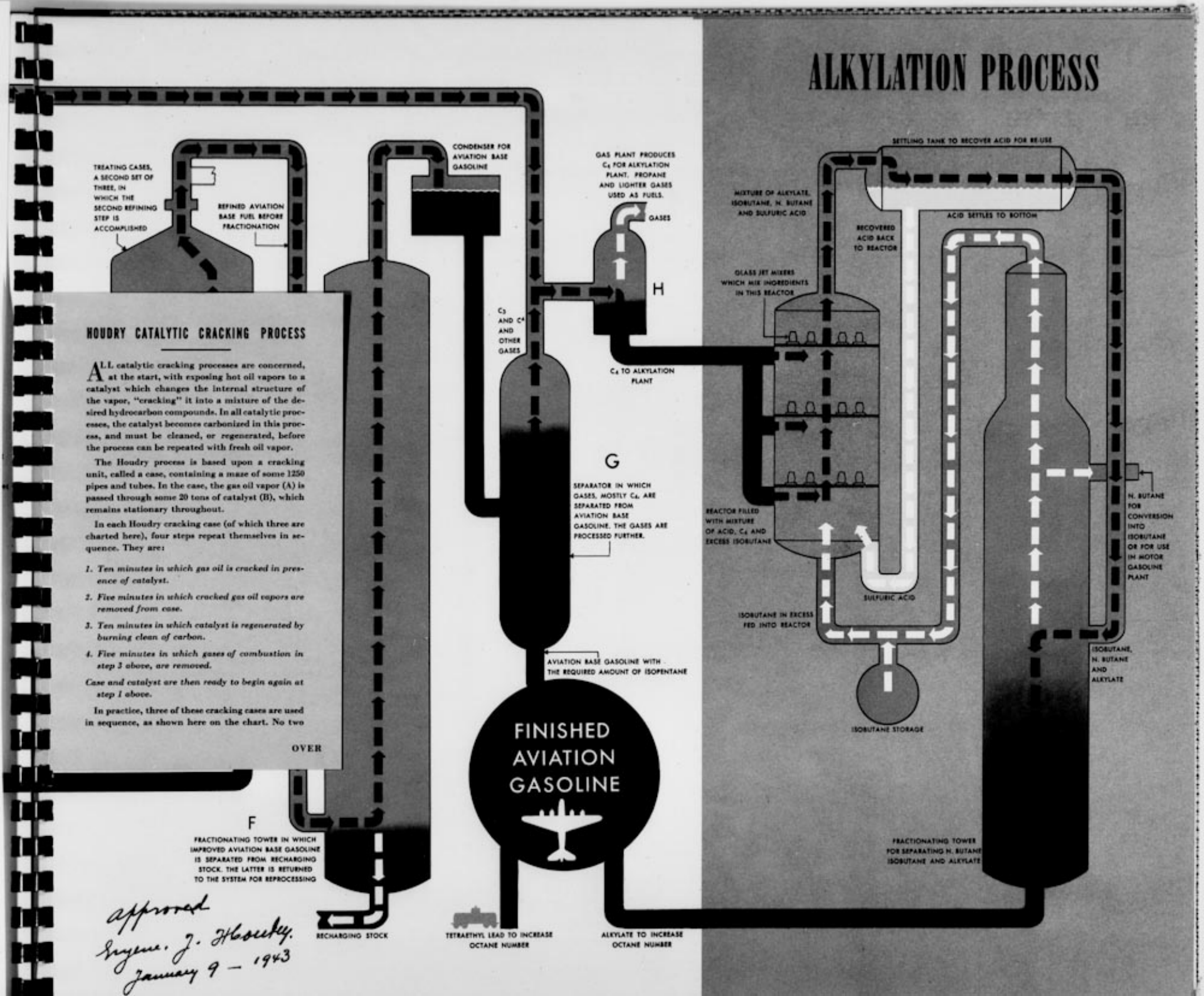
No Thermofor Catalytic plant is now in operation. However, there are several under construction or projected.

SIMPLIFIED FLOW DIAGRAM

HOUDRY CATALYTIC CRACKING PROCESS



ALKYLATION PROCESS



HOUDRY CATALYTIC CRACKING PROCESS

ALL catalytic cracking processes are concerned, at the start, with exposing hot oil vapors to a catalyst which changes the internal structure of the vapor, "cracking" it into a mixture of the desired hydrocarbon compounds. In all catalytic processes, the catalyst becomes carbonized in this process, and must be cleaned, or regenerated, before the process can be repeated with fresh oil vapor.

