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HEARINGS

BEFORE THE

ADMI COMMITTEE TO INVESTIGATE THE
AC RATION OF THE INTERNAL SECURITY
OTHER INTERNAL SECURITY LAWS
OF THE
MITTEE ON THE JUDICIARY
UNITED STATES SENATE

Barcode with number: 011600 679105

EIGHTY-SEVENTH CONGRESS
SECOND SESSION

PART 3

PROBLEMS RAISED BY SOVIET OIL DEVELOPMENT
TESTIMONY OF GEORGE T. PIERCY

OCTOBER 26, 1962

Printed for the use of the Committee on the Judiciary



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CONTENTS

MAPS

	Page
Map 1. Ratings of prospective basins in the U.S.S.R. (oil and gas) --	Facing 387
Map 2. Major oil and gas producing areas of the U.S.S.R.-----	Facing 389
Map 3. Refineries and refining capacity in the U.S.S.R.-----	Facing 394
Map 4. Comecon and new major crude oil export lines, European area-----	Facing 394
Map 5. Major crude oil and petroleum product pipelines of the U.S.S.R.--	Facing 394

FIGURES

No. 1. Crude oil production and goals in the first 3 years of the 7-year plan, 1959-61-----	390
No. 2. Shortfalls in the production of natural gas in the first 3 years of the 7-year plan, 1959-61-----	392
No. 3. Supply sources for Soviet bloc tanker tonnage-----	396
No. 4a. Exports to Soviet bloc as percent of total export trade-----	402
No. 4. Exports to Soviet bloc-----	403

CONTENTS

Introduction 1

Chapter I 10

Chapter II 25

Chapter III 45

Chapter IV 65

Chapter V 85

Chapter VI 105

Chapter VII 125

Chapter VIII 145

Chapter IX 165

Chapter X 185

Chapter XI 205

Chapter XII 225

Chapter XIII 245

Chapter XIV 265

Chapter XV 285

Chapter XVI 305

Chapter XVII 325

Chapter XVIII 345

Chapter XIX 365

Chapter XX 385

Chapter XXI 405

Chapter XXII 425

Chapter XXIII 445

Chapter XXIV 465

Chapter XXV 485

Chapter XXVI 505

Chapter XXVII 525

Chapter XXVIII 545

Chapter XXIX 565

Chapter XXX 585

EXPORT OF STRATEGIC MATERIALS TO THE U.S.S.R. AND OTHER SOVIET BLOC COUNTRIES

FRIDAY, OCTOBER 26, 1962

U. S. SENATE,
SUBCOMMITTEE TO INVESTIGATE THE ADMINISTRATION
OF THE INTERNAL SECURITY ACT AND OTHER INTERNAL
SECURITY LAWS, OF THE COMMITTEE ON THE JUDICIARY,
New York, N.Y.

The subcommittee met, pursuant to call, at 10:45 a.m., in room 129, U.S. Courthouse, Foley Square, New York, N.Y., Senator Kenneth B. Keating presiding.

Also present: Samuel J. Scott, assistant counsel; William F. McManus, and Patricia Connell, assistants to chief counsel.

Senator KEATING. The subcommittee will come to order.

These hearings are a continuation of the Senate Internal Security Subcommittee's inquiry into trade between the free world and the Communist bloc.

Our investigations to date have established that, over a period of many years, the free world has been making a direct contribution to the Communist military and industrial strength by sales of vital materials and technology to the Soviet bloc. Unless the United States and our allies are willing to institute more realistic curbs on bloc procurement, this buildup will continue, despite the critical confrontation of East and West now taking place in many areas of the world, such as Cuba, Berlin, and Vietnam.

Due to an inquiry from one member of the press, I want to say that these hearings were scheduled approximately 2 months ago.

The Soviet bloc has relied heavily on procurement from the West in the period of its growth as a world power. The Soviets have obtained pipeline equipment from Italy and other countries, which has enabled them to greatly expand the flow of Communist oil into Western markets.

The Red Chinese have received Viscount jet prop airplanes with strategically classified navigation equipment which could be used to transport troops to Laos, Vietnam, and other Asian battlefronts.

Chemicals, plastics, electronic equipment, and machine tools have flowed from the West to many Communist bloc countries at an inexplicable rate.

The bloc countries have been able, partly as a result of this procurement, to export their own machinery and technology to other countries always with tight political strings attached. And yet, according to Commerce Department figures, in 1961 we shipped \$1,468,000 worth of steel sheet and strip to the bloc. We also exported \$1,550,000 worth of aluminum ores and \$1,072,000 in industrial machinery.

Despite the fact that all such trade is supposedly restricted by our Export Control Act, the Battle Act, the regulations issued pursuant to the Trading With the Enemy Act, and CoCom controls. CoCom is the agency, headquartered in Paris and made up of 14 NATO countries, which deals with this problem of strategic trade with the Communist bloc.

It seems amazing that these materials, having such an obvious industrial and strategic potential, continue to be shipped to the bloc. We have failed completely to mobilize anything resembling a free world global economic offensive against communism.

The President, prior to the institution of the quarantine on shipments of offensive weapons to Cuba, had announced that new shipping regulations would be issued to curb delivery to Cuba of many other items of importance to the Cuban economy.

The quarantine proclamation indicates that, under a narrow definition of offensive weapons, practically the only items affected by the quarantine will be surface-to-surface missiles, bomber aircraft, and related equipment, items which can clearly be identified as offensive equipment.

Even MIG fighters, torpedo boats, tanks and amphibious vehicles apparently are excepted from the blockade and will be allowed to go through.

Under these circumstances, the proposed shipping regulations announced prior to the quarantine, which would close U.S. ports to ships delivering other vital cargoes to Cuba are as important as ever, perhaps more important.

The commendable steps the President has taken to protect us from the immediate threat posed by Soviet missiles in Cuba should not deter other measures which are still urgently required to isolate Cuba and encourage its ultimate collapse. It is ridiculous to permit a continuation of the existing practice of having one ship carry goods to Cuba on a westward journey and U.S. foreign aid material on the homeward trip.

All shipping—not just the shipment of offensive weapons—contributes to Castro's strength and his hold on the Cuban people.

We must not neglect our long-term strategy for bringing Castro down and weakening communism throughout the world in dealing with the immediate threat to the United States.

I am confident that these hearings will provide valuable information as to the methods and extent of bloc procurement from the free world and what we should and can do about it.

The testimony of Mr. Snyder, Mr. Drago and Dr. Strausz-Hupé will be illuminating in this area.

The other side of Communist economic tactics, politically and strategically motivated Soviet exports, will also be examined. Probably the most critical of these exports is oil.

A study recently made public by the National Petroleum Council points out with graphic clarity the extent of the Soviet oil potential, the rapid growth of this industry in the Soviet Union, the part which has been played by our allies in this expansion, and the startling success the Communists have had in using their oil as a political weapon.

The dangers in this situation must be exposed so that effective action can be taken to deal with the Communist oil war. We are fortu-

nate in having with us today Mr. George T. Piercy, who is chairman of the working subcommittee of the National Petroleum Council which prepared the study on Soviet oil.

I am confident that his testimony will shed light on this complex problem, and point out areas where specific action is needed.

Our first witness is Mr. Piercy.

Mr. SCOTT. Mr. Piercy.

Senator KEATING. Mr. Piercy, would you come forward, please?

Mr. Einar B. Paust, assistant general counsel of the Standard Oil Co. of New Jersey, may accompany Mr. Piercy if he would like to do so.

Be seated, Mr. Piercy. We do not have the practice of swearing witnesses in this particular field, and we appreciate your being here to give us the benefit of your views with regard to the very excellent work done by this National Petroleum Council.

Mr. PIERCY. Thank you, Mr. Chairman.

Senator KEATING. You may proceed in your own way.

Mr. PIERCY. Thank you, Senator.

Mr. SCOTT. Mr. Piercy, will you state your full name for the record?

TESTIMONY OF GEORGE T. PIERCY

Mr. PIERCY. My name is George T. Piercy.

Mr. SCOTT. And your employment or profession?

Mr. PIERCY. I am employed by Standard Oil Co., New Jersey, as executive assistant to the president, who is the chief executive officer.

Mr. SCOTT. You are here under a subpoena?

Mr. PIERCY. Yes.

Mr. SCOTT. Mr. Chairman, I would like to submit at this time the proper return of the subpoena for the record.

Senator KEATING. That will be made a part of the record.

(The subpoena was marked "Exhibit No. 21" and reads as follows:)

(EXHIBIT No. 21)

UNITED STATES OF AMERICA

CONGRESS OF THE UNITED STATES

To George T. Piercy, Room 2925, RCA Building, New York 30, N.Y., Greeting:
Pursuant to lawful authority, you are hereby commanded to appear before the Subcommittee on Internal Security of the Committee on the Judiciary of the Senate of the United States, on Friday, October 26, 1962, at 10:30 o'clock a.m., at their committee room, 129 Federal Court House, Foley Square, New York, N.Y., then and there to testify what you may know relative to the subject matters under consideration by said committee, pursuant to S. Res. 366, approved by the 81st Congress, 2d session, as amended and extended, and S. Res. 264, agreed to February 7, 1962.

Thereof fail not, as you will answer your default under the pains and penalties in such cases made and provided.

To Samuel J. Scott to serve and return.

Given under my hand, by order of the committee, this 24th day of October, in the year of our Lord one thousand nine hundred and sixty-two.

JAMES O. EASTLAND, U.S.S.,
*Chairman, Committee on the Judiciary
and the Subcommittee on Internal Security.*

OCT. 25, 1962.

I made service of the within subpoena by hand upon the within-named George T. Piercy, at New York, N.Y., at 3:30 o'clock p.m., on the 25th day of October 1962.

SAMUEL J. SCOTT.

Senator KEATING. Am I correct, counsel, that, in these proceedings we have not made a practice of swearing the witness?

Mr. SCOTT. Yes, sir.

Mr. PIERCY. My testimony today—

Mr. SCOTT. Before you get into your testimony there is one other thing I would like to have for the record, a biographic résumé. Do you have a copy of that? Is this the copy you furnished me?

Mr. PIERCY. I have furnished you that copy.

Mr. SCOTT. Mr. Chairman, I have a copy here of the biographic résumé of Mr. Piercy, reflecting his education, experience, training, and activities in the field of oil.

Senator KEATING. That will be received for the record.

(The biographic résumé referred to was marked "Exhibit No. 22" and reads as follows:)

(EXHIBIT No. 22)

GEORGE T. PIERCY

Birth:

Date: November 29, 1915

Place: Eau Claire, Wis.

Education:

Eau Claire State College, 1932-34

University of Minnesota, 1934-38

Degree, bachelor chemical engineering.

Extension courses, Louisiana State University, geology and engineering, 1939-41

Business experience (all with Standard Oil Co. (New Jersey) and its affiliates):

Baton Rouge refinery, 1938-51

Esso Standard Oil Co., New York, 1951-58

Manager, refining coordination

Manager, petroleum supply department

Standard Oil Co. (New Jersey), 1958 to present

Assistant manager and manager, coordination and petroleum economics department, 1958-61

Executive assistant to the president, 1961 to present

Plantation Pipe Line Co., director, 1956-58

Esso Tankers, Inc., director, 1960-61

Governmental experience:

Consultant on oil and energy to Office of Civilian Defense, 1960-61

Member of American petroleum delegation to the U.S.S.R., 1960

Senator KEATING. All right, Mr. Piercy.

Mr. PIERCY. As you mentioned, Senator, my testimony today is to be based on the findings of the National Petroleum Council's Committee on the Impact of Oil Exports from the Soviet Bloc.

In the preparation of this work I served as chairman of the working subcommittee. The committee study was in considerable depth and detail.

Volume 1 of this report, containing the comments and the conclusions, and also a very brief summary of volume 2, have been issued and copies are available and I have made them available to this committee.

Volume 2, containing the voluminous amount of data that was collected by the committee, is now in the printer's hands and will be issued in about 3 weeks. I believe that this committee would find volume 2 of considerable value in their study of the critical issue of trade with the bloc.

I have promised Mr. Scott that volume 2 would be sent to him just as soon as it is released.*

My testimony today will, of necessity, be one of summary because of the vast amount of data that we have in these volumes.

Senator KEATING. We would appreciate that, because we are anxious to hear you fully but we do have three other witnesses and we want to expedite these hearings as much as possible. Any part of your statement which you feel you can omit for full presentation will be made a part of the record in its entirety in any event.

Mr. PIERCY. All right.

I think, though, I should give you a little background of the scope of the study.

We studied the petroleum industry of the bloc in depth. We started with the quality and the size of its prospective producing area, and then we led into the exploratory program, the bloc's development program, its production methods, its refining, its transportation, its consumption, and ultimately its trade.

The amount of information on European satellites and Red China was limited as compared to that of the U.S.S.R. However, we did not feel that this presented any particular limitation to the study because the U.S.S.R. is now producing 90 percent of all of the petroleum produced in the Sino-Soviet bloc.

So, now and in the foreseeable future, the bloc's petroleum offensive is going to depend on the performance and the direction of the U.S.S.R.

However, petroleum is only one form of energy, so the committee also turned its attention to the other forms of energy to be certain that our forecasts of energy production were sufficient to provide for the internal needs of the bloc as well as the exports with which we are concerned here.

Here again it was possible for us to study the U.S.S.R. in considerably more depth than the other satellites.

The studies of petroleum and energy within the bloc were, of course, only preliminaries to an evaluation of the bloc's oil exports to the free world. We studied the past petroleum exports to the free world, how this had been absorbed in the free world, its effect on the producing and importing countries and its contributions as a foreign exchange earner of the bloc.

But here again, since petroleum was only one of the exports, and only one component of the bloc foreign trade, we didn't think it could be properly evaluated in isolation so this led to a study in some depth of the entire bloc trade and its motivations and its effects.

Now, throughout this presentation I intend to use the word "plan" to denote an official plan of the U.S.S.R. or some other bloc nation and to use the word "estimate" as one made by the National Petroleum Council's Committee on the Impact of Oil Exports from the Soviet Bloc.

For the sake of brevity here, I am not going to discuss anything on the bloc energy or the satellite petroleum industry. I am going to confine my remarks to the U.S.S.R. petroleum industry.

*A copy of pt. 2 of the study above referred to was received from Mr. Piercy by Mr. Scott and has been placed in the subcommittee's reference file.

Senator KEATING. Before you proceed, I am correct, am I not, that the Petroleum Council was made up not only of people from the industry but also people from government?

Mr. PIERCY. Well, the National Petroleum Council was formed at the request of the Secretary of the Interior. It is composed entirely of industry people but there are governmental cochairmen of all its committees.

Senator KEATING. From the Department of Commerce or Interior?

Mr. PIERCY. From the Department of Interior.

Senator KEATING. Interior?

Mr. PIERCY. Yes.

Senator KEATING. Thank you.

Mr. PIERCY. With your permission, I would like to stand here to make the rest of my presentation because I have some visual aids.

Senator KEATING. Yes. We would be very glad to have you do so. Any way you would like to do it.

All of this 38-page presentation will be made a part of the record.

Mr. PIERCY. Yes.

Senator KEATING. But if you could summarize it as much as possible we would appreciate it.

Mr. PIERCY. I will try to do so and if you want to tell me how much more time I have I will be glad to bring it within my time.

Senator KEATING. I don't want to inhibit you because we are very appreciative of your help to the committee, but we would like to conclude our hearings this morning, late this morning, if possible.

Mr. PIERCY. All right. Thank you. I will do my best.

I would like to start off here and to discuss the area in the Soviet Union that we would consider as prospective for oil.

In order to determine this, of course, we studied the geology of the nation. On this and on the first slide the brown, yellow, and green represent what we might consider as the favorable area, the favorable sedimentary area for petroleum in the U.S.S.R.

The favorable areas are in the Ural-Volga Basin which is now the major producing area, in the old Baku region, in the central Asian plain, and in the region north of the Caspian. The gray and the blue areas we do not consider highly prospective. The gray is unknown. The blue we would say is probably of no prospectiveness at all, but there is some disagreement on that.

Now on the next slide we have added up the square miles covered by each of these areas. For the total favorable area we come up with 2.84 million square miles and with 3.98 million square miles as the total prospective area. It so happens this number checks within 9 percent of what the U.S.S.R. has officially released. We feel that this 2.84 million square miles can be compared to 2.12 million square miles of favorable area in the United States, including Alaska and the Continental Shelf up to a depth of 600 feet.

So you can see that the magnitude of the total sedimentary area in the U.S.S.R. and the magnitude of the area considered favorable for oil and gas, is indeed impressive.

In considering the size of these areas, our committee concluded that the chances of finding considerable volumes of oil and gas in the U.S.S.R. are great. Relating the magnitude of the favorable area in the U.S.S.R. to that in the United States and considering the present

productability level in the United States of between 10 to 11 million barrels per day, the committee concluded that petroleum production levels in the U.S.S.R. would not be limited by geological factors for many years.

Of course, the high probability of the occurrence of petroleum does not in itself result in produced oil and gas. The deposits must be located and developed. In the past the U.S.S.R. has been highly successful in locating deposits by surface geology but as the research for oil has progressed into deeper fields and into regions where the surface indications are not so prominent, the geophysical techniques of prospecting have become very important.

And the U.S.S.R. has recognized this and has launched a major geophysical exploration program and this is portrayed on the next slide.

They have raised the total number of their crews from 600 to almost 1,200 in the period 1957 to 1961. In 1965 we estimate there will be a further increase to almost 1,700.

I think it is particularly significant that the U.S.S.R. now has more geophysical crews in operation than the entire free world.

The U.S.S.R. also makes extensive use of core drilling in their exploratory work. They have increased this type of drilling from 9 million feet in 1957 to 12 million feet in 1961 and their plans call for 20 million feet of core drilling in 1965.

Both the final proof, of course, of the occurrence of petroleum and the means of getting it out of the earth rests with the drill, and in this area, in the area of drilling, the U.S.S.R. has also greatly increased its effort.

Exploratory and development drilling have, however, failed to meet the Soviet annual goals during the period 1957-61 by about 11 percent for exploratory and 4 percent for development.

Nevertheless, the total amount of drilling has increased rapidly and the targets for the future are high.

