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OVERVIEW OF THE SIBERIA-TO-EUROPE NATURAL GAS PIPELINE

OFFICE OF SOVIET ANALYSIS
CENTRAL INTELLIGENCE AGENCY

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Overview of the Siberia-to-Europe Natural Gas Pipeline

Summary

The 3,000-mile Siberia-to-Europe natural gas pipeline is an enormous undertaking that promises substantial economic and political gains for the Soviet Union. The trunkline, costing at least $22 billion, is the first of two gas lines through which the Soviets plan to deliver 3.9 billion cubic feet per day to Western Europe by the late 1980s, a volume worth $6 billion annually in much needed hard currency. After credits are paid off beyond 1990, Soviet earnings from the deal will reach at least $8 billion. Increased dependence on Soviet gas will almost certainly influence European decision-making, despite likely efforts to provide a cushion against supply cutoffs. The Soviets conceivably could exacerbate European differences with the US over future economic sanctions against the USSR or even over more sensitive issues such as NATO force modernization. [redacted] (b)(1) (b)(3)

Financing and equipment negotiations for the first pipeline are nearly completed, and construction should begin later this year.

- West Germany and France have already agreed to purchase roughly half the gas to be exported through the new pipeline system. Italy, the other large prospective gas importer under the deal, will sign very soon. Much smaller gas purchase agreements with Austria, the Netherlands and Belgium probably will follow in the next few months.

- Less-than-full gas deliveries are supposed to begin in fourth-quarter 1984 at a floor price of $5.40 per 1,000 cubic feet.
- Moscow has lined up almost $13 billion in government-backed, subsidized credits for non-pipe equipment for the first export pipeline, more than twice the amount needed to cover likely equipment needs.
- The Soviets have signed contracts for approximately $4 billion in turbines, compressors and other non-pipe equipment for the pipeline. Another $1 billion in equipment--primarily pipe-laying machinery--may still be ordered. Delivery of most equipment is probably scheduled for late 1983 or early 1984.
- [redacted] (b)(1) (b)(3) The prospect of an expanded US embargo, however, has forced Moscow to canvass Western firms to determine whether a sufficient number of turbines not using US technology could be obtained should US sanctions prevent delivery of the GE-design turbines already ordered.
- Moscow has not ordered any pipe specifically for the export pipeline but will instead use pipe from multi-year contracts already signed with West European and Japanese firms to provide pipe for Soviet gas lines in general.

The value of the pipe use on the export line will approximate $2-$3 billion. [redacted]

Should US sanctions substantially reduce the availability of critical Western turbines to the USSR, Moscow would encounter considerable difficulty in building the export pipeline. The Soviets could still complete the pipeline if Western Europe were willing to purchase the gas. Moscow could reconfigure orders placed with Western turbine suppliers and divert additional domestic resources to the export pipeline project. [redacted]

Even if all Western turbines for the export line were denied by US sanctions, Moscow could make adjustments in its internal pipeline building, but the domestic cost would be substantial. The USSR's projected tight energy position through most of the 1980s would make Moscow extremely reluctant to risk making such a sacrifice. If the gamble failed, the Soviets almost certainly (b)(1) (b)(3) would have to sharply curtail oil exports. Moscow especially wants to avoid the disruption and potential hardship of having to divert equipment from domestic line construction at short notice after two or three years work on the export line. Nonetheless, the USSR's great need for substantially increased hard currency earnings from gas could prompt it to risk the costs of restricting the growth of domestic gas supplies, particularly if Moscow believed that it had no other way of retaining a sizable share of the West European gas market in the late 1980s and 1990s. [redacted]

Scope of the Project

The export pipeline represents an enormous undertaking in

terms of size, commercial complexity, and cost. [redacted]