The Houdry process is based upon a cracking unit, called a case, containing a maze of some 1250 pipes and tubes. In the case, the gas oil vapor (A) is passed through some 20 tons of catalyst (B), which remains stationary throughout.

In each Houdry cracking case (of which three are charted here), four steps repeat themselves in sequence. They are:

1. *Ten minutes in which gas oil is cracked in presence of catalyst.*
2. *Five minutes in which cracked gas oil vapors are removed from case.*
3. *Ten minutes in which catalyst is regenerated by burning clean of carbon.*
4. *Five minutes in which gases of combustion in step 3 above, are removed.*

Case and catalyst are then ready to begin again at step 1 above.

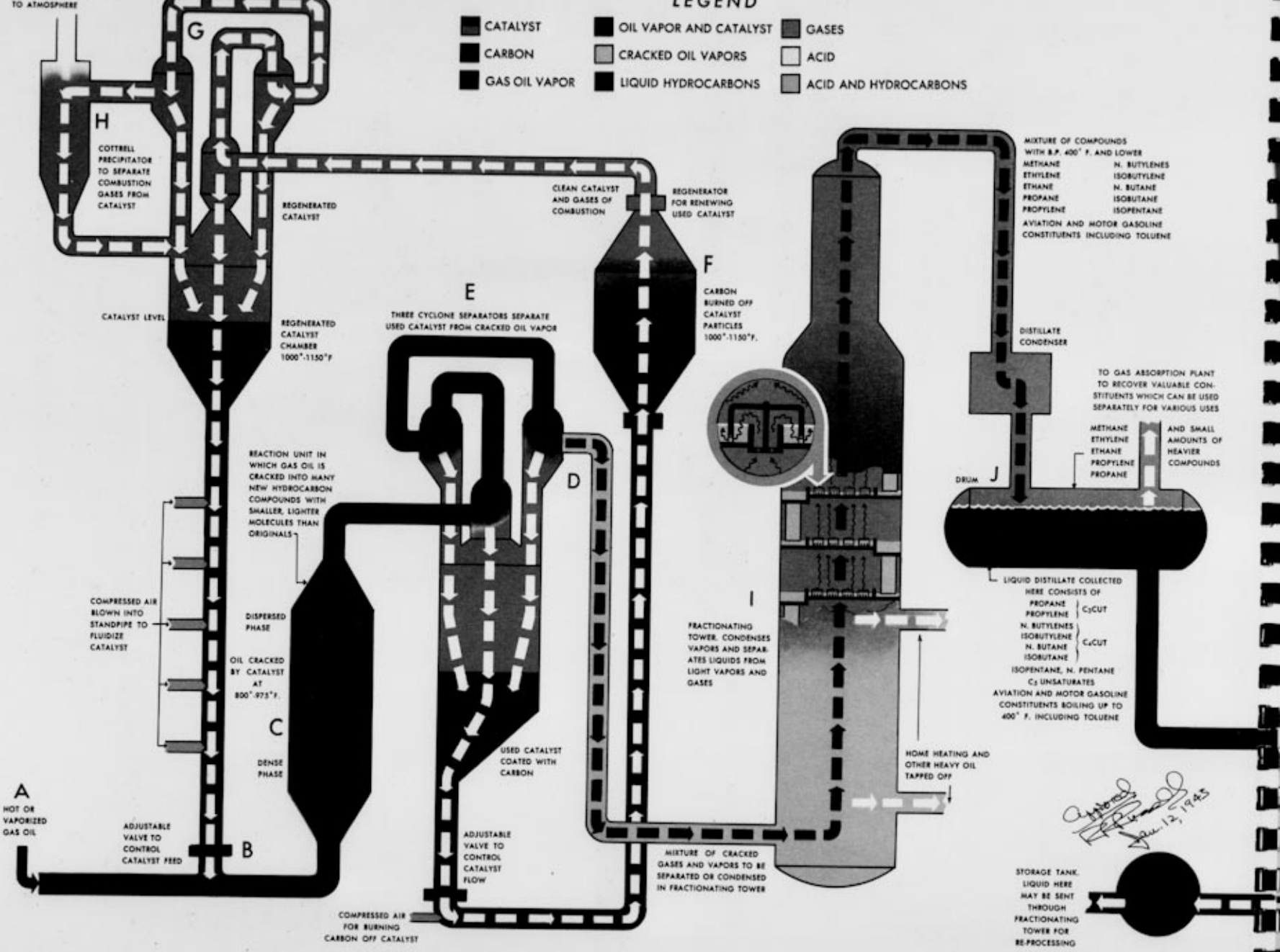
In practice, three of these cracking cases are used in sequence, as shown here on the chart. No two