They have gone from 14 million feet of drilling in 1950 to 161½ in 1955, to 26 million in 1960, to 29 million in 1961, and their target is 53 million in 1965. Their targets for the 1961-80 period are most impressive.

Presently, about 85 to 90 percent of this drilling is done with a Soviet development called the turbodrill. The drill has been of significance in the development of the U.S.S.R. industry. It has provided a fairly efficient and economical method for drilling to moderate depths and enabled them to use their own interior drill pipe. Had the U.S.S.R. continued with the rotary rig, they would have been forced to import from the West drill pipe and tool joints of higher quality than the U.S.S.R. manufactured.

The Soviet Union is now entering a new phase in its search for additional crude oil and natural gas. In this phase, which calls for penetration to average depths of 10,000 to 13,000 feet and even greater, the performance of the turbodrill so far has been unsatisfactory.

Soviet engineers are recommending that the turbodrill technique be limited to 6,000 feet in depth with the electrodrill to be used for deeper drilling. But the electrodrill has its own disadvantages, and, as a consequence, drillers in the field have called for the almost exclusive use of rotary drilling in the deep drilling program.

Until improvement can be made in turbodrilling techniques, a combination of turbo and rotary drilling will be used. Use of this combination will necessitate the development of rotary drilling know-how, the training of drilling crews in rotary practice, and the development of better drill pipe, tool joints, and bits required for rotary drilling.

The committee concluded that there will be increasing need on the part of the Soviet oil industry to seek drilling technology and equipment in the free world. With the leadtime implicit in the U.S.S.R.'s plans it does not appear that equipment problems will prevent meeting and exceeding production goals up through 1965 however.

Now, in the foregoing, I have tried to give you a very brief summary of the U.S.S.R.'s geological potential, and the scope of its exploratory and development programs.

The effectiveness of these programs in the production of petroleum will be covered now.

First of all, I will discuss crude oil and I will dispense with natural gas in order to summarize this report some. Now, of all the major forms of energy in the Soviet Union, only the production of crude oil has been in excess of the annual goals for each of the first 3 years of the 7-year plan. The 7-year plan is for the years 1959-65.

The major portion of the growth in the production of crude oil during this postwar period can be attributed to the continued development of new capacity in the Ural-Volga Basin. In 1960 it accounted for about 73 percent of the national output.

Now, the rapid expansion of crude oil production in the U.S.S.R. is illustrated in the next slide.

They have been able to raise their production from a very modest 760,000 barrels a day in 1950 to 3,320,000 in 1961.

In 1962 their plan is about 3,700,000. Their official plan for 1965 is 4,800,000 barrels and our Committee concluded that they will likely attain a level of 5,300,000 barrels per day. Also included on this slide I have the official Soviet plans for future years.

You notice by 1980 they intend to be producing 14 million barrels per day of petroleum.

Senator KEATING. What is the U.S. production?

Mr. PIERCY. The U.S. production is about 7 million barrels per day. I might point out one other thing, Senator.

In 1961 the U.S.S.R. became the second largest producer of petroleum in the world. In 1961 they surpassed Venezuela which previously had been No. 2.

I would like to elaborate on just one approach that we took to substantiate these forecasts.

Our calculations indicate that for each foot of exploratory oil well that was drilled they discovered 200 barrels of oil in the 1951-55 period and 370 barrels in the 1956-61 period.

Now, the planned program for meeting their targets for 1965 will allow them to drop in effectiveness or to drop in their success to 200 barrels per foot.

Now, admittedly, any allocation between drilling for oil and gas is somewhat arbitrary, but we have also checked their drilling programs for gas and they, too, look consistent.

So, on this basis, the committee believes that the drilling plans seem adequate to support our estimate of 5,300,000 barrels per day as a production level for 1965.

Now, in order to reach their 1970 level, they will have to find 115 billion barrels of oil. This compares with the reserves that have been found and developed in the United States of about 100 billion barrels today. This, of course, is an impressive task that the U.S.S.R. has cut out for itself. But we note that the Soviet planners have been somewhat conservative. They are allowing for a discovery and development of only about three-fourths as much crude per foot of drilling in this 1960 to 1980 period as they obtained in the 1951 to 1960 period.

And while we did not believe it feasible to forecast whether the U.S.S.R. will succeed or fail in achieving these long-range goals, the goals do appear consistent with the announced plans for prospecting and drilling, and are not unreasonable in view of the probable reserves of the U.S.S.R.

But probably the greatest problems in reaching their levels that they have forecast in the 1960 to 1980 period will be overcoming the deficiencies present in Soviet drilling and producing equipment, and the shortage of oilfield tubular goods and other related material.

And the committee believes that these shortages will be more acute after 1964-65 and in an attempt to overcome these problems the Soviet Union will look increasingly to the free world for equipment.

I would like to show you the petroleum balance for the bloc. The entire bloc production will go from 3,762,000 barrels to 5,911,000 barrels per day in 1965. Consumption is not keeping up with the growth in production, so the net exports the bloc will have to ship to the free world will go from 596,000 in 1961 to 1,020,000 barrels per day in 1965. This is what will be available for export. Whether this much is exported to the free world, of course, will depend upon what action is taken by the free world to control it.

We also have made some estimates as to the amount of products that might be in this million barrels per day. We took a very careful look at their refining plans, and we conclude that the U.S.S.R., in the 7 years 1958 to 1965, is attempting to increase its capacity for crude distillation by 2,600,000 barrels per day to 5 million barrels per day by 1965.

Coupling that with our forecasts of consumption we conclude they will have about 440,000 barrels a day of products for export.

So, within this total of a million barrels per day, some 40 percent of it will be products.

This will continue to give the U.S.S.R. flexibility in penetrating the markets of the free world.

Now, the U.S.S.R.'s efforts in petroleum are not limited to production and refining.

Transportation has certainly been coming in for its share of attention.

First, I would like to comment briefly on pipelines. At the end of 1958, when they started their 7-year program, the Soviet Union had in operation only about 9,000 miles of crude and product pipelines and 8,000 miles of gaslines.

The 7-year plan calls for doubling this capacity. The 7-year plan calls for installing twice as much as existed in 1958.

Of these major pipeline systems planned in this 7-year plan, most are designed to increase their export capability, and I would like to outline now briefly these systems.

First of all, this much publicized Comecon, or Pipeline of Friendship, running from Kuibyshev in the Ural-Volga region over to the western border of the European satellites.

This line is 3,600 miles long. The largest pipeline in the world, its starting diameter is 40 inches. It delivers crude oil to refineries en route and in the satellites themselves. It has a starting capacity of 740,000 barrels per day.

Another important line goes from this same area to Leningrad. It has a capacity of about 320,000 barrels per day and will be completed next year, 1963. I forgot to mention that the Comecon line will be completed in 1964.

To further increase their exportability on the Black Sea they are building a new line from Stalingrad to two ports on the Black Sea, and this line will deliver 200,000 barrels per day to each of these ports.

They are also constructing some lines in the Far East. They are building product and crude lines from the Kuibyshev area to Irkutsk on Lake Baikal and the product line will go as far as Chita. They have under discussion the extension of this crude line all the way from Irkutsk to the port of Nakhodka on the Pacific and they have been negotiating with Japan for steel pipe for building this line but to the best of my knowledge they have not yet secured the 28 to 32 inch pipe they desire. These pipelines are going to have very great economic and strategic significance. It should be noted that they will supply crude oil to terminals that already have heavy concentrations of Soviet and satellite troops.

The lines will make possible for the first time an uninterrupted supply of petroleum in this area. Moreover the pipeline will go to the Baltic where they can supply the naval vessels.

The economic significance of the lines arises from several factors.

First, the Communist export capabilities to the free world will increase. The total capacities of these lines is about a million and a half barrels per day. Additional exports to the free world will, of course, increase the possibilities of the Soviet bloc buying critical equipment and technology from the free world.

It will also tie the European satellites into the Soviet Union and will further decrease and diminish any chance of their turning to Western sources of petroleum supply.

The other thing that the pipelines will do will substantially reduce the cost of transporting crude in the Soviet Union.

Today, the Soviet Union is moving crude oil for export from Kuibyshev all the way to Klaipeda at a cost of \$1.05 per barrel.

When this line is installed it will reduce their cost to about 29 cents per barrel.

I would like now to give you a word as to how they were able to build these lines.

For the decade 1951 to 1961, the U.S.S.R. failed to achieve its petroleum pipeline construction goal every year. Actual construction fell below goals by about 20 percent. Most of the lag occurred after 1955, and can be traced to an inadequate supply of pipe. The

production of steel pipe was running only 75 to 80 percent of requirements.

Now, up to a year ago this performance would have cast serious doubts on the capability of completing this system on time. But there now seems to be little doubt that they will meet the goals and the construction completion dates that I gave you.

This has been accomplished entirely by resorting to the purchase of pipe and other facilities from Western suppliers.

In the period 1959 to mid-1962, the Soviet Union either has purchased or arranged for purchase of at least a million tons of 40-inch pipe for delivery through 1964. They obtained 680,000 tons of this pipe from West Germany, 240,000 tons in Italy, and 135,000 tons in Sweden. These purchases will supply 40 percent of their entire requirements for 40-inch pipe in the 7-year plan.

So, by the end of 1961, the U.S.S.R. had installed 900 miles of 40-inch line, although only token amounts had been produced in their own Soviet mills. Clearly the imports of pipe have breathed new life into the pipeline construction program and averted a delay of far-reaching proportions.

Another transportation facility that is coming in for its share of attention, and which I think is of concern to us, is their marine fleet.

In 1950 the U.S.S.R. deep sea tanker fleet totaled only 174,000 dead-weight tons with the largest vessel of 10,900 tons.

In 1958 when their oil offensive got underway, they laid the keel of their first supertanker, the 29,000-ton *Pekin*. This was followed in short order by ships of this same size in 1960 and 1961, but in 1960 the U.S.S.R. started acquiring tonnage in the free world yards.

Now, as of September 1 of this year, they had built their fleet from 175,000 tons in 1959 to 2 million tons and, of this total, 786,000 tons or 40 percent were built in free world countries.

So the U.S.S.R. has been deeply indebted to the free world for building up its present fleet.

But the tanker fleet is continuing to grow, and as of September 1 of this year, they had construction orders out for 1,900,000 tons of additional shipping. And of this total only 640,000 were to be built in bloc yards but 1,253,000 was to be built in free world yards.

So, the tonnage the bloc is receiving from the free world is twice what it is building in its own yards.

Now to summarize their tanker supply situation.

In 1961 they were using about 3 million tons of shipping, 12 percent of it was built in the free world yards, 61 percent was supplied by the free world as charters, and 26 percent built in Soviet yards.

In 1965, 47 percent of the tankers that we think they will be using will be built in free world yards but owned by the Soviet Union and its satellites, 19 percent will be supplied by the free world but most of this will be supplied by customers like Japan who prefer to pick up their oil on an f.o.b. basis.

Only 33 percent of their entire supply of ships will have been built in the Soviet yards.

When they reach this situation in 1965, they will be practically self-sufficient with owned tonnage.

They will be self-sufficient and they will not have to rely heavily on charters of free world ships as they are doing today.

When they become self-sufficient this way, and move most of their oil in their own ship bottoms, they will be in a position at any time to deny the free world not only the export volume of oil but the ships that are carrying it. Our committee estimates that, in 1965, if the Soviets are effective in selling a million barrels of oil a day to the free world, should they interrupt this supply and take the ships with it, the free world would need an additional 231 T-2 equivalents of shipping or about 3,800,000 tons to replace this supply of oil.

Now, this surge in requirements on the free world could be in excess of the then existing spare tonnage, causing severe transportation and oil crises. The transportation and oil crises might not be limited to marine movements, as difficulties could be experienced in inland movements of both crude and products to areas heavily dependent on bloc supplies.

Senator KEATING. In other words, if they reach that position in 1965, as you have outlined, they could use this supply of oil for the achievement of political or other objectives, and always hold over the heads of those getting it the threat of shutting off their oil supply, which would cause complete disruption in their economy. Isn't that a fair summary?

Mr. PIERCY. That is right. The free world might not have the alternative transportation to supply the oil. It would become such a serious problem by that time.

I would like briefly now, recognizing your need for time here, to show you where the bloc oil is going.

First, I would like to show you how rapidly it has increased lately.

New exports to the free world have gone up from 100,000 barrels a day in 1955 to 610,000 barrels in 1961, and repeating myself, we forecast that it could go to a million barrels a day in 1965.

We consider it impractical to forecast what the exports might be as far ahead as 1970 and 1980, but you can get some idea as to the Soviet Union's intention by taking their published statements on the percentage growth in production and demand.

If you take these two statements and relate them to their production level in 1965, you will find that they could have an exportable surplus of 1.8 to 3.7 million barrels per day in the 1972 and 1975 period.

This is indeed an impressive number, and it does indicate their intentions, if it doesn't indicate precisely how much it would be.

Historically, the bulk of Soviet oil exports have gone to Europe and they are going there today. Of the 600,000 barrels per day available, 400,000 are going to Europe. Eighty percent of all the bloc oil is absorbed by a handful of customers: Italy, West Germany, Cuba—which is here classed as a free world country—Japan, Sweden, Egypt, and Finland.

The NATO countries absorb 275,000 barrels a day or about half the volume of oil exported.

While the overall volume of exports is only about 6 percent of the local demand of these areas, you will notice in some areas it has reached a very high proportion ranging from 100 percent in Cuba, 78 percent in Finland, to 22 percent in Italy, and 19 percent in Sweden, of their local demand supplied by Soviet bloc oil.

I think one of the most interesting things is to take a look at the type of customers for Soviet oil.

Senator KEATING. In other words, that means in Cuba all of their oil supply comes from the Soviet bloc.

Mr. PIERCY. Every drop of it. They are getting on the order of 70,000 to 80,000 barrels per day, but about half of it is products.

Prior to Castro, Cuba manufactured all of its own products. They had modern refineries there producing enough products to supply the demands. They imported only crude oil.

They apparently are having enough trouble with their refineries so that they must import about half the needed volume as products today.

Mr. SCOTT. Mr. Piercy, I also notice on your chart you have a high percentage—48 percent—for Egypt; is that correct?

Mr. PIERCY. Yes.

Mr. SCOTT. What is the significance? Is it due to its proximity to the Saudi Arabian oil?

Mr. PIERCY. This requires a little explanation.

Egypt has production of a very heavy crude, and they have been importing Soviet oil, and selling their heavy crude—which they are not equipped to refine—to Italy. Thus they are an exporter of oil to Italy but it is primarily because they are not equipped to run their heavy crude themselves, extremely heavy crude. There has been in the past and will continue to be, I think, a significant amount of Soviet oil going to Egypt and it does have some problems because interruption of this oil does not mean that Egypt could supply their own product requirements with their own heavy crude because they just do not have the type of refineries to run it. So it still has this strategic implication that you mentioned.

Now, we have classified exports of Soviet oil by the type of customer.

The first classification is government-owned oil companies. These are companies that are owned outright or primarily controlled by the governments themselves. A classic example, of course, is E.N.I. in Italy. Others are Scholven Refinery in Germany, Petrobras in Brazil, and so forth.

Now, 62 percent of all the crude oil exported by the Soviet bloc was run by government oil companies, 34 percent by nonintegrated.

I might explain nonintegrated for you people who are not oil people. It means they don't have any substantial amount of crude oil production; they are just refineries and marketers.

So, between these two categories, they absorb practically all the crude oil coming out of the Soviet bloc. With products, we find government oil companies again purchase about 20 percent and the nonintegrated companies—the ones which do not have their own crude supply—purchase about 51 percent.

So the government-owned oil companies are the largest customers of Soviet oil and hence the governments could, through their own companies, do much to restrict the penetration of Soviet oil if they desired.

I would like to skim over briefly on the effect of this oil on the producing countries.

Had the Soviet exports been held to the 1953 percentage level when they supplied only 1.9 percent of Europe's demand, the revenue to the world's producing and exporting countries—that is the Mideast and Venezuela—would have been increased by the amount of oil that would have gone to Europe instead of the Soviet oil.

We have calculated that, through 1954 to 1961, this loss of revenue has amounted to just slightly less than \$500 million to the Mideast and Venezuela.

In addition, of course, to this loss of revenue, which is a direct revenue that these countries get by virtue of their concessions, there is a lot of other revenue that they lose, such as the indirect revenue of wages and salaries, local contractors' payments, purchases of goods and local supplies.

Now, the size of the direct payment to these producing countries depends not only on the volume of oil but the price, and there is considerable evidence that indicates that the reduction in posted prices in the Mideast that took place in February 1959 and 1960 was caused by cut-price Soviet oil exports.

I would like to turn briefly to bloc trade with the free world, and to discuss some of the features of their petroleum trade.

I think, to fully appreciate bloc trade, it is helpful to consider how the U.S.S.R. conducts it.

First of all, the first things they nationalized when the Communists came to power was trade. It has been a state monopoly, of course, ever since.

Now, this monopoly provides them certain essential things. It provides a complete protection of their domestic economy against foreign competition.

It isolates their internal currency against the influence of foreign exchange markets.

It gives them a very strong bargaining position when they deal with private enterprises in the free world.

It gives them ability to discriminate in their marketing and that gives them flexibility to adjust their trade to serve their political objectives. And I think all of these can be summed up best by Premier Khrushchev himself when he said that, "We value trade least for economic reasons and most for political purposes."

So, clearly, this Soviet trade which is backed by the monolithic power of the state cannot be considered in the same terms of trade as individual private companies motivated by commercial objectives.

The foreign trade of the Soviet bloc is but one element of the Soviet Union's plan to consolidate its own power and to extend its communistic influence over countries that deal with it.

Specifically we feel that the foreign trade of the bloc is aimed at, first obtaining vital materials and technical know-how from the free world to strengthen the Communist economic and military base.

Second, we think it is aimed at spreading communism through the extension of state control in countries with whom they trade.

The third objective is to destroy the operations of private companies. The U.S.S.R. very clearly recognizes that large commercial firms, particularly the private companies, are a source of strength and pose a threat to the extension of their own ideology and state control.

The fourth objective, we believe, is for them to create unrest and political instability and is of vital importance to the strength of the free world.