Route

The export pipeline will run approximately 5,000 km (3,000 miles) within the USSR, following the southwesterly route planned for almost all Soviet domestic gas lines to be built by the mid-1980s (see map). The route selected represents a compromise between the shorter "Northern Lights" right of way, more of which lies in difficult sub-Arctic terrain, and the longer but easier path through Chelyabinsk. Beyond the exit point at Uzhgorod, some of the gas will transit Czechoslovakia to West Germany and central and north European customers, and some will cross through Hungary to supply Austria and southern customers. [redacted]

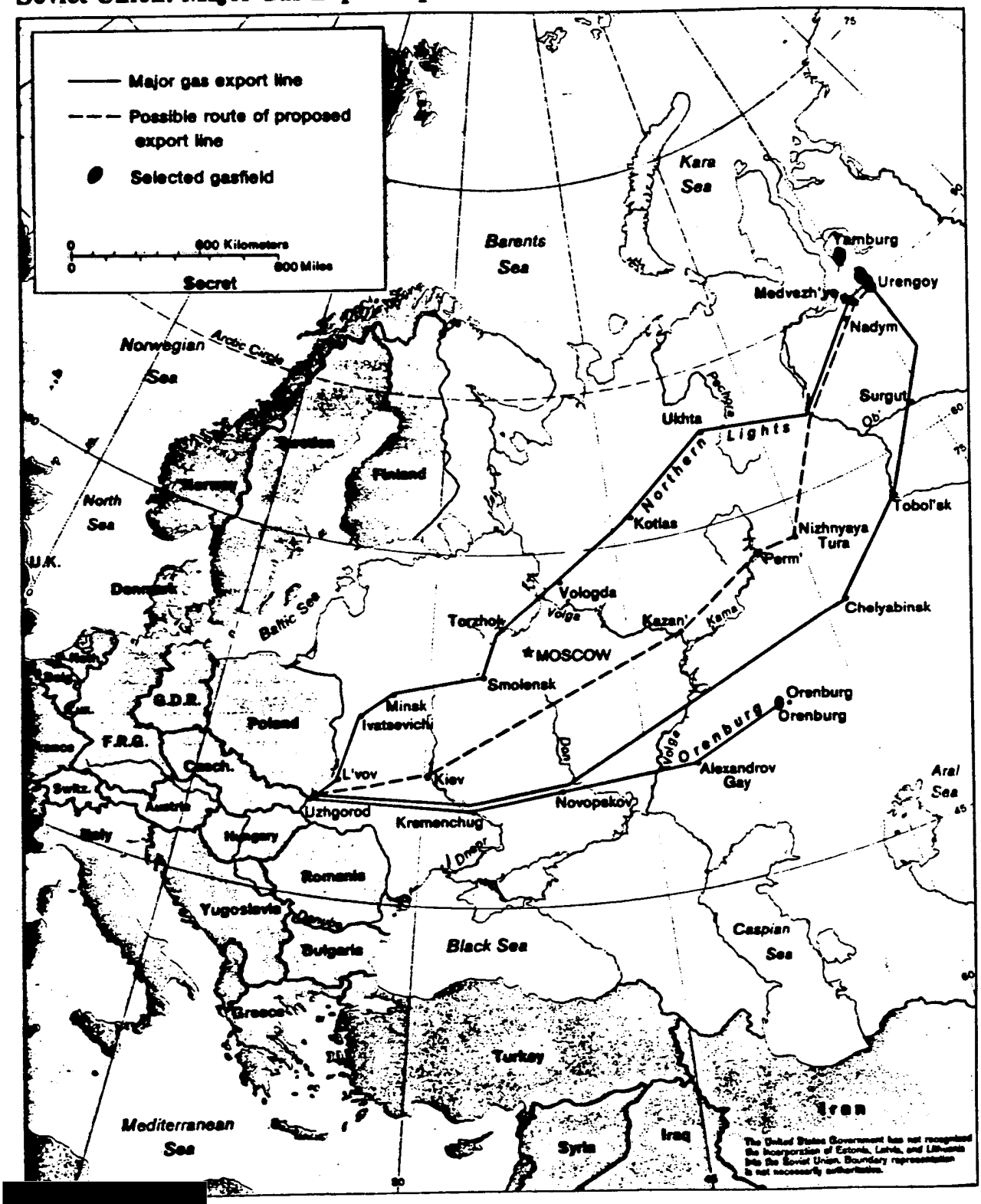
Capacity

The pipeline at full capacity can probably deliver 2.9 billion cf/d to Western Europe. (The input at the gas field will probably be 3.5 billion cf/d, with the turbines powering the 41 compressor stations consuming at least 10 percent of the [redacted] [b][1] [b][3] throughput). Because the Soviets want to ship some of the gas to domestic consumers and give a portion to Eastern Europe as a transit fee, a lesser amount will actually reach the West. Moscow therefore plans to build a parallel export line, beginning in 1984 or 1985, in order to deliver a total of 3.9 billion cf/d to Western Europe by the late 1980s. [redacted]

Gas Customers

At least six countries will purchase gas delivered through the export pipeline, and additional countries may sign up. West Germany is the largest prospective buyer. It signed an agreement

Soviet Union: Major Gas Export Pipelines



[redacted]

(b)(1)
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in November 1981 to import 1.0 billion cf/d, with an option for an additional 100 million cf/d if East Germany allows gas to flow to West Berlin. France and Italy are the next largest buyers, at 0.8 billion cf/d each. Austria, the Netherlands, and Belgium have not made firm commitments, but will probably each import 0.2-0.3 billion cf/d. Spain has not actively participated in negotiations with Moscow thus far but has become increasingly interested in purchasing Soviet gas following France's agreement to buy last month. Madrid wants to tie into the West European gas grid, and sees imports of Siberian gas--probably 0.2-0.3 billion cf/d--as the best way of doing so. [redacted]

Pipeline Completion Date