OVER

approved
Eugene J. Houdry.
January 9 — 1943

SIMPLIFIED FLOW DIAGRAM

FLUID CATALYTIC CRACKING PROCESS



FLUID CATALYTIC CRACKING PROCESS

This chart represents plants now in operation at Baytown, Tex., Baton Rouge, La., and Bayway, N. J. Other plants now under construction and projected will, however, employ simplified catalytic cracking and regeneration units requiring fewer critical materials.

THE raw gas oil, in vapor form, enters the process at (A) to be joined at once by the catalyst, powdered fine as dust, entering from (B). This mixture of catalyst and gas oil vapor flows along together, into the reaction chamber (C). The process is described as fluid because the catalyst is handled as though it actually were a fluid.

In this chamber, the internal structure of the gas oil is broken down to produce gasoline synthetically. At the same time the catalyst becomes coated with carbon, rendering it useless until it has been cleaned, or regenerated.

The used catalyst accordingly leaves the mixture at (D), being recovered and cleaned through a series of steps shown as (E, F, G, H) to return to its original starting point (B).

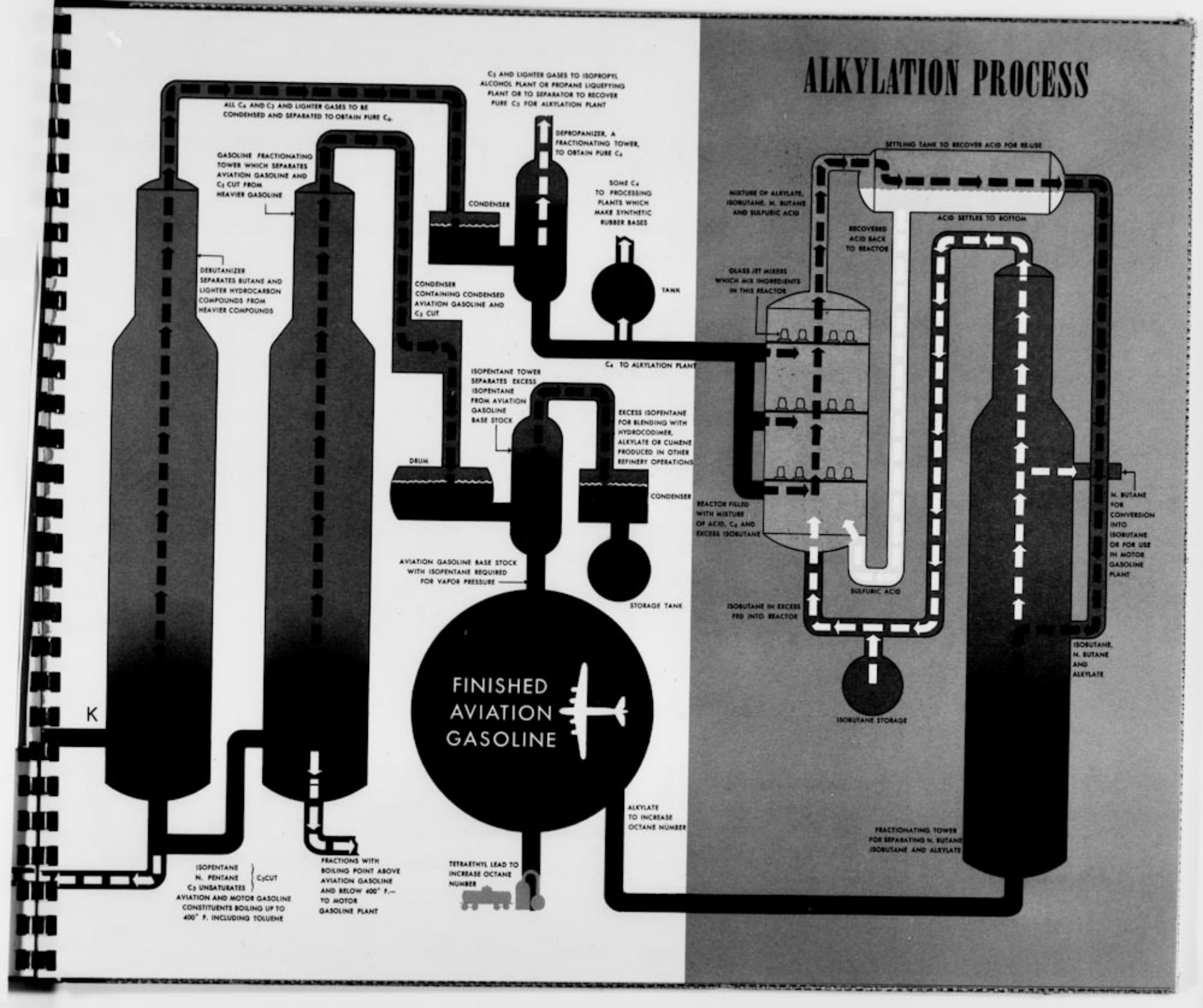
The chemically modified oil vapors, separated from the used catalyst at (D) are next passed to a fractionating tower (I), where preliminary separation of fractions, or parts, takes place.