In the initial years following World War II, the trade in the Soviet bloc declined. They followed a deliberate policy of self-sufficiency. Following the death of Stalin in 1953 this policy was reversed imme-

diately and their aim was to increase the trade with the East and West.

Stalin's successor saw very clearly the need for trade with the West to accelerate their own economic growth and I would like to discuss the rapid growth in this trade.

Between 1947 and 1953 the total Soviet trade was only \$1,600 million. By 1960 it had gone up to \$4.4 billion, and from official Soviet statistics the first half of 1962 that had gone up to \$5.9 billion.

Now, one of the primary objectives of this trade, as I mentioned, was to acquire strategic goods and technology from the free world, and Senator Keating himself has already very well summarized what they are obtaining and I will not repeat this. But I would like to say again that Mr. Samuel Pizar, in his study, showed that the Soviet bloc, in just 18 months—January 1960 to June 1961—purchased approximately a billion dollars worth of goods, of strategic goods and equipment in the free world that he considered, or that embodied new Western technology—a million dollars in 18 months.

I would like to speak of the degree of concentration of these items in their trade with certain selected countries.

This chart shows certain selected industrialized countries, primarily Europe, the level of their trade with the Soviet bloc, and the percent of that trade that is in this highly manufactured type of equipment. You will notice that for Western Germany, 80 percent of their trade with the bloc is this type of equipment. For the United Kingdom, 65 percent, France, 87 percent, Italy, 61 percent, but for the United States only 25 percent. West Germany in 1960 had \$765 million worth of trade with the Soviet bloc, and 80 percent of this was in equipment that is of strategic economic importance to the bloc.

Senator KEATING. I think it is significant there that our percentage is substantially below that of our free world allies.

Mr. PIERCY. Yes.

Senator KEATING. And it points up to my mind the imperative necessity of stronger representations to our free world allies of the dangers inherent in the shipment of this transport equipment, machinery and items which are certainly either strategic or semistrategic in character.

Mr. PIERCY. You have summarized pretty well about the conclusion of this study. Yes, I couldn't agree more.

Senator KEATING. Thank you.

Mr. PIERCY. I might also point that the U.S. number here is quite diluted by food shipments to Poland, as you know.

The next chart shows the growth rate of trade in these industrialized countries plus Japan, this is a growth rate with 1948 being 100 except in Germany where we have taken 1952 as 100 because it goes completely off the scale if 1948 is used. This will give you some idea of the rapid growth rate of trade with the U.S.S.R. among the industrialized European countries.

I would like to conclude my discussion of this type of trade by observing that, though the bloc is now buying huge amounts of industrial equipment and products of high technology, we don't believe there is any intent of the bloc to continue to remain dependent on these suppliers of such items. They have not abandoned their goal

of self-sufficiency. A current example of this is the Soviet desire for self-sufficiency in the case of tankers.

Currently they are highly dependent on tonnage from the free world but, by 1965, they will be practically self-sufficient.

So it would make more sense for the Western World to limit its trade with the bloc largely to consumer goods which are in short supply at the bloc.

Consumer goods, if traded, would emphasize to the Soviet citizen the deficiency in the Soviet system of providing for the citizen's needs.

Senator KEATING. But that is not what the Soviets are after.

Mr. PIERCY. That is not what they are after.

Senator KEATING. That is not what they ask for.

Mr. PIERCY. That is right.

Senator KEATING. We ship them machinery and strategic items, and they ship us in return furs and feathers and that sort of thing.

Mr. PIERCY. That is right.

Senator KEATING. Yes.

Mr. PIERCY. But there is no question in my mind, Senator, there is a crying need, and I use those words advisedly, of Soviet citizens to have Western goods, Western consumer goods. All you have to do is spend some time in Moscow and Leningrad and have these Russians try to buy the clothes off your back—which will happen to you if you spend more than a week there—and this is most impressive.

Now, some of the experts on Soviet Russia will tell you this only exists in Leningrad and Moscow and it does not exist in the hinterlands.

However, I believe that, with a little Madison Avenue approach, it would exist all over.

I believe I will skip over the aspect of political influence.

Senator KEATING. That will be made a part of your presentation and it is, of course, very important.

Mr. PIERCY. I would like to skip that and I would like to turn now to the petroleum component in this Soviet trade.

The Soviet bloc has seized on petroleum as a highly merchantable commodity that they can barter for much needed Western equipment and technology as well as political influence. Within the U.S.S.R. alone, the petroleum trade has gone from \$10 million in 1952 to \$344 million in 1960 and, as a percentage of their total trade, has gone from 2 to 24.6, a fantastic increase. From the entire bloc the percentage, of course, is much less because the other bloc countries are petroleum deficient countries, it has gone from 2 to 10.8.

Clearly this shows that petroleum is most essential to the Soviets in reaching their trade objectives. I don't think this is very surprising.

All you have to do is study the Soviet Union a little bit to see what they do have to export and you wonder why they didn't strike on petroleum sooner.

Now, the free world oil industry is a major target of the Soviet economic offensive. I think I can summarize this by giving you a quotation out of their own publication, Foreign Affairs, and I quote:

It should be borne in mind that oil concessions represent, as it were, the foundation of the entire edifice of Western political influence in the (less developed) world, of all military bases and aggressive blocs. If this foundation cracks, the entire edifice may begin to totter and then come tumbling down.

I would like to mention again the discriminatory nature of Soviet trading. It is best exemplified in their oil trading. The next chart summarizes what the Soviet Union charges the free world for crude oil versus what they charge their own satellites and you will see they charge their satellites roughly twice as much on the average as the free world.

Senator KEATING. The answer to that is they already have them and they are working on the free world.

Mr. PIERCY. That is right.

Senator KEATING. This is the most graphic illustration to me of the use of oil exports for political purposes.

Mr. PIERCY. Yes.

You can emphasize this a little more by taking nations that adjoin each other.

In 1960, for instance, East Germany paid \$2.69 a barrel for crude oil and West Germany \$1.38.

Hungary paid \$3.06 and Italy \$1.41; Communist China \$2.92, Japan \$1.34.

This applies to products, too.

Senator KEATING. If the satellites knew what is being done to them, they certainly, I would think, would deeply resent it. I suppose they are prevented from knowing.

Mr. PIERCY. No. This data is published in the Soviet trade handbooks, so I think they know. There has been one theory proposed that there are offsetting arrangements within the bloc. I say that, even though there may be offsetting arrangements with other commodities within the bloc, this subsidy which Soviet oil obtains here certainly permits their oil industry to show a reasonable performance in spite of its cut price sales to the free world.

Senator KEATING. But I don't understand what those offsetting arrangements could be. I could think that Poland, for instance, or Hungary would object vigorously when they saw their free world neighbor right next door getting oil for half what they were paying.

Mr. PIERCY. Well, Professor Holtzman has put out a paper in the Review of Economics and Statistics, published by Harvard Press, saying you should look at this thing in terms of a trading bloc, the theory being that, although the satellites are paying more for oil, one must consider the cost of oil and other products traded. He points out that the profits the satellites are giving the Soviet Union on oil is equated to the profit that the Soviet Union is giving the satellites for something else, sheepskins or something like that, you see.

Now he says what this represents is the added profit that the satellites could have gotten if they traded with the free world. No question about that. They could have gotten oil cheaper if they went out in the free world and bought it. This is what this professor says, and I think there is logic in his argument.

But, nevertheless, looking at this industry by industry, this is a very definite subsidy to the oil industry in the Soviet Union, and permits the oil planners and administrators to show a real good performance because they are being subsidized by sales to the satellites.

So, if I make myself clear, the argument of the satellites is, yes, but we are paying you so much profit for sheepskins or grain or something like that, you see, and they say this profit balances another out.

Senator KEATING. I see.

Mr. PIERCY. But I don't want to get into that. This will take me a couple of hours. This paper is pretty lengthy. But I repeat, though, it is a subsidy.

Now, I would like to conclude, Senator. Although the committee may not have been aware of all the efforts to restrict bloc oil, it is believed that relatively little has been done to date. We do know that some restrictive measures have been discussed in NATO and active consideration is now being given to this problem by the European Common Market but with no action.

Equally as serious, however, our committee felt, was the lack of an effective program of controlling the critical equipment the bloc is purchasing in the West—the purchases of which the Soviet is making a large contribution.

The present CoCom agreement seems limited to a narrow list of arms, atomic energy material, and strategic materials. The agreement is not aimed at the export of goods and technology which contribute to the industrial potential of the bloc.

To illustrate this, we in the committee believe that the U.S.S.R. will seek certain petroleum equipment in the West to assure meeting its production goals.

Now, none of these items that we have talked about, rotary rigs, drill collars, drill pipe, is embargoed by CoCom.

The United States maintains a much tighter control than the CoCom agreement prescribes but, even in the United States, there are no restrictions on the export of drill pipe, drill collars, tool joints, and diamond bits—items the committee believes the Soviet oil industry will need to meet its production targets. The United States does require export licenses for rotary drilling rigs that the U.S.S.R. will in all probability need.

It would appear evident that Western industrialized countries which know themselves to be threatened militarily and subversively by the Soviet bloc are defeating their own ends by contributing to the industrial strength of the Communists.

Our committee's concluding remarks were:

In view of these factors our committee felt a continued expansion of the Communist oil exports was a serious problem to the free world.

The impact of Soviet oil on the free world countries is far greater than the volume figures would indicate and goes beyond its immediate implication for the oil companies themselves.

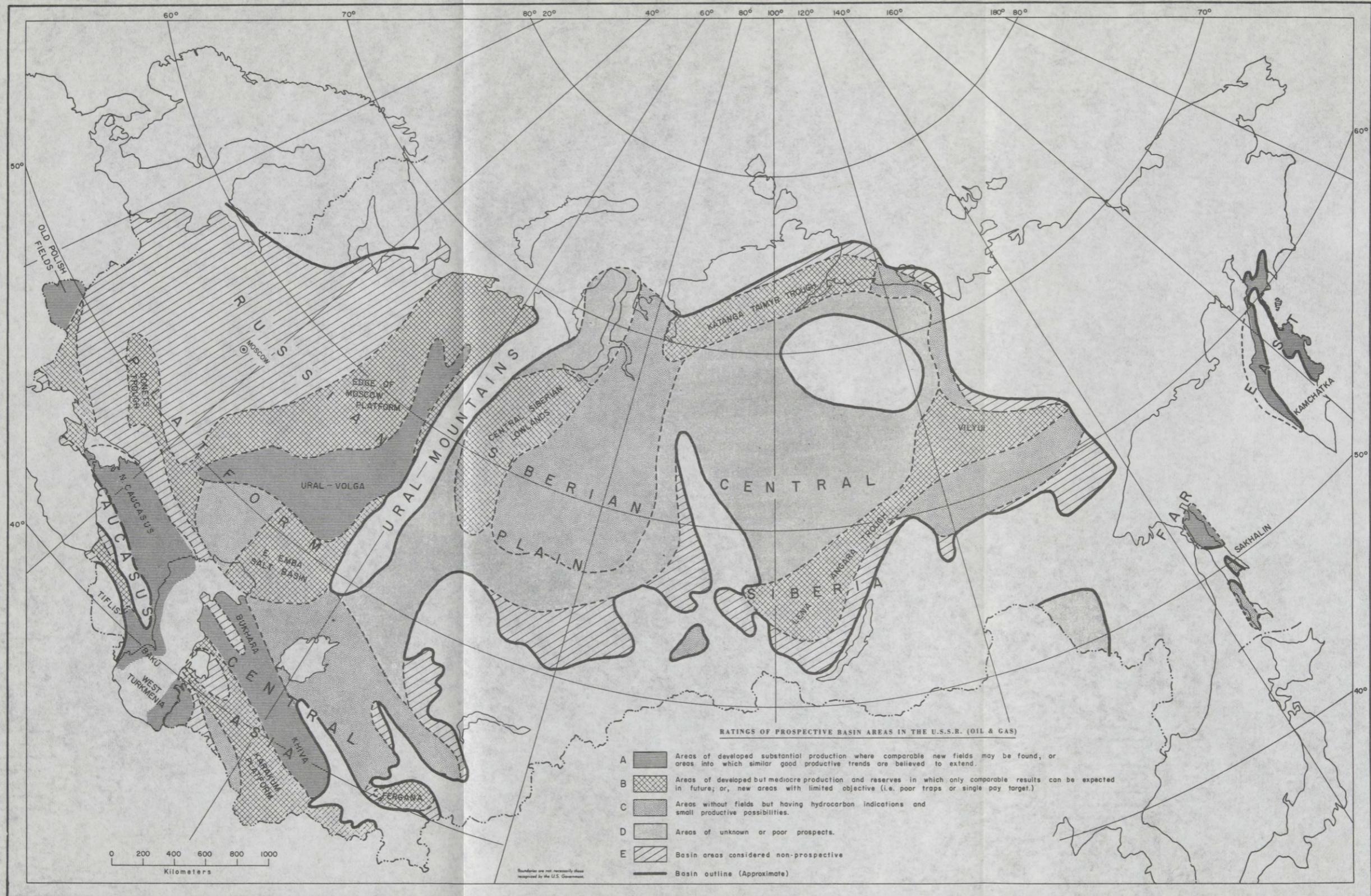
Without a doubt, Soviet oil is the most important element in the Soviet politicoeconomic offensive in the free world. The Communists are using it to procure vital equipment and technology, to create political unrest and spread communism. It is a weapon with which they hope to destroy the private oil industry.

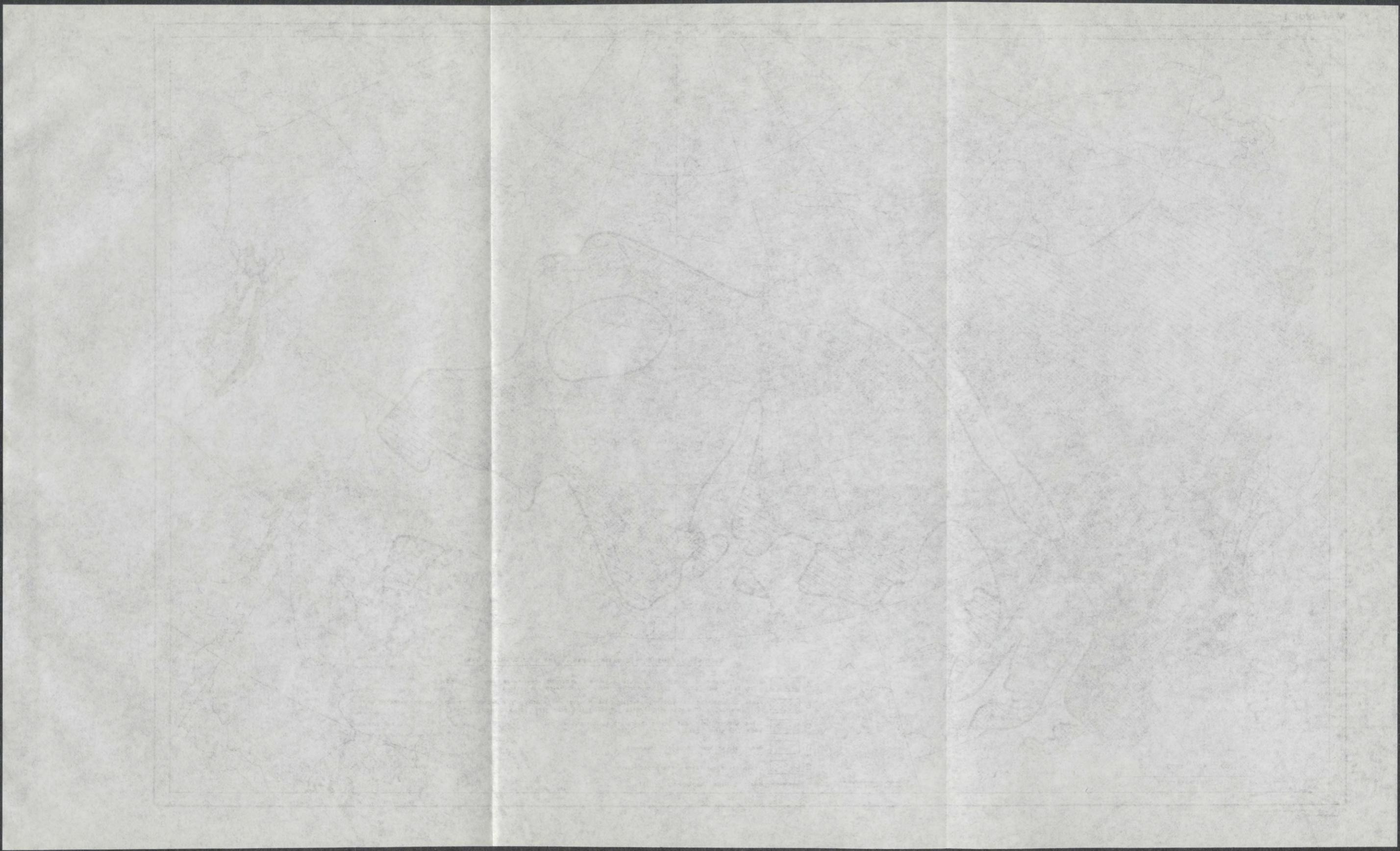
The seriousness of the Soviet economic offensive requires a concerted effort by the leading countries of the free world to restrict further imports of Communist oil and the export of strategic materials to the Soviets. Individual action is insufficient.

For example, the "Black Sea" chartering policy of a single company (the refusal to charter ships from owners supplying tonnage to the bloc) did not stem the flow of Soviet oil to Cuba.