Moscow has contracted to begin gas deliveries to Western Europe in fourth quarter 1984. If start-up did occur on time, probably no more than 0.5 billion cf/d would be delivered that year. Completion of the export pipeline--bringing on line of all compressor stations and ancillary equipment--would probably be delayed until late 1986 or early 1987. Moscow could also extend an existing domestic line to the Czech border in the next two years to ensure at least small gas deliveries on schedule. (See "Work Done to Date" below.) Once the export line itself is laid, deliveries to Western Europe will increase gradually until full compressor capacity is achieved, perhaps by late 1986. [redacted] (b)(1) (b)(3)

Construction Costs

The first export pipeline will cost at least $22 billion. Western pipe and equipment paid for in hard currency will probably total $7-8 billion. Roughly $5 billion in equipment

will be required, and $2-3 billion in pipe. Soviet internal costs of roughly $15 billion are estimated on the basis of analogous Western projects, such as the Alaskan-Canadian gas pipeline. [redacted]

What the Pipeline Means to the USSR and Western Europe

Construction of the first export line by the mid-1980s and the second line by the decade's end would confer significant benefits on both the USSR and Western Europe. The Soviets would probably gain more from the project's completion than the West Europeans, however, both economically and politically. [redacted]

Soviet Benefits

Moscow wants the pipeline principally for the hard currency it will generate beginning in the mid-1980s, but the potential political leverage inherent in the project must also be attractive. [redacted] (b)(1) (b)(3)

Hard Currency Gains. Hard currency earnings from the export pipeline will partially offset the expected decline in Soviet oil exports to the West (see table 1). Natural gas promises to be by far Moscow's most important source of incremental hard currency revenues, since earnings from non-fuel exports--including arms and gold--will probably stagnate or rise only slowly during the 1980s. Although the USSR will have to make substantial outlays for equipment and pipe before gas export pipeline is ready for full operation, most of these expenditures will be covered by Western credits on favorable terms. In 1986--when we expect that the first pipeline could come on stream--net receipts will total nearly $3 billion. Receipts from the