Certain heavy products, including some fuel oils, are taken off at this stage.

The remaining vapor passes next to a distillate condenser and then to a drum (J) where all possible distillate is condensed and collected, while the gases and vapors which will *not* condense are taken

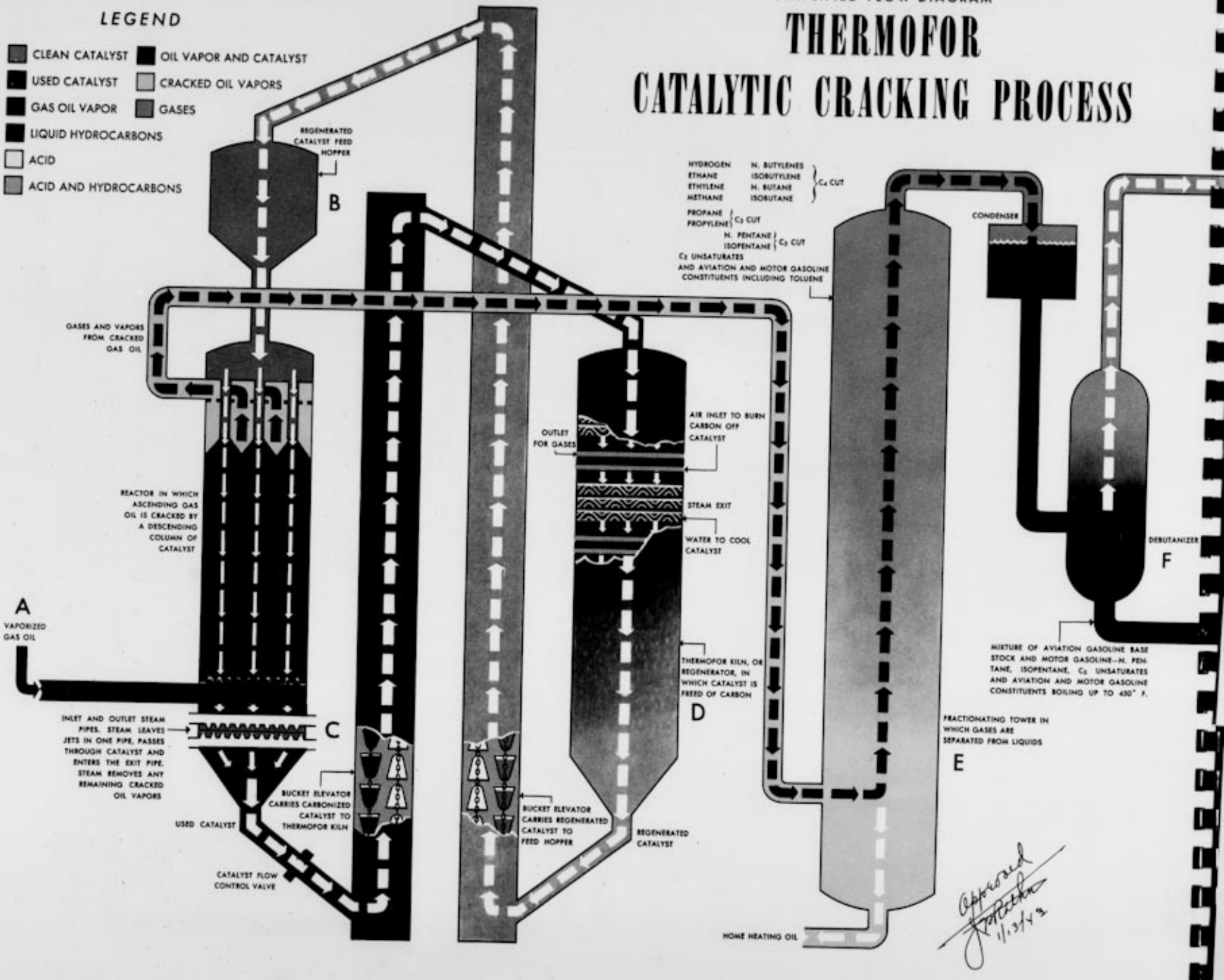
OVER

ALKYLATION PROCESS



SIMPLIFIED FLOW DIAGRAM

THERMOFOR CATALYTIC CRACKING PROCESS



THERMOFOR CATALYTIC CRACKING PROCESS

IN this process, contact between the catalyst and the oil vapor is made by passing them through each other as they move in opposite directions.

Vapor under pressure enters at (A) and moves upward, through catalyst descending by gravity from storage hopper (B). Catalyst is cleared of oil vapor by steam at (C).

Used catalyst is then carried by bucket elevator to Thermofor regenerating kiln (D), where it is cleaned of carbon by combustion and its temperature controlled by steam in enclosed pipes. By the time it reaches the bottom of this unit it is restored to its original condition and carried back to storage hopper (B) for re-use.