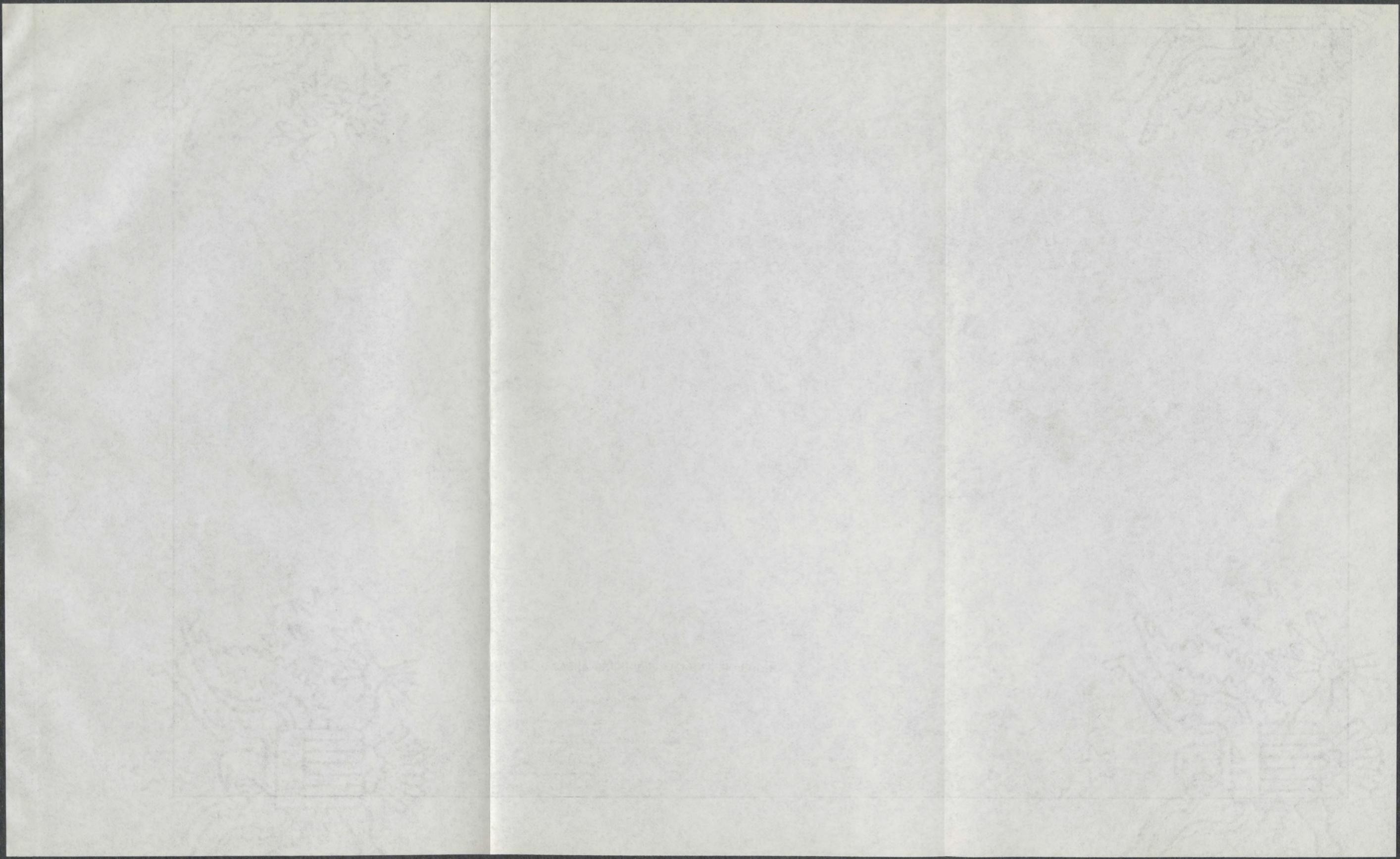
This shows that an individual company cannot handle this thing.

The political alliances which free world countries have formed to combat Soviet aggressions must now be extended fully to the equally important economic field. It is unrealistic to leave the free world's economic flanks unprotected, particularly as the Soviets have clearly indicated that their trade is conducted "most for political purposes."









I thank you.

(The statement of Mr. Piercy referred to was marked "Exhibit No. 22" and reads as follows:)

(EXHIBIT No. 22)

OIL EXPORTS FROM THE SOVIET BLOC

(George T. Piercy)

My testimony today is based on the findings of the National Petroleum Council's Committee on the Impact of Oil Exports from the Soviet bloc. In the preparation of this work, I served as chairman of the working subcommittee. The committee's study was in considerable depth and detail.

It will, of course, be necessary for me to summarize considerably this vast amount of data and to discuss only the most important conclusions.

As an introduction, I should like to explain the scope of this study:

The petroleum industry within the Soviet bloc was studied in depth starting with the quality and size of its prospective producing area and then leading to its exploratory program, its development program, the production methods employed, refining, transportation, consumption, and finally, trade. The amount of information available on the European satellites and Red China was limited as compared to the U.S.S.R. However, this presents no great limitation as the U.S.S.R. produces about 90 percent of the bloc's petroleum. Now, and in the foreseeable future, the bloc's petroleum offensive depends on the performance and direction of the U.S.S.R.

However, petroleum being only one form of energy, the committee also turned its attention to other forms of energy to be certain that the committee's forecasts of energy production, including petroleum, was providing sufficient energy to take care of the internal needs of the bloc, as well as exports. Here, again, it was possible to study in greater depth the U.S.S.R.'s energy base than that for the European satellites or Red China. With the Soviet Union being not only the dominant energy producer in the bloc, but also an exporter of energy to the energy-deficient East European satellites and Red China, the fact that the energy studies of the satellites was not as complete does not appear to be a serious limitation.

The studies of petroleum and energy within the bloc and particularly within the U.S.S.R. were, of course, preliminaries to an evaluation of the impact of the bloc's oil exports to the free world. Hence, the committee also studied past bloc petroleum exports to the free world, how this petroleum was absorbed, its effect on producing and importing countries, and its contributions as a foreign exchange earner for the bloc. But since petroleum exports are only a part of the Soviet bloc foreign trade, they could not be evaluated properly in isolation. This led to a study in some depth of the entire bloc trade, its motivations and its effect.

Throughout this presentation I intend to use the word "plan" to denote an official plan of the U.S.S.R. or other bloc nations, and the word "estimate" to refer to estimates made by the committee.

For the sake of brevity, I will not discuss in this presentation the satellite petroleum industry nor the details of the energy base for the bloc.

With the foregoing introduction I would like now to discuss certain conclusions reached with regard to the U.S.S.R.'s petroleum industry.

AREA PROSPECTIVE FOR PETROLEUM

In order to determine the possible limits to the occurrence of oil in the U.S.S.R., the geology of this nation was studied. Map 1¹ shows the sedimentary area of the U.S.S.R. as classified by the committee. The first three classes A through C

¹ See opposite page.

are considered favorable for the occurrence of oil. The square miles of surface covered by each of these areas is as follows:

Classification of sedimentary area, U.S.S.R.

<i>Description of area</i>	<i>Million square miles</i>
Total favorable area (areas A through C, map II).....	2.84
Basin areas of unknown or poor prospects (area D, map II).....	1.14
<hr/>	
Total prospective area.....	3.98
Basin areas considered nonprospective (area E, map II).....	1.51
<hr/>	
Total.....	5.49

The committee's estimate of favorable area is 2.84 million square miles which can be compared to the estimated favorable area for the United States (including Alaska and the Continental Shelf up to a depth of 600 feet) of 2.12 million square miles.

The magnitude of the total sedimentary area of the U.S.S.R. and the size of that area considered prospective for petroleum is indeed impressive. Considering that the favorable area for the U.S.S.R. is considerably greater than that of the United States, and recognizing the present level of U.S. producibility, the committee concluded that the petroleum production levels in the U.S.S.R. will not be limited by geological factors for many years.

EXPLORATORY EFFORT

A high probability for the occurrence of petroleum does not in itself result in produced oil or gas. The deposits must be located and developed.

The U.S.S.R. has been quite successful in the past in locating deposits from surface geology. As the search for oil has progressed into deeper fields and into regions where the surface indications are not so prominent, the geophysical techniques of prospecting have become more important. That the U.S.S.R. has recognized this and has launched a major geophysical exploration program is portrayed in the following:

Geophysical crews, U.S.S.R.

	1957	1961	1965 estimate
Seismic.....	371	850	1,200
Electric.....	90	200	250
Gravimetric.....	133	100	200
Magnetic.....	6	6	12
Airborne magnetometer.....	0	12	20
<hr/>			
Total.....	600	1,168	1,682

It is particularly significant that the U.S.S.R. now has more geophysical crews in operation than the entire free world.

The U.S.S.R. also makes extensive use of core drilling in their exploratory work. They have increased this type of drilling from 9 million feet in 1957 to 12 million feet in 1961 and the official plans call for 20 million feet in 1965.

DRILLING

Both the final proof of the occurrence of petroleum and the means of getting it to the surface of the earth rests with the drill. In this area the U.S.S.R. has also greatly increased its effort. Exploratory and development drilling have failed to meet the Soviet annual goals during the period 1957-61 by about 11 percent for exploratory and 4 percent for development. Nevertheless, the total amount of drilling has increased rapidly and future targets are high, as shown below:

Exploratory and development drilling for oil and gas in the U.S.S.R.

[In million feet]

Year	Exploratory	Development	Total
1950.....	7.0	7.1	14.1
1955.....	7.4	9.1	16.5
1960.....	13.4	12.2	25.6
1961.....	15.4	13.3	28.7
1965 plan.....	33.4	19.5	52.9
1961-80 plan total for period.....	495.0-594.0	1,072.0	1,567.0-1,666.0

It is significant that between 1955 and 1961, total drilling has approximately doubled, and the U.S.S.R. plans to again double the amount by 1965.

Presently, 85 to 90 percent of all drilling is done by the turbodrill. This drill has been of great significance in the development of the U.S.S.R. industry. It has provided a fairly efficient and economical method for drilling to moderate depths and enabled them to use their own inferior drill pipe. Had the U.S.S.R. continued with the rotary rig, they would have been forced to import from the West drill pipe and tool joints of higher quality than the U.S.S.R. manufactured.

The Soviet Union is now entering a new phase in its search for additional crude oil and natural gas. In this phase, which calls for penetration to average depths of 10,000 to 13,000 feet and even greater, the performance of the turbodrill so far has been unsatisfactory.

Soviet engineers are recommending that the turbodrill technique be limited to 6,000 feet in depth, with the electrodrill to be used for deeper drilling. But the electrodrill has its own disadvantages, and, as a consequence, drillers in the field have called for the almost exclusive use of rotary drilling in the deep drilling program.

Until improvement can be made in turbodrilling techniques, a combination of turbo and rotary drilling will be used. Use of this combination will necessitate the development of rotary drilling know-how, the training of drilling crews in rotary practice, and the development of better drill pipe, tool joints, and bits required for rotary drilling.

The committee concluded that there will be increasing need on the part of the Soviet oil industry to seek drilling technology and equipment in the free world. With the leadtime implicit in the U.S.S.R.'s plans, it does not appear that equipment problems will prevent meeting and exceeding production goals up through 1965.

PRODUCTION OF PETROLEUM

The foregoing presents a brief summary of the U.S.S.R.'s geological potential and the scope of its exploratory and development programs. The effectiveness of these programs in the production of petroleum are outlined below:

Crude oil

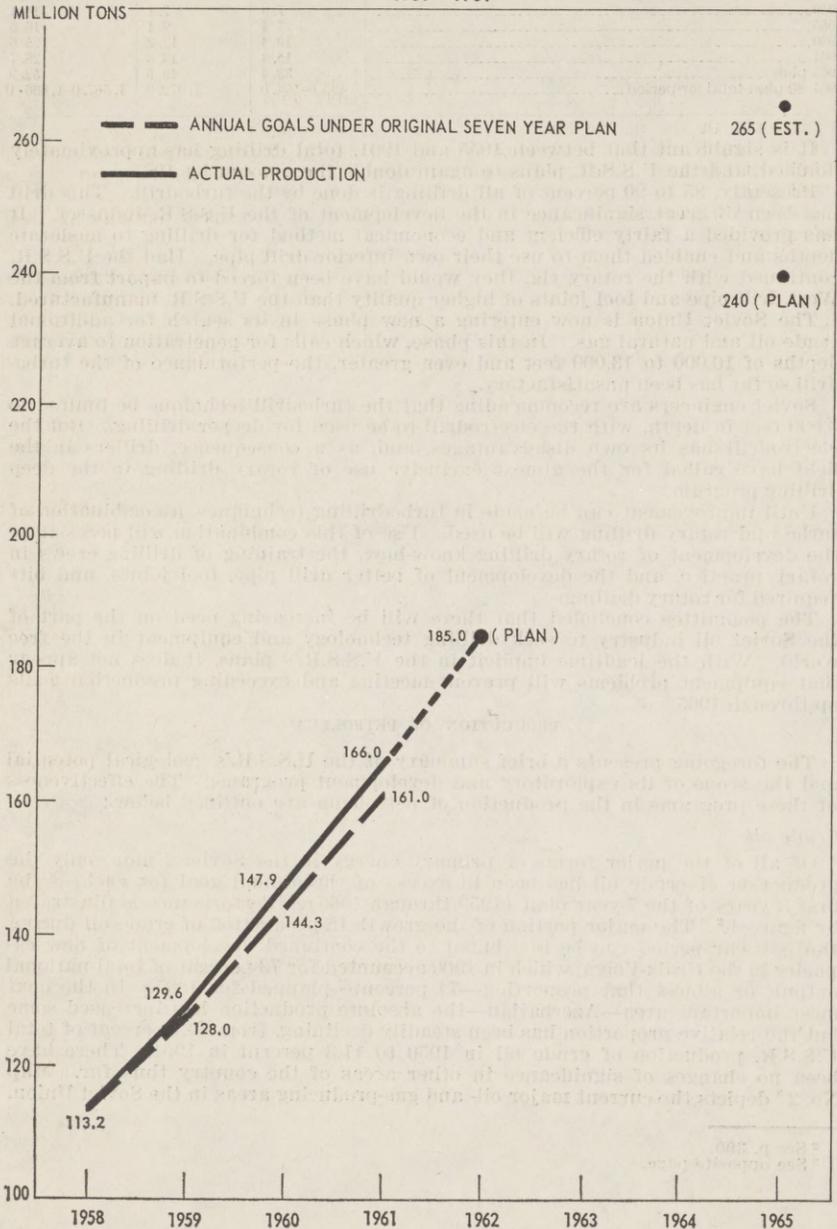
Of all of the major forms of primary energy in the Soviet Union, only the production of crude oil has been in excess of the annual goal for each of the first 3 years of the 7-year plan (1959 through 1965). Performance is illustrated by figure 1.² The major portion of the growth in production of crude oil during the postwar period can be attributed to the continued development of new capacity in the Urals-Volga, which in 1960 accounted for 73 percent of total national output, or almost that proportion—74 percent—planned for 1965. In the next most important area—Azerbaijan—the absolute production has increased some but the relative proportion has been steadily declining, from 39.1 percent of total U.S.S.R. production of crude oil in 1950 to 11.3 percent in 1961. There have been no changes of significance in other areas of the country thus far. Map No. 2³ depicts the current major oil- and gas-producing areas in the Soviet Union.

² See p. 390.

³ See opposite page.

FIGURE 1

CRUDE OIL PRODUCTION AND GOALS
IN FIRST THREE YEARS OF SEVEN YEAR PLAN
1959 - 1961



The rapid expansion of crude oil production in the U.S.S.R. is illustrated in the following:

Production of crude oil in the U.S.S.R.

Year:	Million barrels per day	Year:	Million barrels per day
1950-----	0.7	1965 plan-----	4.8
1955-----	1.4	1965 committee est.---	5.3
1960-----	2.9	1970 plan-----	7.8
1961-----	3.3	1975 plan-----	10.9
1962 plan-----	3.7	1980 plan-----	13.8-14.2

Growth in production has been at a rate of 14 percent per year for the period 1950-61, and it is estimated that it will continue at 12 percent per year through 1965 with production exceeding plan and reaching 5,300,000 barrels per day in that year.

Official plans call for a level of 13.8 to 14.2 million barrels per day by 1980.

Natural gas

The performance of the natural gas industry in recent years has been a source of disappointment to Soviet planners. Largely because of continued lags in the installation of compressors on existing gas pipelines, the failure to ready potential consumers for the use of natural gas, and the lack of storage facilities to meet peakload demands, the natural gas industry has not been able to meet a single annual production goal since 1956.

The 7-year plan established 5.24 trillion cubic feet as the goal for production of natural gas in 1965. No intermediate goals were provided in the original plan. From year to year annual goals have been set, but they have not been attained, as shown on figure No. 2.⁴ In light of the production deficiencies during 1959-61 and the likelihood that the problems facing the gas industry will not be corrected easily, the committee estimates that the production of natural gas in the U.S.S.R. in 1965 will reach no more than 4.8 trillion cubic feet.

Production of natural gas in the U.S.S.R.

Year:	Trillion cubic feet	Year:	Trillion cubic feet
1950-----	0.2	1965 plan-----	5.2
1955-----	.3	1965 committee est.---	4.8
1960-----	1.6	1970 plan-----	10.9-11.5
1961-----	2.1	1980 plan-----	24.0-25.4

Long-range plans for the development of the natural gas industry through 1980 have been established. They call for the production of natural gas to reach an annual rate of 24.0 to 25.4 trillion cubic feet in 1980.

EFFECTIVENESS OF DRILLING—SUBSTANTIATION OF '65 ESTIMATES

Calculations indicate that for each foot of exploratory oil well there was discovered 200 barrels of oil during 1951-55 and 370 barrels of oil during 1956-61. The planned drilling program and production targets for crude in 1965 would allow a drop in effectiveness to 200 barrels per foot or the same as the 1951-55 success level.