The cracked oil vapors leaving the original reactor, are handled again much as in the other processes.

In fact, it should be kept in mind that treatment of the cracked vapor, after the catalytic reaction is effected, is more or less interchangeable between any of the catalytic refining processes—and that any one catalytic process may do any of a great many things with the cracked vapor, depending upon which of the available end-products are wanted, and in what relative amounts.

In the arrangement charted here, the cracked vapor is fractionated in tower (E), fuel oil being taken off, and the balance passed on to the debutanizer (F). Here C_3 and C_4 fractions, and other compounds, are passed (white arrows) along

OVER

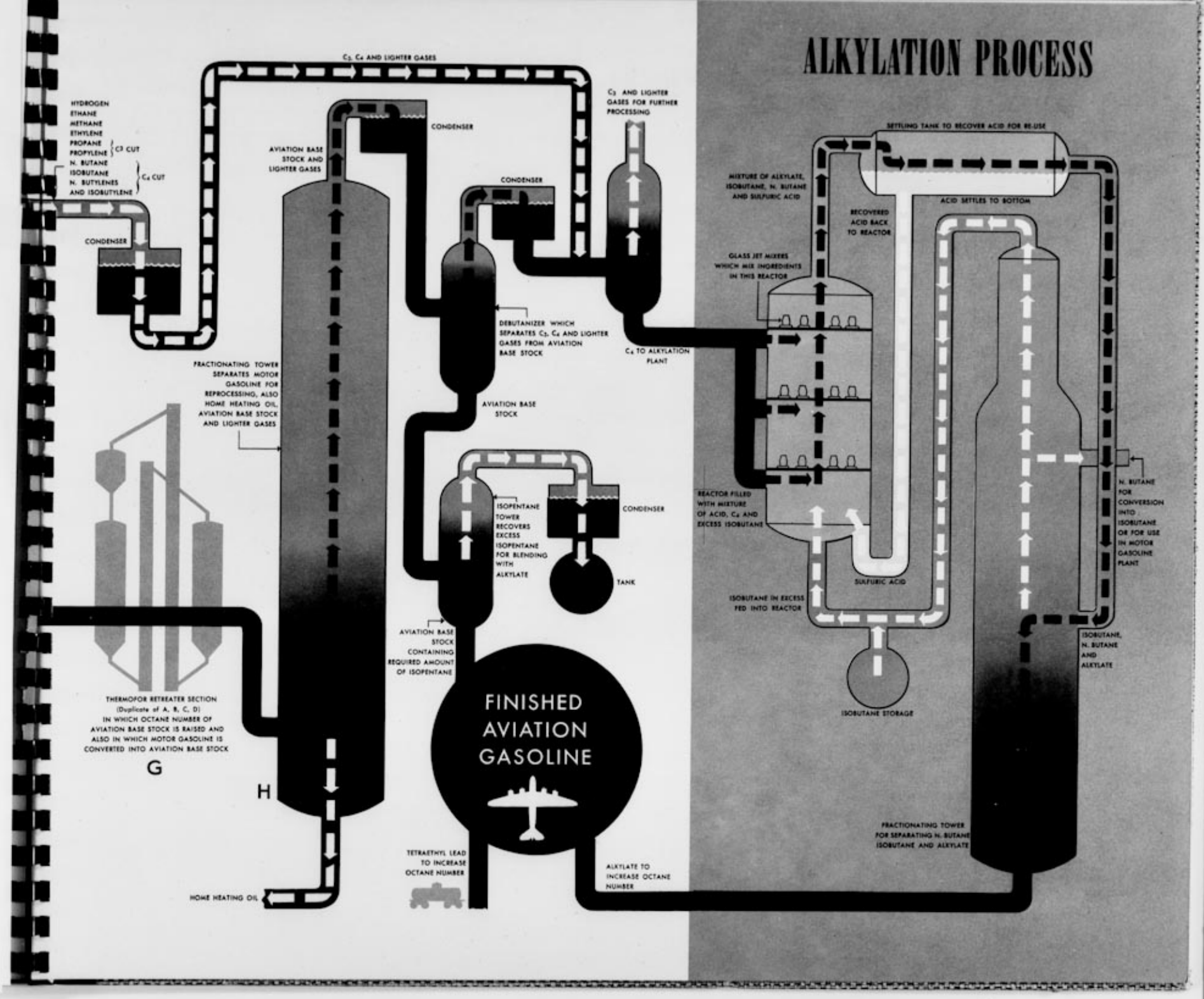
through their final processing, while a mixture of aviation gasoline base stock and motor gasoline constituents remains.

This mixture may or may not then be sent through a "retreater" section (G) which is a duplicate of the original Thermofor catalytic process, and which will raise the octane number of the aviation base stock, while converting the motor gasoline chemically into aviation base stock.

The following steps, either direct from debutanizer (F), or after retreatment at (G) then follow the familiar pattern of final refining, from fractionating tower (H) on to the final production of aviation gasoline base stock and finished materials for production of alkylates in the alkylation plant.

ALKYLATION PROCESS

In the diagram, alkylate is shown being made by treating refinery butanes and an excess of isobutane with sulfuric acid in the chamber, or reactor, illustrated. The acid is recovered and used again. The alkylate is removed and, after redistillation, is sent to an aviation gasoline blending plant.


ALKYLATION PROCESS
C3, C4 AND LIGHTER GASES
HYDROGEN
ETHANE
METHANE
ETHYLENE
PROPANE
PROPYLENE
C3 CUT
N. BUTANE
ISOBUTANE
N. BUTYLENES
AND ISOBUTYLENE
C4 CUT
CONDENSER
AVIATION BASE STOCK AND LIGHTER GASES
CONDENSER
C3 AND LIGHTER GASES FOR FURTHER PROCESSING
CONDENSER
DEBUTANIZER WHICH SEPARATES C3, C4 AND LIGHTER GASES FROM AVIATION BASE STOCK
C4 TO ALKYLATION PLANT
FRACTIONATING TOWER SEPARATES MOTOR GASOLINE FOR REPROCESSING, ALSO HOME HEATING OIL, AVIATION BASE STOCK AND LIGHTER GASES
AVIATION BASE STOCK
ISOPENTANE TOWER RECOVERS EXCESS ISOPENTANE FOR BLENDING WITH ALKYLATE
CONDENSER
TANK
AVIATION BASE STOCK CONTAINING REQUIRED AMOUNT OF ISOPENTANE
THERMOFOR RETREATER SECTION
(Duplicate of A, B, C, D)
IN WHICH OCTANE NUMBER OF AVIATION BASE STOCK IS RAISED AND ALSO IN WHICH MOTOR GASOLINE IS CONVERTED INTO AVIATION BASE STOCK
G
H
FINISHED AVIATION GASOLINE
TETRAETHYL LEAD TO INCREASE OCTANE NUMBER
ALKYLATE TO INCREASE OCTANE NUMBER
HOME HEATING OIL
SETTLING TANK TO RECOVER ACID FOR RE-USE
MIXTURE OF ALKYLATE, ISOBUTANE, N. BUTANE AND SULFURIC ACID
ACID SETTLES TO BOTTOM
RECOVERED ACID BACK TO REACTOR
GLASS JET MIXERS WHICH MIX INGREDIENTS IN THIS REACTOR
REACTOR FILLED WITH MIXTURE OF ACID, C4 AND EXCESS ISOBUTANE
N. BUTANE FOR CONVERSION INTO ISOBUTANE OR FOR USE IN MOTOR GASOLINE PLANT
SULFURIC ACID
ISOBUTANE IN EXCESS FED INTO REACTOR
ISOBUTANE, N. BUTANE AND ALKYLATE
ISOBUTANE STORAGE
FRACTIONATING TOWER FOR SEPARATING N. BUTANE ISOBUTANE AND ALKYLATE