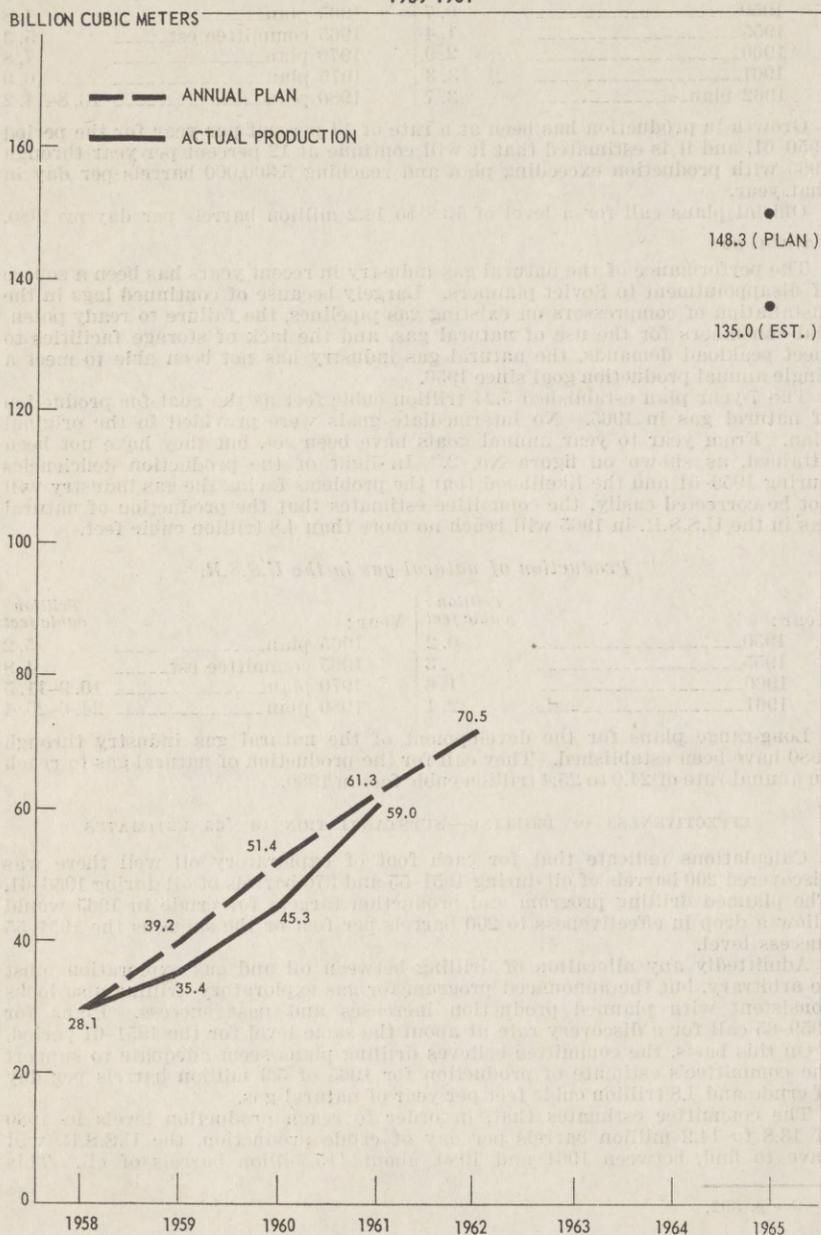
Admittedly any allocation of drilling between oil and gas exploration must be arbitrary, but the announced program for gas exploratory drilling also looks consistent with planned production increases and past success. Plans for 1959-65 call for a discovery rate at about the same level for the 1951-61 period.

On this basis, the committee believes drilling plans seem adequate to support the committee's estimate of production for 1965 of 5.3 million barrels per day of crude and 4.8 trillion cubic feet per year of natural gas.

The committee estimates that, in order to reach production levels in 1980 of 13.8 to 14.2 million barrels per day of crude production, the U.S.S.R. will have to find, between 1961 and 1980, about 115 billion barrels of oil. This

⁴ See p. 392.

FIGURE 2
SHORTFALLS IN THE PRODUCTION OF NATURAL GAS
IN THE FIRST THREE YEARS OF THE SEVEN YEAR PLAN
1959-1961



compares with reserves of about 100 billion barrels found and developed in the United States to date. This indeed is an impressive task.

The committee notes, however, that the Soviet planners are allowing for the discovery and development of only three-fourths as much crude per foot of total drilling planned in the 1960-80 period as they obtained in the 1946-60 period.

With regard to natural gas, it is planned to prove up reserves of 600 trillion cubic feet. To reach this, the U.S.S.R. plans allow a drop in discovery effectiveness of drilling to about two-thirds of that realized in the 1951-61 period.

While the committee did not believe it feasible to forecast whether the U.S.S.R. will succeed or fail in achieving these long-range production goals, such goals appear consistent with the announced plans for prospecting and drilling and are not unreasonable in view of the probable oil reserves of the U.S.S.R.

Probably the greatest problems in reaching the 1961-80 plans will be overcoming the deficiencies present in Soviet drilling and producing equipment, and the shortage of oil field tubular goods and other related material. The committee believes that these shortages may be more acute after 1964-65 and, in an attempt to overcome these problems, the Soviet Union will look increasingly to the free world for equipment.

BLOC PETROLEUM BALANCE

Based on estimates of consumption and production (as outlined above), the committee arrived at the following bloc petroleum balance:

Soviet bloc petroleum balance

[1,000 barrels per day]

	1961		1965 estimate	
	Production	Consumption	Production	Consumption
U.S.S.R.....	3,320	2,600	5,400	4,000
East Europe.....	336	390	371	615
Communist China and Far East.....	106	176	141	276
Total bloc.....	3,762	3,166	5,911	4,891
Net exports from bloc to free world.....		1,596		² 1,020

¹ Represents total exports of 610,000 barrels per day less bloc imports from the free world. Throughout this report Cuba and Yugoslavia data are included in the free world.

² Available.

Total bloc petroleum production has increased from 2,010,000 barrels per day in 1956 to 3,762,000 barrels per day in 1961, and the committee predicts that this total will reach about 5,900,000 barrels per day by 1965. The great bulk of the petroleum production increase has in the past and will in the future come from the U.S.S.R. She provided 85 percent of bloc petroleum production in 1956, 88 percent in 1961, and is expected to provide 91 percent in 1965. There will be an increasing deficiency of indigenous supplies in the satellite countries, relative to their consumption. The Soviet production will meet this deficiency and still permit ever-increasing exports to the free world.

Consumption is not growing as fast as production, and the committee estimates that 1,020,000 barrels per day of petroleum (crude and products) will be available for export by 1965, which compares with the net exports of 596,000 barrels per day in 1961. Whether this much petroleum will be exported will, of course, depend on the action taken by the free world to control it.

AMOUNT OF PRODUCTS AVAILABLE FOR EXPORT

The committee estimates that during the current 7-year plan the U.S.S.R. is attempting to increase its capacity for crude distillation by 2.6 million barrels per day to a total of 5.0 million barrels per day by 1965.

Operated according to current Soviet practice (i.e., about 85 percent of stated capacity), 5.0 million barrels per day of design capacity will be sufficient to process 4.3 million barrels per day. This will be sufficient to meet estimated domestic consumption of 3.6 million barrels per day of nongaseous products and leave a balance of 340,000 barrels per day for export. Natural gas liquids and synthetics will add to the total surplus and on this basis the committee

predicts that total export of products from the U.S.S.R. (with the bulk to the free world) will be 440,000 barrels per day in 1965. Thus the proportion of total exports that can be produced will be at about the same level as present. This will continue to give the U.S.S.R. flexibility in the penetration of markets. (The locations of existing refineries are given on map 3.)⁵

NEW PIPELINE SYSTEM

The U.S.S.R.'s efforts in petroleum are not limited to production and refining. Transportation is coming in for its share of attention.

At the end of 1958, the Soviet Union had in operation only 8,900 miles of crude oil and petroleum product pipelines and 8,200 miles of gas pipelines. The 7-year plan (revised) calls for the construction of about twice as much trunk-line as existed at the end of 1958.

Of the major petroleum pipeline systems planned for 1959-65, most are designed to increase the export capability of the Soviet Union. These systems (see maps No. 4 and No. 5)⁶ are:

(1) The much publicized Comecon (CEMA) pipeline or the so-called Pipeline of Friendship is scheduled for completion in 1964. The Comecon line is a 3,595-mile system, including all branches, designed to transport Urals-Volga crude oil to refineries in the U.S.S.R. and in Poland, East Germany, Czechoslovakia, and Hungary, and to carry crude to the Baltic export terminals of Ventspils and Klaipeda. The committee has calculated that the Comecon line will have a carrying capacity of 740,000 barrels per day over the 40-inch sector leading out of the Urals-Volga. The section from Brody (U.S.S.R.) to Bratislava (Czechoslovakia) already is in operation and being supplied by rail. That section from Sahy (Czechoslovakia) to Szazhalombatto (Hungary) will be in operation shortly.

(2) Another important system is the Almet'yevsk (Urals-Volga) to Leninrad crude oil line. This 32/28-inch system will have a capacity of 340/320,000 barrels per day and will be completed in early 1963.

(3) To facilitate petroleum exports from the Black Sea, construction is underway on a system which will link oilfields in the Stalingrad (Volograd) area to the Black Sea ports of Tuapse and Novorossiysk. It will be able to deliver 210,000 barrels per day to each of the two Black Sea ports when completed in early 1965.

(4) Construction is also proceeding on an extension of both crude oil and products lines running east from the Ufa region to the Far East. The crude oil line will terminate at Irkutsk and probably will be completed in early 1963. The products line to terminate at Chita is to be finished by 1965. The crude oil line will have a capacity of 320,000 barrels per day. Negotiations are still underway between the U.S.S.R. and Japan concerning the barter of Soviet crude for Japanese steel pipe for use in a 2,730-mile extension of the crude oil line as a 28-inch (or possibly a 32-inch) line from Irkutsk to the Pacific Ocean port of Nakhodka.

The new pipeline systems will have great economic and strategic significance. It should be noted that these systems will supply crude oil to terminals where there are heavy concentrations of Soviet and satellite military forces. Thus the lines make possible a more reliable uninterrupted delivery of fuels to these forces. Moreover, pipelines to the Baltic will facilitate the fueling of naval vessels.

The economic significance of these lines arises from several factors:

First, the Communist export capabilities to the free world will increase. Additional exports will permit the Soviet bloc to increase purchases of critical equipment and technology in the free world.

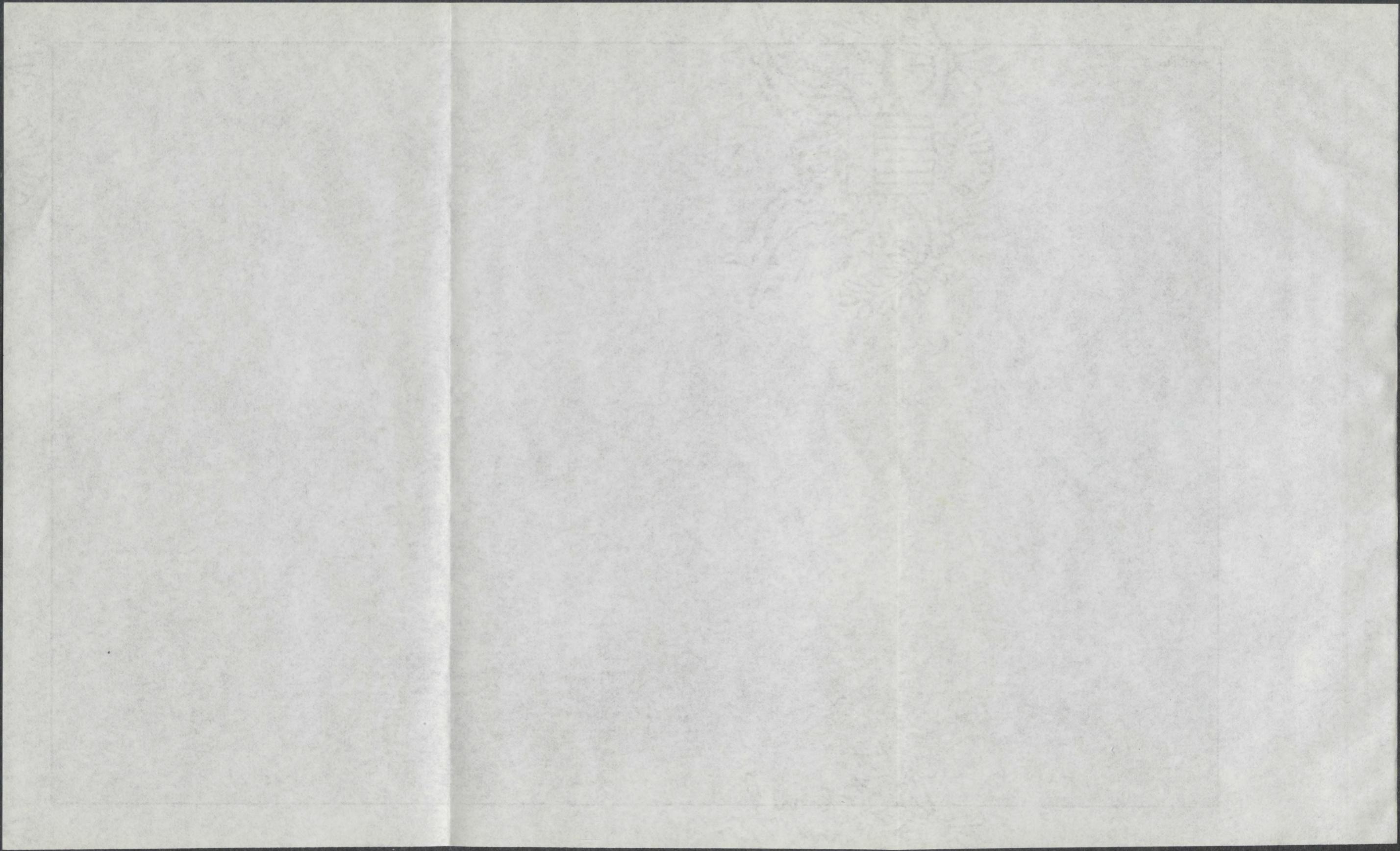
Second, the Comecon system will increase the dependence of the European satellites on the U.S.S.R. for crude oil and further diminish the chances of their turning to Western sources of supply.

Third, the pipeline systems will result in a substantial reduction in transportation costs. The savings can be illustrated by comparing rail transport costs from Kuibyshev to Klaipeda on the Baltic Sea with estimated pipeline costs over the same route. Rail costs to move crude oil from Kuibyshev to Klaipeda are about \$1.05 per barrel. But pipeline costs will be only 29 cents per barrel.

⁵ See opposite page.

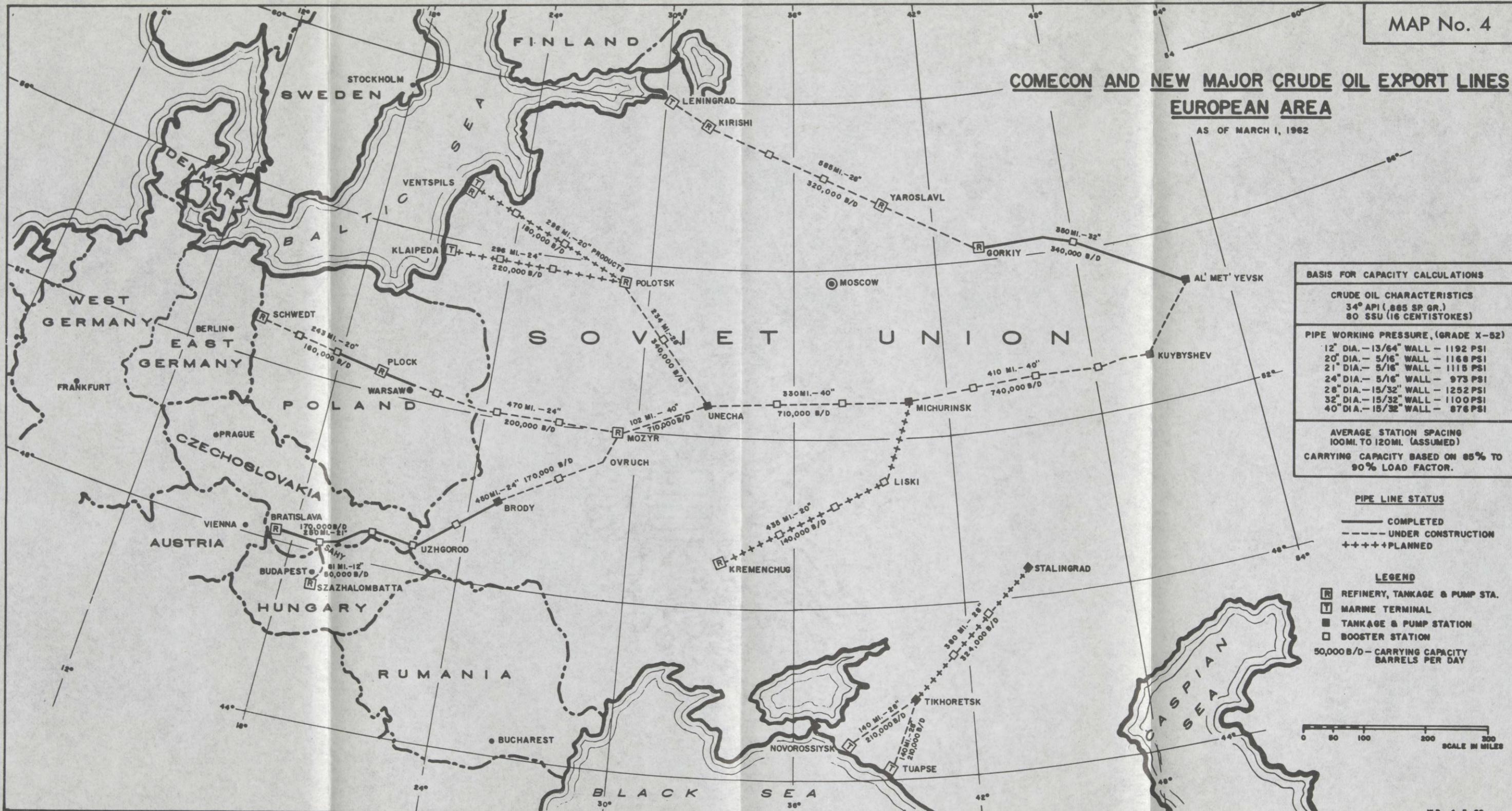
⁶ See opposite page.





**COMECON AND NEW MAJOR CRUDE OIL EXPORT LINES
EUROPEAN AREA**

AS OF MARCH 1, 1962



BASIS FOR CAPACITY CALCULATIONS
CRUDE OIL CHARACTERISTICS 34° API (865 SP. GR.) 80 SSU (16 CENTISTOKES)
PIPE WORKING PRESSURE, (GRADE X-52)
12" DIA. - 13/64" WALL - 1192 PSI
20" DIA. - 5/16" WALL - 1168 PSI
21" DIA. - 5/16" WALL - 1115 PSI
24" DIA. - 5/16" WALL - 973 PSI
28" DIA. - 15/32" WALL - 1252 PSI
32" DIA. - 15/32" WALL - 1100 PSI
40" DIA. - 15/32" WALL - 876 PSI

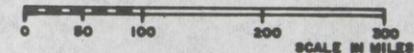
AVERAGE STATION SPACING
100MI. TO 120MI. (ASSUMED)
CARRYING CAPACITY BASED ON 85% TO
90% LOAD FACTOR.