PRODUCTION CAPACITY (GRADE 130) OF

COMPANY	LOCATION	PROCESS	BARRELS PER DAY
EAST COAST			
Atlantic	Philadelphia, Pa.	Fluid Catalytic Cracking & Alkylation	6,248
Socony-Vacuum	Paulsboro, N. J.	Houdry Catalytic Cracking	6,660
Standard-New Jersey	Baltimore, Md.	Fluid Catalytic Cracking & Alkylation	2,200
Standard-New Jersey	Bayway, N. J.	Fluid Catalytic Cracking	6,530
Sun	Marcus Hook, Pa.	Houdry Catalytic Cracking & Alkylation	17,446
WEST COAST			
General Pet.	Torrence, California	Thermofor Catalytic Cracking & Alkylation	2,780
Mohawk	Bakersfield, Calif.	Alkylation	1,090
Richfield	Watson, Calif.	Alkylation	4,950
Shell	Martinez, Calif.	Alkylation	1,864
Shell	Wilmington, Calif.	Fluid Catalytic Cracking & Alkylation	13,846
Standard Oil-Cal.	El Segundo, Calif.	Houdry Catalytic Cracking & Alkylation	13,311
Standard Oil-Cal.	Richmond, Calif.	Alkylation	5,238
Texas	Wilmington, Calif.	Alkylation	8,500
Tide Water	Avon, Calif.	Alkylation	9,845
Union	Wilmington, Calif.	Alkylation	7,219
Wilshire	Los Angeles, Calif.	Fluid Catalytic Cracking & Alkylation	2,338
GULF COAST AND ARUBA, N. W. I.			
Abercrombie and Harrison	Sweeney, Texas	Fluid Catalytic Cracking & Alkylation	7,355
Atlantic	Atreco, Texas	Fluid Catalytic Cracking & Alkylation	3,054
Cities Service	Lake Charles, La.	Fluid Catalytic Cracking & Alkylation	16,600
Continental	Lake Charles, La.	Alkylation	*(Included in Sun Production)*
Crown Central	Houston, Texas	Thermofor Catalytic Cracking & Alkylation	3,880
Eastern States	Houston, Texas	Fluid Catalytic Cracking & Alkylation	2,481
Great Southern	Corpus Christi, Texas	Alkylation	2,700
Gulf	Port Arthur, Texas	Houdry and Thermofor Catalytic Cracking & Alkylation	11,264
Humble	Baytown, Texas	Fluid Catalytic Cracking & Alkylation	18,051
Lago Oil	Aruba, N.W.I.	Fluid Catalytic Cracking & Alkylation	10,933
Magnolia	Beaumont, Texas	Houdry and Thermofor Catalytic Cracking & Alkylation	13,169
Pan American	Texas City, Texas	Fluid Catalytic Cracking & Alkylation	7,370
Premier	Cotton Valley, La.	Alkylation	3,030
Pure	Nederland, Texas	Thermofor Catalytic Cracking & Alkylation	3,500
Republic	Texas City, Texas	Fluid Catalytic Cracking & Alkylation	2,635
Shell	Houston, Tex., incl. Norco, La.	Alkylation	12,531
Sinclair	Houston, Texas	Houdry Catalytic Cracking & Alkylation	3,400
Southport	Texas City, Texas	Houdry Catalytic Cracking & Alkylation	2,817