PIPE LINE STATUS

- COMPLETED
- UNDER CONSTRUCTION
- +++++ PLANNED

LEGEND

- [R] REFINERY, TANKAGE & PUMP STA.
- [T] MARINE TERMINAL
- [■] TANKAGE & PUMP STATION
- [□] BOOSTER STATION
- 50,000B/D - CARRYING CAPACITY BARRELS PER DAY



COCCON AND NEW MAJOR-CRUDE OIL EXPORT LINES
EUROPEAN AREA

AS OF JANUARY 1957

BASED ON "BRITISH COLUMBIAN OIL"
FROM OIL CHARACTERISTICS
5. GRAVITY AND API
6. SULFUR CONTENT

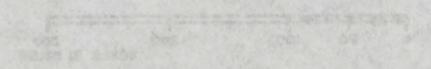
THE FOLLOWING TABLE SHOWS THE
OIL GRAVITY AND API VALUES
FOR THE OILS LISTED BELOW

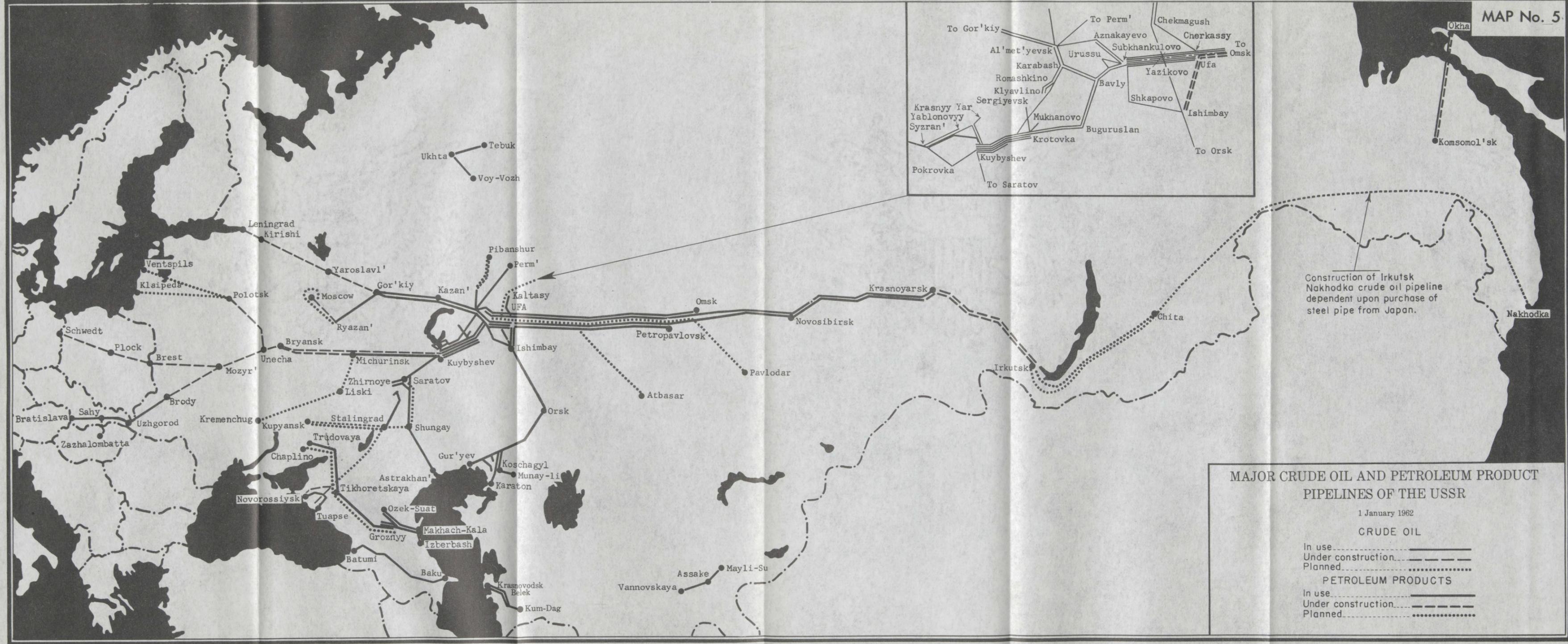
0.1 - 0.2 GRAVITY - 85.0 API
0.3 - 0.4 GRAVITY - 80.0 API
0.5 - 0.6 GRAVITY - 75.0 API
0.7 - 0.8 GRAVITY - 70.0 API
0.9 - 1.0 GRAVITY - 65.0 API
1.1 - 1.2 GRAVITY - 60.0 API
1.3 - 1.4 GRAVITY - 55.0 API
1.5 - 1.6 GRAVITY - 50.0 API
1.7 - 1.8 GRAVITY - 45.0 API
1.9 - 2.0 GRAVITY - 40.0 API

WEIGHTS AND MEASURES
BASED ON 100% OF
NET WEIGHT

FOR THE STATION
COMPLETED
UNDER CONSTRUCTION
PLANNED

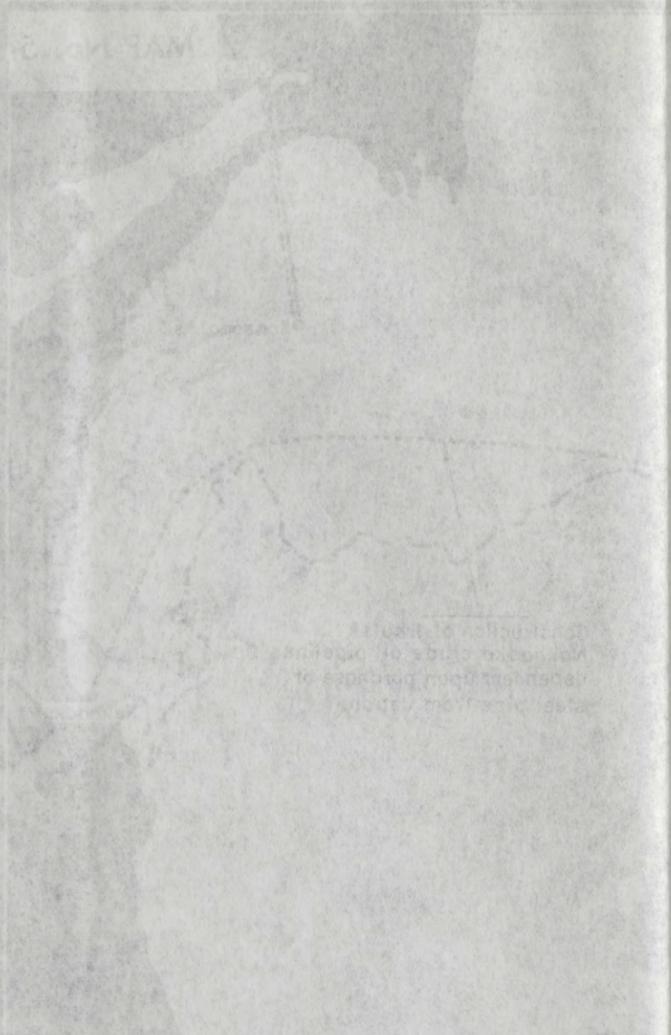
IN THE OIL FIELD - 100% OF
THE OIL FIELD
1. OIL FIELD
2. OIL FIELD
3. OIL FIELD
4. OIL FIELD
5. OIL FIELD
6. OIL FIELD
7. OIL FIELD
8. OIL FIELD
9. OIL FIELD
10. OIL FIELD





MAJOR CRUDE OIL AND PETROLEUM PRODUCT PIPELINES OF THE USSR
 1 January 1962

CRUDE OIL
 In use _____
 Under construction - - - - -
 Planned
PETROLEUM PRODUCTS
 In use _____
 Under construction - - - - -
 Planned
 Construction of Irkutsk Nakhodka crude oil pipeline dependent upon purchase of steel pipe from Japan.

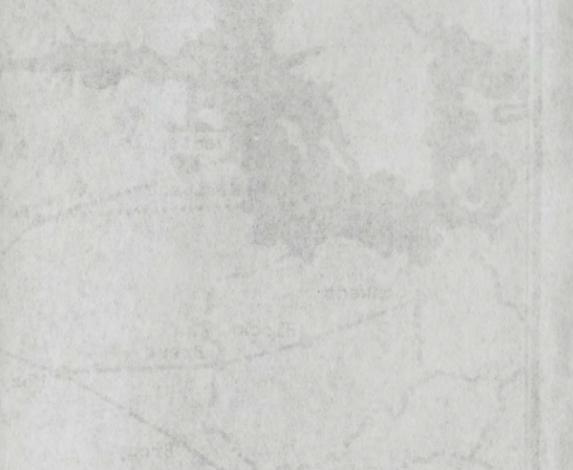


MAP OF THE
RIVER OF THE
MOUNTAINS OF THE
WEST

Scale of Miles
0 1 2 3 4 5 6 7 8 9 10

Scale of Feet
0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

Scale of Feet
0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000



PIPELINE CONSTRUCTION—ASSISTANCE FROM THE WEST

For the years 1951-61, the U.S.S.R. failed to achieve its petroleum pipeline construction goals and for the entire decade actual construction fell below the goals by 20 percent. Most of the lag encountered in the construction of oil pipelines, particularly after 1955, can be traced to an inadequate supply of steel pipe and a desire to expand at a rapid rate the natural gas transmission system. The production of steel pipe from domestic sources has only been 75 to 80 percent of requirements.

This performance would have cast some doubts at one time on the capability to complete the plan on schedule. There now seems little doubt, however, that the essential parts of this program will be completed on schedule. This has been accomplished by resorting to purchases of pipe and other facilities from Western suppliers. In the period 1959 to mid-1962, the Soviet Union either has purchased or arranged to purchase at least 1 million tons of 40-inch steel pipe for delivery through 1964 as follows:

Supplier:	Metric tons
West Germany supplied.....	680,000
Italy supplied.....	240,000
Sweden supplied.....	135,000
Total.....	1,055,000

These purchases will supply 40 percent of the entire requirements of the 7-year plan for 40-inch pipe.

By the end of 1961, the U.S.S.R. had installed 900 miles of 40-inch pipe, although only token amounts had been produced in Soviet mills.

Clearly, the imports of pipe breathed new life into the pipeline construction program and averted a delay of far-reaching proportions.

MARINE TRANSPORTATION

The bloc-controlled marine tanker fleet is also being expanded rapidly.

In 1950 the U.S.S.R. deep sea tanker fleet totaled only 174,000 deadweight tons with the largest vessel 10,900. Also, the satellite fleet was extremely small. In 1958, when the Soviet oil offensive was beginning to get into its stride, the first of their supertankers, the *Pekin* of 29,000 deadweight tons, was laid down. Three other ships of this size followed in 1960 and 1961, and in 1960 the U.S.S.R. started acquiring tonnage in free world yards.

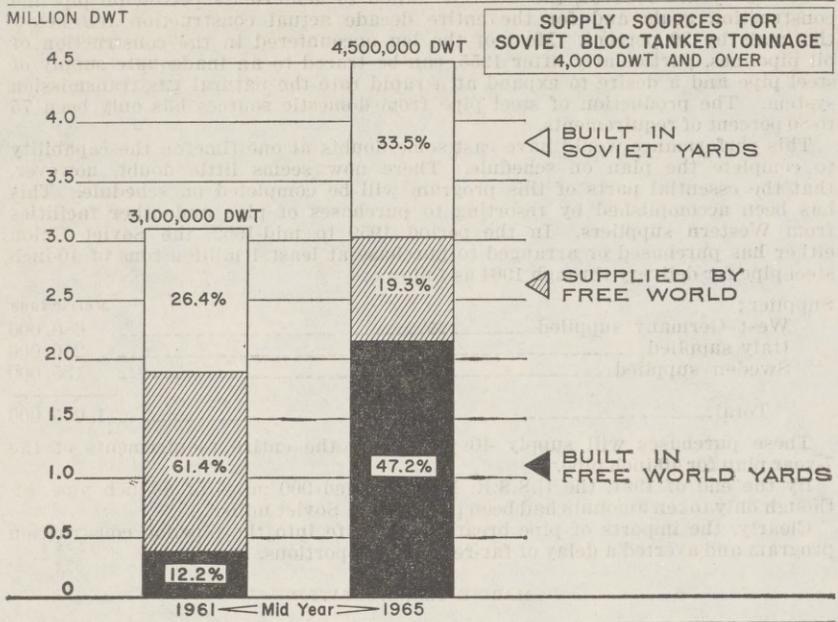
As of September 1, 1962, the Soviet bloc fleet totaled almost 2 million tons. Of this total fleet, 786,000 deadweight tons or 40 percent was built in free world countries. Thus, the U.S.S.R. is deeply indebted to the free world for building up its present fleet.

The bloc tanker fleet will continue to grow. As of September 1, 1962, orders for new construction totaled 1,900,000 deadweight tons. Of this total, 23 ships or 641,000 deadweight tons will be built in bloc yards and 51 ships or 1,253,000 deadweight tons will be built for the U.S.S.R. in the free world yards. The tonnage the bloc is receiving from the free world is twice the buildings in the bloc's own yards.

The ultimate source (i.e., free world or bloc) of the tanker tonnage used by the bloc in 1961 and 1965 is shown on figure 3⁷ attached. (The 1965 fleet composition is predicated on the export potential of 1,020,000 barrels per day.) It will be noted that the bloc shipyards will have provided only 33.5 percent of the probable supply of tonnage in 1965. All else will be supplied by the free world either as outright sales to the bloc, or charters and customer arranged transportation. Figure 3 shows that 19.3 percent of bloc movements will be supplied by the free world in 1965. However, the bulk of this is expected to be covered by those customers who insist on buying f.o.b. Soviet ports. Hence the bloc will require practically no chartering from the free world. Nearly all of the oil that the bloc will transport will move in owned vessels, making the bloc practically self-sufficient. This is a significant change from 1961. It was accomplished not by bloc buildings—but rather by purchases in the free world.

⁷ See p. 396.

FIGURE 3



When the 7-year plan (1959 through 1965) was announced in 1958, the stated intention was to increase the size of the tanker fleet by 80 percent during the plan. Thus the Soviet fleet would have to increase from 810,000 deadweight tons at the end of 1958 to 1,474,000 deadweight tons at the end of 1965. As contrasted to this, the committee estimates that the U.S.S.R. fleet will total approximately 3,500,000 tons at the end of 1965. Thus, instead of only an 80-percent increase as planned, the U.S.S.R. fleet will quadruple with just the buildings known to date. This emphasizes the importance the U.S.S.R. is placing on the ability to deliver its petroleum.

INSECURITY OF SUPPLY OF BLOC OIL AND TANKERS

With the bloc self-sufficient in tankers and moving most of its exports in its own bottoms, it is in a position at any time to deny the free world not only this export volume of oil, but also the ships being used to transport the oil. The committee estimated that if the bloc is exporting 1,020,000 barrels of oil per day to the free world in 1965, and if it should interrupt this supply and deny the use of the bloc's own tankers, then the free world would need an additional 231 T-2 equivalents to replace this supply of oil from the free world's alternative sources. This surge in requirements could be in excess of the then existing spare tonnage, causing severe transportation and oil crises. The transportation and oil crises might not be limited to marine movements, as difficulties could be experienced in inland movements of both crude and products to areas heavily dependent on bloc supplies.

BLOC OIL EXPORTS TO FREE WORLD

The foregoing conclusions have related to the existing and potential ability of the bloc to produce and deliver oil for export. With this background, this presentation now turns to the impact of these exports and their importance in the Soviet trade offensive.

The volume of Soviet bloc petroleum exports has grown very rapidly as shown below:

Volume of Soviet bloc oil exports to the free world—crude and products

Year:	1,000 barrels per day (approximately)	Year:	1,000 barrels per day (approximately)
1955-----	116	1959-----	353
1956-----	139	1960-----	486
1957-----	166	1961-----	610
1958-----	235	1965 estimate.....	available 1,020

During the 6-year period, 1955-61, these exports grew at a compound rate of 32 percent per annum. During the same period, free world oil consumption grew at a compound rate of less than 6 percent per annum.

Of the 1961 total of 610,000 barrels per day, 85 percent came from the U.S.S.R. However, the importance of the U.S.S.R. is greater than shown by this percentage since, in 1961, the U.S.S.R. exported to the bloc and the free world an estimated 800,000 barrels per day. This came from a country that in 1950 was a net importer of 30,000 barrels per day.

It will be noted that the committee estimates a surplus of 1.02 million barrels per day available for export to the free world from the bloc in 1965. Slightly less than one-half of this volume is expected to be products. A country-by-country analysis of predicted demand pattern, types of Soviet oil purchasers, and refining and marketing facilities, indicates that there would be markets that could be induced to absorb this oil. As previously stated, whether and where this much bloc oil will actually enter the free world in 1965 depends upon the actions taken by the West between now and then.

The committee considered it impractical to attempt any prediction of exportable volumes beyond 1965. However, the published statements of the U.S.S.R. on percentage growth in production and demand would indicate that the U.S.S.R. plans to have an exportable surplus to the satellites and the free world of 1.8 to 3.7 million barrels per day in the 1972-75 period. Some of this would, undoubtedly, be needed to make up the deficiencies in the satellites. Nevertheless, there seems to be every reason to expect that the export potential will continue to increase after 1965.