PLANTS NOW INCLUDED IN THE PROGRAM

COMPANY	LOCATION	PROCESS	BARRELS PER DAY
Standard Oil-Louisiana	Baton Rouge, La.	Fluid Catalytic Cracking & Alkylation	25,436
Terminal	Corpus Christi, Texas	Houdry Catalytic Cracking & Alkylation	2,824
Texas	Port Arthur, Texas	Fluid Catalytic Cracking & Alkylation	19,618
INLAND			
Ashland	Ashland, Kentucky	Thermofor Catalytic Cracking & Alkylation	3,075
Associated	Duncan, Oklahoma	Fluid Catalytic Cracking & Alkylation	4,135
Champlin	Enid, Oklahoma	Alkylation	3,796
Cities Service	East Chicago, Ind.	Alkylation	*(Included in Socony-Vacuum, Trenton, Production)*
Continental	Ponca City, Okla. & Wichita Falls, Tex.	Thermofor Catalytic Cracking & Alkylation	4,520
Frontier	Cheyenne, Wyoming	Fluid Catalytic Cracking & Alkylation	949
National	Coffeyville, Kansas	Fluid Catalytic Cracking & Alkylation	1,153
Pennzoil	Oil City, Pennsylvania	Fluid Catalytic Cracking & Alkylation	2,002
Phillips	Borger, Texas	Alkylation	10,125
Phillips	Lep & Oklahoma City, Okla.	Alkylation	1,710
Phillips	Kansas City, Kansas	Alkylation	*(Included in West Coast Production)*
Root	El Dorado, Arkansas	Fluid Catalytic Cracking & Alkylation	2,075
Shell	Wood River, Illinois	Alkylation	14,500
Sinclair	Parco, Wyoming	Fluid Catalytic Cracking & Alkylation	3,215
Sinclair	East Chicago, Ind.	Alkylation	*(Included in East Coast Production)*
Socony-Vacuum	E. St. Louis, Ill. & Augusta, Kan.	Houdry and Thermofor Catalytic Cracking & Alkylation	5,332
Standard Oil-Indiana	Whiting, Ind. & Wood River, Ill.	Fluid Catalytic Cracking & Alkylation	12,553
Socony-Vacuum	Trenton, Michigan	Houdry Catalytic Cracking	2,203
Standard Oil-Ohio	Toledo & Cleveland, Ohio	Houdry Catalytic Cracking & Alkylation	3,047
Texas Company	Lockport, Illinois	Alkylation	*(Included in Sun Production)*
Utah	Salt Lake City, Utah	Fluid Catalytic Cracking & Alkylation	5,077
CANADA			
Imperial Oil Co. Ltd.	Calgary	Alkylation	1,500
Shell	Montreal	Alkylation	3,600

U.S.A., Canada and Aruba	367,280
Plus Foreign Plants	54,040
	421,320

(Change to Grade 140 specification will reduce productive capacity approximately 25%).

STATUS OF PRODUCTION PROGRAM

	IN TERMS OF GRADE 130 (PRESENT FUEL)	IN TERMS OF GRADE 140 (DESIRED FUEL)
Total Ultimate Requirement	539,829	539,829
Foreign Plants Constructed or Contracted for	54,040	40,530
U. S., Canada and Aruba Plants Constructed or Contracted for	367,280	275,460
Total Production Constructed or Contracted for	421,320	315,990
Balance to be Contracted for to Meet Ultimate Requirement	118,509	223,839

BARRELS PER DAY

SUMMARY

1. Execution of the 8L aircraft production program, and full scheduled use of the combat planes it provides, calls for a total United Nations' capacity for producing combat grade aviation gasoline in the amount of . . . . .

539,829
BARRELS PER DAY

2. In terms of Grade 130 specification, the present standard, plants now built and building will provide a rated capacity of about . . . . .

421,320
BARRELS PER DAY

leaving a deficit of . . . . .

118,509
BARRELS PER DAY

3. The completion of the additional plant expansion program already authorized by the War Production Board will add another . . . . .

84,740
BARRELS PER DAY

leaving a deficit of . . . . .

33,769
BARRELS PER DAY

4. It is the intention of the Petroleum Administration to seek authority from the War Production Board for this additional plant capacity, thus bringing total capacity, *in terms of Grade 130,* to the required . . . . .

539,829
BARRELS PER DAY

5. However, the Aeronautical Board has requested that the *quality* of aviation gasoline be raised from Grade 130 to Grade 140, after meeting the *quantity* goal. Unless new technological discoveries are made before that time, the production of all plants will be cut, in stepping from Grade 130 to Grade 140, by about 25 per cent. This means that still further plant capacity must be planned and authorized in the amount of . . . . .

134,957
BARRELS PER DAY

6. Thus, the *total* additional productive capacity required for Grade 140 is . . . . .

223,839
BARRELS PER DAY

ENEMY AVIATION FUEL

Samples taken from captured Nazi fighters reveal that the enemy is already using combat fuel which exceeds the rich mixture performance of Grade 140, but is inferior in all-round balanced characteristics. In other words, United Nations' pilots are now fighting units of the Luftwaffe which are powered by fuel superior to our present combat fuel (Grade 130) and nearly as good as the grade we are striving to produce in the required quantity.

It is, therefore, imperative that the change to Grade 140 fuel at United Nations' refineries be made as soon as possible — and that authorization be implemented and materials allocated to assure the construction of additional plants to produce enough of this fuel to put our men and our planes at least on even terms with the enemy in the air.