DESTINATION OF EXPORTS

Historically, the bulk of the bloc exports has gone to Europe. In 1961, Europe absorbed two-thirds as shown on the following table:

Estimated total Soviet bloc petroleum exports to the free world by country of destination, 1961

	Thousand barrels per day	Percent of local demand
Western Hemisphere:		
Brazil.....	10.2	4
Cuba.....	78.0	100
Uruguay.....	1.0	4
Subtotal.....	89.2	
Free Europe:		
Austria.....	13.4	21
Belgium.....	6.8	3
Denmark.....	4.4	3
Finland.....	47.7	78
France.....	23.0	3
West Germany.....	82.5	10
Greece.....	18.0	35
Iceland.....	6.0	88
Italy.....	126.6	22
Netherlands.....	1.0	
Norway.....	5.0	7
Spain.....	2.0	2
Sweden.....	51.3	19
Switzerland.....	2.0	
United Kingdom.....	2.3	
Yugoslavia.....	2.0	10
Subtotal.....	394.0	8
Other Eastern Hemisphere:		
Japan.....	54.8	7
Egypt.....	47.0	48
Others.....	25.0	
Subtotal.....	126.8	
Total, free world.....	610.0	6

Eighty percent of the volume of bloc oil is absorbed by a handful of customers—Italy, West Germany, Cuba, Japan, Sweden, Egypt, and Finland. NATO countries absorb 275,000 barrels per day or about half the volume. While the total amount of 1961 imports of Soviet bloc oil was 6 percent of the free world demand (outside the United States), certain countries import much more than this percentage of their local requirements as noted in the foregoing table.

TYPE OF COMPANIES THAT BUY SOVIET OIL

An analysis of the type of free world companies that buy Soviet oil is shown below:

1961 Soviet bloc sales to free world by type of purchaser

[Thousand barrels per day]

	Government-owned companies	Nonintegrated companies	Others	Total
Crude:				
Western Hemisphere.....	68.1	0.7		68.8
Europe.....	99.8	66.9	12.0	178.7
Other Eastern Hemisphere.....	30.0	41.3	1.0	72.3
Subtotal.....	197.9	108.9	13.0	319.8
Percent of total.....	62.0	34.0	4.0	100.0
Products:				
Western Hemisphere.....	20.4			20.4
Europe.....	18.6	134.4	62.3	215.3
Other Eastern Hemisphere.....	19.9	12.2	22.4	54.5
Subtotal.....	58.9	146.6	84.7	290.2
Percent of total.....	20.0	51.0	29.0	100.0

As shown above, 62 percent of the crude was purchased by government oil companies and 34 percent was purchased by nonintegrated oil companies. Government oil companies bought 20 percent of the bloc petroleum products, while nonintegrated marketers accounted for 51 percent. Government-owned oil companies are the largest customers for Soviet crude oil. Hence the governments could, through their own companies, do much to restrict the penetration of Soviet oil.

EFFECT ON PRODUCING COUNTRIES' REVENUE

In 1953 all Soviet bloc exports went to Europe and supplied 1.9 percent of the demand. The rapid increase in bloc exports that has occurred since 1953 with the change in the bloc's trade policy has been at the expense of the free world's oil industry.

If Soviet bloc exports to Western Europe since 1953 had remained in line with their percentage share in that year, and there had been no penetration of other markets, the 1961 total bloc exports would have been only 86,000 barrels per day, or 524,000 barrels per day less than the actual total. The producing government revenues that would have been derived each year since 1953 from such displaced oil, estimated on the basis of the average direct income per barrel received by the Middle East and Venezuela, are shown below:

	Dollars per year	Cumulative		Dollars per year	Cumulative
1954.....	15	15	1958.....	52	145
1955.....	19	34	1959.....	83	228
1956.....	25	59	1960.....	117	345
1957.....	34	93	1961.....	145	490

In addition to payments of tax and royalties, which form the basis of these loss calculations—the production and export of oil gives rise to a number of other local receipts, for example, wages and salaries, revenues of local contractors, and payments for local purchases of goods. The level of such local receipts generated by oil companies is linked to the level of oil production; hence the Soviet oil exports have a retarding or depressing effect on such transactions.

The size of direct payments to the government of free world oil exporting countries not only depends upon the volume of exports, but also is related to f.o.b. selling prices. There is ample evidence that the U.S.S.R. has substantially reduced prices below economic levels as its main means of obtaining or increasing its oil export business. This practice has inevitably increased existing pressure upon the f.o.b. selling prices. For example, though the degree of responsibility is not demonstrable, there can be no doubt that cut-price Soviet bloc exports contributed to the reduction in Middle East posted prices which took place in February 1959 and August 1960.

The committee did not consider it practical to make an attempt at quantifying the damage done to the free world's oil industry, but it believes the effect has been considerable.

BLOC TRADE WITH THE FREE WORLD

To fully appreciate the problems of bloc trade it is helpful to consider how the U.S.S.R. conducts it. Among the first things to be nationalized when the Communists came to power in Russia was foreign trade. A Government decree of April 23, 1918, prohibited all import and export transactions except through the intermediary of special state agencies. While there have been some changes in form through the years, the principle of maintaining a state monopoly over exports and imports has never been infringed.

This control provides:

Complete protection of the domestic economy against foreign competition. Isolation of the internal currency from the influence of foreign exchange markets.

A strong bargaining position in trading with private enterprises in the free world.

Ability to discriminate among purchasers and suppliers and sell in foreign markets without regard for normal commercial considerations or internal costs.

Flexibility to adjust trade to serve political objectives.

Premier Khrushchev underscored the importance of the last purpose when he stated that "We value trade least for economic reasons and most for political purposes." Clearly, Soviet bloc trade, which is backed by the monolithic power of the state, cannot be considered on the same terms as the trade of individual private companies motivated by commercial objectives. The foreign trade of the Soviet bloc is but one element in the Soviet Union's plan to consolidate its own power and to extend communistic influence over countries that deal with it.

Specifically, the foreign trade program of the Soviet bloc is aimed at:

(1) Obtaining vital materials and technical know-how from the free world to strengthen the Communist economic-military base.

(2) Spreading communism through extension of state control in countries with whom they trade, thus expanding their area of immediate ideological influence and eventual control.

(3) Destroying operations of private companies. The U.S.S.R. recognizes that large commercial firms, particularly the private oil companies, are a source of strength to the free world, and pose a threat to extension of their own ideology of state control.

(4) Creating unrest and political instability in areas of vital importance to the defense of the free world.

In the initial years following World War II, the trade of the Soviet bloc followed a deliberate policy of aiming toward self-sufficiency. The bloc was slow in developing surpluses for export to the free world. Following the death of Stalin in 1953, the commercial policy of the bloc was reversed with the aim of increasing trade between the East and the West. The result was a spectacular increase in free world trade with the Soviet bloc.

Free world trade with Soviet bloc

(Millions of U.S. dollars)

FREE WORLD IMPORTS FROM

Year	U.S.S.R.	Satellites	Far East	Total	Bloc as percent of world trade
1947.....	273.9	732.9	417.9	1,424.7	2.5
1953.....	374.1	803.2	442.7	1,620.0	2.1
1956.....	806.1	1,473.1	657.5	2,936.9	3.0
1960.....	1,504.3	2,117.7	784.0	4,406.0	3.7

FREE WORLD EXPORTS TO

1947.....	477.0	856.5	672.3	2,005.8	3.9
1953.....	423.5	677.8	287.6	1,388.9	1.8
1956.....	784.1	1,318.5	434.2	2,536.8	2.7
1960.....	1,565.0	2,175.4	702.4	4,442.8	3.9

By 1960, free world trade with the bloc had increased threefold over 1953 levels to \$4.4 billion in each direction. The bloc's share of international trade rose from about 2 percent to almost 4 percent during this period. Two-thirds of the East-West trade in 1960 was with Western Europe.

SOVIET BLOC ACQUISITION OF STRATEGIC GOODS AND TECHNOLOGY

The acquisition of strategic goods and technology is an important objective of the Soviet bloc in their trade with the industrialized nations of the free world.

The items of major interest to the Soviet bloc are the products of advanced technology. Particularly desirable from the Communist point of view are complete plants which represent an import of technology that can be duplicated directly and thus multiply manifold the yield from a relatively small purchase. The following items are of especial significance: complete petrochemical and synthetic plants, electronic equipment for communications and control, precision and highly automatic machine tools, construction machinery, industrial handling equipment, carbon steel and alloy sheet and strip, modern cold-rolling mills for sheet and strip steel, electric power generation and transmission equipment, precision bearings, rail and ocean transport equipment, complete tire plants, and large diameter pipe and other equipment needed for the production and transportation of oil.

Pisar found that the Soviet bloc had procured in 18 months—January 1960 through June 1961—approximately \$1 billion in plants and equipment embodying new Western technology.

The degree of concentration of these items in the trade with the bloc is shown in the following:

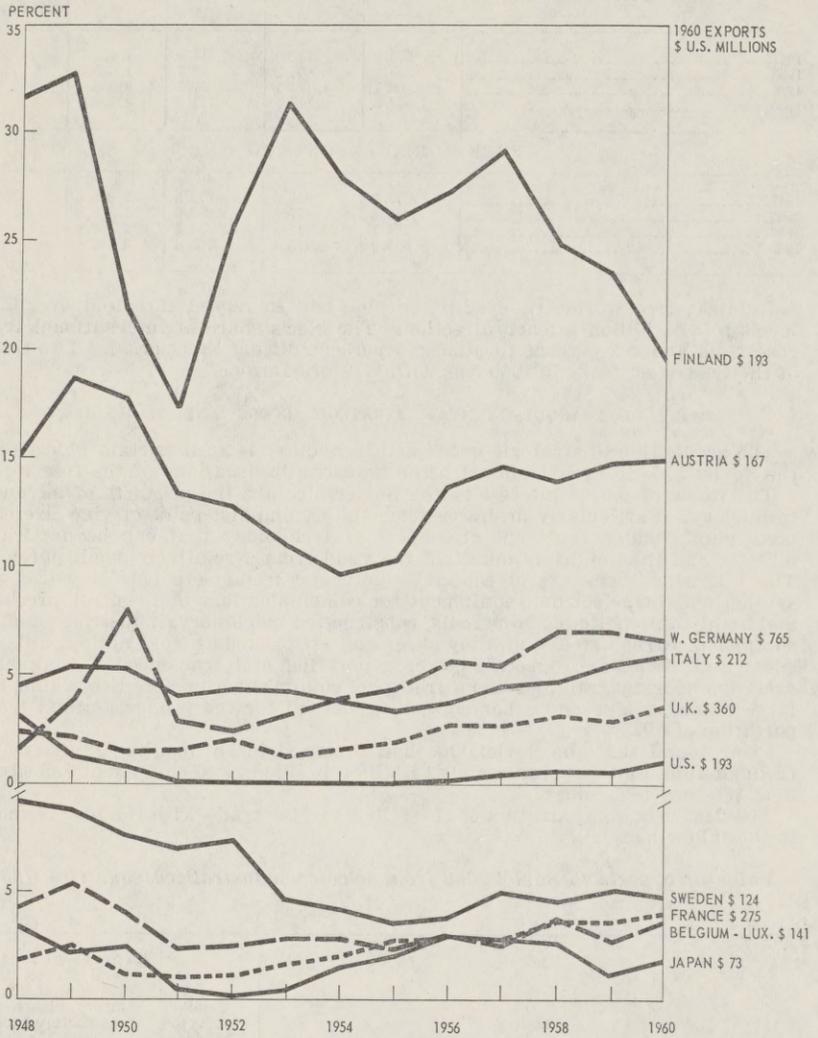
Value of exports to Soviet bloc from selected industrialized countries, 1960

[In millions of U.S. dollars]

Country	Total exports to the bloc	Exports of metals, metal shapes, transport equipment, machinery, plants, other manufactured goods	
		Amount	Percent of total
West Germany.....	765	613.5	80
United Kingdom.....	360	234.7	65
France.....	275	240.4	87
Italy.....	212	130.3	61
United States.....	193	47.5	25
Austria.....	167	141.0	84
Belgium-Luxembourg.....	141	102.8	73
Sweden.....	124	76.1	61
Japan.....	73	61.8	85

FIGURE 4

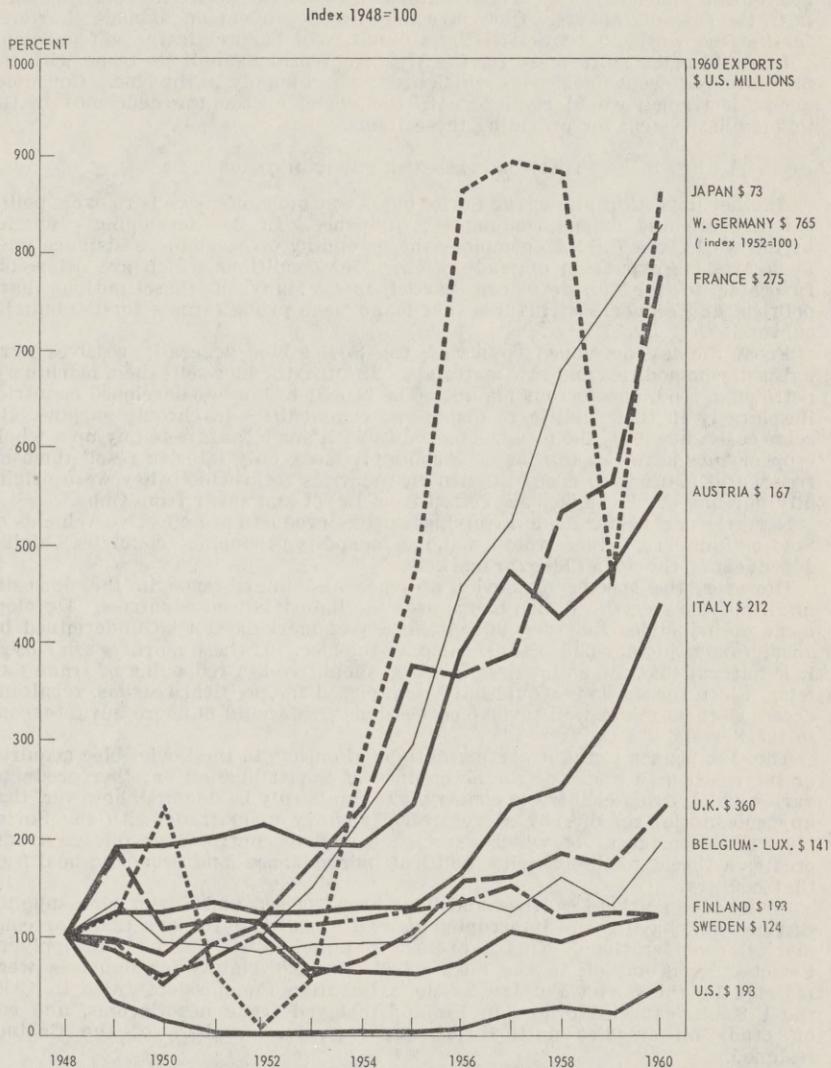
EXPORTS TO SOVIET BLOC AS PERCENT OF TOTAL EXPORT TRADE



SOURCE: U.S. DEPARTMENT OF COMMERCE, INTERNATIONAL ECONOMIC ANALYSIS DIVISION
BUREAU OF FOREIGN COMMERCE - VALUE SERIES.

In return, the industrialized nations buy from the bloc large amounts of food, crude materials, and fuels. Of the 10 countries listed above, 6—West Germany, France, Austria, Italy, Sweden, and Japan—are among the 10 largest off-takers of Soviet bloc oil. Furthermore, all of these six with the exception of Sweden have shown very rapid increases in their trade with the bloc. This is shown in figures 4⁸ and 4a.

FIGURE 4a
EXPORTS TO SOVIET BLOC



SOURCE: U.S. DEPARTMENT OF COMMERCE, INTERNATIONAL ECONOMIC ANALYSIS DIVISION
BUREAU OF FOREIGN COMMERCE - VALUE SERIES.

⁸ See p. 402.

Many of the items which the industrialized nations export to the Soviet bloc—for example, equipment used for an expanding oil transportation network—have obvious potential military value. The effect is that the industrialized nations who engage in this kind of trade are strengthening the avowed enemy of the free world.

Though the bloc is now buying huge amounts of industrial equipment and products of high technology, there is no intent of the bloc to continue to remain dependent on these suppliers for such items. They have not abandoned their goal of self-sufficiency. A current example of the Soviet desire for self-sufficiency is in the case of tankers. Currently they are dependent on tonnage chartered in the free world, but by 1965 the U.S.S.R. will be practically self-sufficient.

It would make more sense for the Western World to limit its trade with the bloc largely to consumer goods which are in short supply in the bloc. Consumer goods, if traded, would emphasize to the Soviet citizen the deficiency in the Communist system for providing these items.

POLITICAL PRESSURE THROUGH TRADE

Another important aim of the Soviet bloc's economic offensive is to exert political pressure and extend communistic influence. In the developing countries of the world, the U.S.S.R. combines the extending of economic assistance with an aggressive expansion of trade often under conditions which are ostensibly favorable to the less-developed participants. Many of these nations have political and economic structures that make them prime targets for Communist subversion.

From the less-developed countries, the Soviet bloc generally receives agricultural commodities and raw materials. In turn, the bloc sells them machinery, petroleum, food, and ferrous metals. The benefit to the less-developed countries lies largely in their ability to dispose of commodities in chronic surplus. In some cases, however, the bloc has moved in with much fanfare to buy up a whole crop or substantial quantities of surplus products, only later to resell them on free world markets in competition with countries from which they were originally purchased. Examples are cotton from Egypt and sugar from Cuba.

Nevertheless, barter deals involving surplus products are effective vehicles of Soviet influence, since they make commodity-producing countries highly dependent on the Soviet bloc for markets.

However, the specter of Soviet pressure and interference in the domestic affairs of the free world also hangs over the industrialized countries. Development of industries that depend on the Soviet markets can be undermined by abrupt and arbitrary political decisions of the bloc. If these markets are closed, it is natural that the enterprises involved should seek a reopening of trade outlets. Since the markets would have been closed for political reasons, regaining access to them might well involve concessions that would be more advantageous to the Soviets.

The significance to the exporting nations of outlets in the Soviet bloc acquired or increased as a result of the acceptance of Soviet bloc oil or other products, varies widely from country to country. It can hardly be doubted, however, that any substantial reliance by a free world country upon trade with the Soviet bloc, the government of which exercises complete control over foreign trade, creates a threat to the security, political independence, and economic health of that country.

Soviet bloc markets can be—and have been—closed and Soviet bloc supplies can be—and have been—interrupted more for political reasons than for commercial considerations. This happened to Israel in 1956 when its supply of Soviet oil was cut off in the Suez crisis. Israel's claims for damages were rejected by the Soviet Foreign Trade Arbitration Commission. Also in 1958, the U.S.S.R. canceled orders in Finland, delayed trade negotiations, and cut off crude oil supplies until certain Conservative members of the Cabinet resigned.

PETROLEUM COMPONENT IN SOVIET TRADE

The Soviet bloc has seized on petroleum as a highly merchantable commodity that they can barter for much needed Western equipment and technology as well as for political influence. This is not surprising when one surveys what little else the bloc has available for trade.

Petroleum component of free world imports from the bloc

[Millions of U.S. dollars and percent]

Year	From total bloc			From U.S.S.R.		
	Total imports	Petroleum	Percent of total	Total imports	Petroleum	Percent of total
1952.....	1,634	26	1.6	468	10	2.1
1955.....	2,421	143	5.9	640	71	11.0
1960.....	4,276	460	10.8	1,395	344	24.6

The growth of oil has been spectacular. It now accounts for 10.8 percent of the free world imports from the bloc and 24.6 percent of those from the U.S.S.R. In 1960 the value of free world imports from the Soviet bloc amounted to \$400 million.

Clearly, petroleum is most essential to the Soviets in reaching its trade objectives.

FREE WORLD OIL INDUSTRY: A MAJOR TARGET OF SOVIET ECONOMIC OFFENSIVE

The growth in bloc oil trade has a significance more widespread than the volume indicates.

From Lenin down to the present day, the Communists have looked upon the private oil industry as a major symbol of the free enterprise system and of the economic strength of the free world. As such, the continuing existence and prosperity of the private oil industry poses an obstacle to the spread of their own ideology and influence.

An article in an authoritative Soviet publication went further in clarifying the aims of the Communists toward the free world oil industry. It stated:

"It should be borne in mind that oil concessions represent, as it were, the foundation of the entire edifice of Western political influence in the (less developed) world, of all military bases and aggressive blocs. If this foundation cracks, the entire edifice may begin to totter and then come tumbling down."

Thus, the Soviet Union is not out simply to sell oil, but to disrupt, undermine, and, if possible, destroy the position of the private oil industry.

The U.S.S.R. is using every means to encourage state control over oil in free world countries, and to incite the leaders of developing nations against the private oil industry. Facilities have already been expropriated in Ceylon and Cuba, and the industry is under heavy pressure in many other countries as a result of Soviet offers of oil aid. The Soviet bloc is sending out petroleum technicians and making loans to any country willing to promote state development and distribution of oil. Countries which have accepted such aid range from Afghanistan in the Far East to Argentina in the Western Hemisphere. As previously shown, government oil companies in turn become large customers of Soviet oil.

The trading methods of the Communists—state trading on the basis of government-to-government barter agreements—weaken seriously the basis for continued private trading in oil. State trading is, by its nature, discriminatory and destructive of free enterprise, and when conducted on a massive scale and by countries opposed to private ownership, it becomes an even more powerful means of weakening private oil company operations.

The U.S.S.R. openly charges its satellites considerably higher prices than it charges for the same oil in free world markets without the least fear of competition.

Average export prices for U.S.S.R. crude oil[U.S. dollars per barrel ¹]

Year	To free world	To satellites	Year	To free world	To satellites
1955.....	2.16	3.37	1958.....	2.08	2.96
1956.....	2.17	3.30	1959.....	1.89	3.01
1957.....	2.56	3.28	1960.....	1.56	3.01

¹ Converted at \$1.11 per rouble.

Further evidence is obtained by comparing crude prices charged specific countries. In 1960, for instance, East Germany paid \$2.69 per barrel versus \$1.38 per barrel for West Germany. Hungary paid \$3.06 per barrel versus \$1.41 per barrel for Italy. Communist China paid \$2.92 per barrel versus \$1.34 per barrel for Japan.

Product prices also show the same discrimination. This discriminatory pricing suggests that the satellite economies are being used to subsidize the U.S.S.R.'s oil exports to the free world. Even though there may be offsetting or compensating arrangements in other commodities within the bloc, the subsidy Soviet oil obtains must help its oil industry show a reasonable performance in spite of its cut price sales to the free world. Furthermore, in countries whose currencies are soft or inconvertible, the exchange of commodities through barter agreements gives Soviet oil a big advantage over free world oil.

FREE WORLD TRADE CONTROLS ARE INEFFECTIVE

Although the committee may not have been aware of all the efforts to restrict bloc oil, it believed that relatively little had been done to date. However, it is known that restrictive measures have been discussed in NATO and active consideration is now being given this problem by the European Common Market.

Equally as serious is the lack of an effective program of controlling the critical equipment the bloc is purchasing in the West—purchases for which Soviet oil is making a large contribution. The present CoCom agreement seems limited to a narrow list of arms, atomic energy material, and strategic materials. The agreement is not aimed at the export of goods and technology which contribute to the industrial potential of the bloc. To illustrate, the committee believes the U.S.S.R. may seek certain petroleum equipment in the West to insure meeting its oil production goals. None of these items is embargoed by CoCom.

The United States maintains a much tighter control than the CoCom agreement prescribes, but even in the United States there are no restrictions on the export of drill pipe, drill collars, tool joints, and diamond bits—items the committee believes the Soviet oil industry will need to meet its production targets. The United States does require export licenses for rotary drilling rigs that the U.S.S.R. will in all probability need.

It would appear evident that the Western industrialized countries, which know themselves to be threatened militarily and subversively by the Soviet bloc, are defeating their own ends by contributing to the industrial strength of the Communists.

CONCLUDING REMARKS

In view of the above factors, the committee feels that continued expansion of Communist oil exports is a serious problem to the free world. The impact of Soviet oil on free world countries is far greater than the volume figures would indicate and goes beyond its immediate implication for the oil companies involved.

Without a doubt, Soviet oil is the most important element in the Soviet politicoeconomic offensive in the free world. The Communists are using it to procure vital equipment and technology to create political unrest and spread communism. It is a weapon with which they hope to destroy the private oil industry.

The seriousness of the Soviet economic offensive requires a concerted effort by the leading countries of the free world to restrict further imports of Communist oil and the export of strategic materials to the Soviets. Individual action is insufficient. For example, the "Black Sea" chartering policy of a single company (the refusal to charter ships from owners supplying tonnage to the bloc) did not stem the flow of Soviet oil to Cuba. The political alliances which free world countries have formed to combat Soviet aggressions must now be extended fully to the equally important economic field. It is unrealistic to leave the free world's economic flanks unprotected, particularly as the Soviets have clearly indicated that their trade is conducted "most for political purposes."

Senator KEATING. We certainly thank you, Mr. Piercy. This has been a problem which enlisted my interest some time ago and, with perhaps one exception, there is no subject on which I have been more

consistently and constantly speaking out on the floor of the Senate and elsewhere than on this problem of trade with the Soviet bloc.

I feel that there is no more important problem overall—barring emergency problems—in the long range, that faces our country and the free world, and we are very grateful to you for appearing here this morning. I want to note the presence in the room of Mr. Robert McMillan, formerly of the staff of this committee who did outstanding work for us while he was with us.

Counsel has a question.

Mr. SCOTT. Mr. Chairman, one question in which we were interested was finding the answer to your discussion of the split or division of the world market between the Soviet bloc and the Western bloc, taking it on a worldwide basis.

Mr. Piercy, would you tell us what share of the free world market outside of the United States belongs to the Western oil majors?

Mr. PIERCY. I do not have that—

Senator KEATING. You can remain seated if you want to.

Mr. PIERCY. I don't have that number in mind.

Mr. SCOTT. Can you supply that for the record?

Mr. PIERCY. Yes, I would be happy to supply it.

Senator KEATING. I think that is a good question.

Mr. PIERCY. Let me be sure I got the question straight. It was outside the United States what percent—outside the Soviet bloc.

Mr. SCOTT. Yes, what share of the free world market—

Mr. PIERCY. Is handled—

Mr. SCOTT. Is handled or belongs to our Western oil majors.

Mr. PIERCY. Western oil majors. You left it up to me as to what company is included, I can supply it.

Senator KEATING. Isn't the question free world oil companies?

Mr. SCOTT. Yes.

Senator KEATING. Incidentally what percentage is supplied by the Soviet bloc? Is that what you are getting at?

Mr. SCOTT. Yes.

Mr. PIERCY. Well, now, I could tell you how much is supplied by the Soviet bloc. Total petroleum demand outside the United States and outside the Soviet bloc is about 10 million barrels per day, close to 11 million.

The Soviet bloc in 1962 is shipping 633,000 barrels per day, so it is supplying about 6 percent of the demand outside of the United States.

Mr. SCOTT. Then we supply 94 percent, is that correct?

Mr. PIERCY. No. In this 94 percent you have Western oil companies, you have State oil companies and you have lots of other ones. What I thought your first question to be was, What share of the free world market outside the United States belongs to the Western private oil companies?

Mr. SCOTT. Yes.

Mr. PIERCY. I do not have that.

Mr. SCOTT. But you can provide it for the record?

Mr. PIERCY. I think I can provide it and I will try.

Senator KEATING. I think it would be helpful to break that down between Western private oil companies and Government-operated oil companies in the free world.

Mr. PIERCY. Yes. I will try to supply that.

In a letter dated November 15, 1962, to Mr. Scott, assistant subcommittee counsel, Mr. Piercy wrote:

During my testimony on Friday, October 26, before the Internal Security Subcommittee of the Senate Judiciary Committee, you and Senator Keating asked if I could furnish you some data with regard to the relative amount of the market supplied by private oil companies and Government oil companies. We find that we do not have the data with regard to market position. However, we do believe that the data we have with regard to refining capacity owned by Government and private companies will probably give you the general background information that you need. This is given on the attached table. You will note that we have classified the world's refining capacity outside of the United States according to the ownership by international majors, Government oil companies and other private companies. We have defined the international majors as consisting of Standard Oil Co. (New Jersey), Socony Mobil, Gulf Oil, Texaco, Standard of California, Royal Dutch/Shell Group, and British Petroleum. We call your attention to the fact that we have included British Petroleum as a private international major although I believe that something over 50 percent of the voting stock is owned by the British Government.

I trust that the attached table will be helpful to you in your investigations. I regret that I am unable to furnish you the information in precisely the form that you asked. If I can be of further service, please do not hesitate to call upon me.

(The table referred to follows:)

Free world (excluding the United States) ownership of refining capacity

[Thousands of barrels daily]

	1961		1962-65	
	Year-end capacity	Percent	New capacity	Percent
Latin America (excluding Caribbean):				
International majors.....	203	15	102	17
Government.....	977	73	379	62
Others.....	164	12	127	21
Free Europe:				
International majors.....	3,036	65	880	44
Government.....	417	9	348	17
Others.....	1,192	26	764	39
Far East (excluding Japan):				
International majors.....	826	86	399	58
Government.....	37	4	152	22
Others.....	93	10	140	20
Japan:				
International majors.....	202	21	73	10
Others.....	774	79	677	90
Free world (excluding United States):				
International majors.....	8,261	65	1,729	35
Government.....	1,767	14	1,284	26
Other.....	2,682	21	1,902	39

Senator KEATING. Mr. Piercy, now your testimony was based here on this extensive study that you had made and the reports and I have a copy of volume 1 of the Impact of Oil Exports From the Soviet Bloc.

You also have a volume 2 that is in draft form which will be published in the very near future?

Mr. PIERCY. It will be out in about 3 weeks, I have it here.

Senator KEATING. Could you make available copies of both volume 1 and volume 2 to the committee?

Mr. PIERCY. I will see that you get those.

Senator KEATING. Thank you, Mr. Piercy.

(Copies of the study above referred to were later received and are retained in the subcommittee files.)

Mr. SCOTT. I have no further questions.

Senator KEATING. Thank you very much, Mr. Piercy. We are indebted to you for summarizing for us the work of this committee. You have done an outstanding job and I hope you have been helpful in alerting the free world to the need for a careful surveillance of this problem, and probable affirmative action to meet the threat that is posed.

Mr. PIERCY. Thank you very much. I appreciate your kind attention to this problem, because we feel it is very serious.

Senator KEATING. The hearing on the subject of Soviet oil will be recessed at this point. The subcommittee will resume with testimony on a related matter.

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INDEX

NOTE.—The Senate Internal Security Subcommittee attaches no significance to the mere fact of the appearance of the name of an individual or an organization in this index.

	Page
A	
Afghanistan.....	405
Alaska.....	374
Almetyevsk (Urals-Volga).....	394
Argentina.....	405
Austria.....	398, 401, 403
Average export prices for U.S.S.R. crude oil.....	405
B	
Baikal, Lake.....	378
Baku region.....	374
Baton Rouge refinery.....	372
Battle Act.....	370
Belgium.....	398, 401
Berlin.....	369
Black Sea.....	378, 386
Black Sea chartering policy.....	406
Bratislava (Czechoslovakia).....	394
Brazil.....	381, 398
British Petroleum.....	408
Brody (U.S.S.R.).....	394
C	
Castro.....	370, 381
Ceylon.....	405
China, Communist.....	369, 385, 393, 406
Chita.....	378, 394
Classification of sedimentary area, U.S.S.R. (table).....	388
CoCom.....	370, 378, 406
CoCom agreement.....	386
Comecon (CEMA) pipeline.....	394
Commerce Department.....	369
Continental Shelf.....	374
Crude oil production and goals in first 3 years of 7-year plan, 1959-61 (chart).....	390
Cuba.....	369, 370, 380, 381, 393, 398, 405, 406
Czechoslovakia.....	394
D	
Denmark.....	398
Designation of exports.....	398
Drago, Joseph P.....	370
E	
Eau Claire State College.....	372
Effect on producing countries' revenue.....	399
Egypt.....	380, 381, 398
E.N.I.....	381
Esso Standard Oil Co. (New York).....	372
Esso Tankers, Inc.....	372

	Page
European Common Market.....	386, 406
Exploratory and development drilling for oil and gas in the U.S.S.R. (table).....	389
Export Control Act.....	370
Exports to Soviet bloc as percent of total export trade (chart).....	402
F	
Finland.....	380, 398, 404
Foreign Affairs (publication).....	384
France.....	398, 401, 403
Free world (excluding the United States) ownership of refining capacity (table).....	408
Free world trade with Soviet bloc (table).....	401
G	
Geophysical crews, U.S.S.R. (table).....	388
Germany, East.....	385, 394, 406
Germany, West.....	379, 380, 383, 385, 395, 398, 401, 403, 406
Greece.....	398
Gulf Oil.....	408
H	
Harvard Press.....	385
Holtzman, Professor.....	385
Hungary.....	385, 394
I	
Iceland.....	398
Impact of Oil Exports, Committee on.....	372
Interior, Department of the.....	374
Irkutsk.....	394
Israel.....	404
Italy.....	380, 381, 395, 398, 401, 403, 406
J	
Japan.....	378, 379, 380, 383, 385, 394, 398, 401, 403
K	
Khrushchev, Premier.....	382, 400
Klaipeda.....	394
Kuibyshev.....	394
L	
Laos.....	369
Leningrad.....	378, 384, 394
Louisiana State University.....	372
Mc	
McMillan, Robert.....	407
M	
Minnesota, University of.....	372
Moscow.....	384
N	
Nakhodka.....	394
National Petroleum Council.....	370, 371, 373, 374
NATO.....	370, 386
Netherlands.....	398
Norway.....	398
Novorossiysk.....	394
O	
"Oil Exports From the Soviet Bloc" (statement of Mr. Piercy).....	387

P	Page
<i>Pekin</i> (supertanker)-----	379, 395
Petrobras-----	381
Petroleum component of free world imports from the bloc (table)-----	405
Piercy, George T.:	
Testimony of-----	371-409
Subpena to-----	371
Biographic résumé of-----	372
Letter to Mr. Scott dated November 15, 1962-----	408
Pipeline of Friendship-----	378, 394
Pisar-----	401
Plantation Pipe Line Co.-----	372
Poland-----	385
Production of crude oil in the U.S.S.R. (table)-----	391
Production of natural gas in the U.S.S.R. (table)-----	391
R	
Review of Economics and Statistics-----	385
Royal Dutch/Shell Group-----	408
S	
Sahy (Czechoslovakia)-----	394
Scholven Refinery-----	381
Scott, Samuel J.-----	371, 373
Seven-year plan-----	393, 396
Shortfalls in the production of natural gas in the first 3 years of the 7-year plan, 1959-61 (chart)-----	392
Snyder, Philip H.-----	370
Socony Mobil-----	408
Soviet bloc petroleum balance-----	393
Soviet bloc sales to free world by type of purchaser (1961) (table)-----	399
Soviet Foreign Trade Arbitration Commission-----	404
Spain-----	398
Stalingrad-----	378, 394
Standard (Oil) of California-----	408
Standard Oil Co., New Jersey-----	371, 372, 408
Strausz-Hupé, Dr. Robert-----	370
Suez crisis-----	404
Sweden-----	379, 380, 395, 398, 401, 403
Switzerland-----	398
Szazhalombatto (Hungary)-----	394
T	
Texaco-----	408
Trading With the Enemy Act-----	370
Tuapse-----	394
U	
United Kingdom-----	401
Ural-Volga Basin-----	374, 376, 378, 394
Uruguay-----	398
V	
Value of exports to Soviet bloc from selected industrialized countries, 1960 (table)-----	401
Venezuela-----	376, 382, 399
Ventspils-----	394
Vietnam-----	369
Volume of Soviet bloc oil exports to the free world—crude and products (table)-----	397
Y	
Yugoslavia-----	393, 398

1. The first part of the report deals with the general situation of the country and the progress of the work during the year. It is divided into two main sections: the first section deals with the general situation and the second section deals with the progress of the work.

2. The second part of the report deals with the results of the work during the year. It is divided into two main sections: the first section deals with the results of the work in the field of research and the second section deals with the results of the work in the field of education.

3. The third part of the report deals with the financial situation of the institution during the year. It is divided into two main sections: the first section deals with the income and the second section deals with the expenditure.

4. The fourth part of the report deals with the general conclusions and recommendations. It is divided into two main sections: the first section deals with the general conclusions and the second section deals with the recommendations.