Table 1

USSR: Estimated Net Receipts from Gas and Oil Sales

(Billion 1981 US $)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Yamal pipeline[1]	0	-0.6	0.8	-1.0	-2.1	2.9	2.7	2.6	5.0	5.8
Gas sales	0	0	0	0	0	5.1	5.1	5.3	7.5	7.7
Downpayments	0	-0.3	-0.3	-0.3	-0.6	-0.2	-0.2	-0.1	-0.1	0
Repayments and interest on credits	0	-0.3	-0.5	-0.7	-1.5	-2.0	-2.2	-2.6	-2.4	-1.9
Non-Yamal receipts	14.9	14.0	13.2	13.4	13.5	11.9	9.8	7.8	6.6	5.0
Oil sales[2]	11.5	10.5	9.5	9.5	9.5	7.9	5.8	3.8	1.6	0
Gas[3]	3.4	3.5	3.7	3.9	4.0	4.0	4.0	4.0	5.0	5.0
Net hard currency earnings from oil and gas	14.9	13.4	12.4	12.4	11.4	14.4	12.5	10.4	11.6	10.8

[1] Projections are based on the USSR's building a dual-line system in two stages, with the lines to begin operation in 1986 and 1989, respectively.

[2] The volume of oil sales for hard currency is projected at 900,000 b/d through 1985. Sales volume then declines to zero by 1990. Oil prices are assumed to fall nearly 10 percent in 1982-83 before leveling off for the rest of the decade.

[3] Natural gas exports from existing lines rise from 2.3 billion cubic feet a day in 1981 to 2.4 billion cubic feet a day in 1983 and remain at this level through 1990. The real price of gas (currently undervalued in relation to oil) is assumed to increase 25 percent during the decade.

[redacted] (b)(1) (b)(3)

arrangement will rise to $6 billion by the end of the decade if the Soviets go through with construction of the second line. Earnings from the deal will not completely offset the expected drop in oil export receipts, even if oil sales for hard currency remain high through 1985 before disappearing by 1990. Nonetheless, the export pipeline will prevent a sharp decline in total Soviet hard currency earnings during the mid-1980s that would have reduce imports of Western good and technology critical to the Soviet economy.

Political Gains. West Europeans reliance on Soviet gas would rise considerably if the deal goes through. The share of Soviet gas in the total combined energy use of the six countries currently in the deal would increase from roughly 2 percent in 1980 to 6 percent by 1990.* Total Soviet gas deliveries--on existing contracts as well as exports over the new line--would cover one-fourth of the gas requirements of the six countries by 1990 if only one export line were built; under a twin-line project total deliveries would cover one-third of gas consumption. For some countries dependence would be quite high. West German reliance on Soviet gas could exceed 30 percent, the level seen as critical by Bonn. (C NF NC)

Moscow almost certainly sees this dependence as giving it increased influence over West European political behavior. The Soviets would be reluctant to threaten a gas cut-off, since

* The increase in gas supplies to Western Europe will be offset by reduced deliveries of oil.

Moscow will need the hard currency from gas sales and would not want the West Europeans to begin switching to other suppliers. The USSR could, however, use its gas exports more subtly in influencing West European decision-making on selected East-West issues. Technical breakdowns in pipeline operation--which will occur periodically in any event due to weather conditions and poor Soviet maintenance--could be used, for example, to heighten West European awareness of the potential economic costs arising from policy decisions harmful to Soviet interests. [redacted]

At the very least, the gas line deal will enhance the USSR's ability to influence the West Europeans on issues which they see as peripheral to their own security interests. Moscow will be able to dampen enthusiasm for economic sanctions sponsored by the United States in retaliation for Soviet actions elsewhere. The USSR already has threatened Western Europe with the loss of energy and other projects if it joined in either the Afghanistan or Polish-related sanctions. A substantially expanded Soviet-European gas relationship would give Moscow even more clout on questions of this sort by the late 1980s. [redacted] (b)(1) (b)(3)

Conceivably, the Soviets might also try to use increased European gas dependence to influence decisions on more sensitive issues such as the NATO force modernization program. If so, Moscow would probably attempt to affect the views of the groups that would suffer most economically from a cutoff of Soviet gas. The USSR could make it more difficult for the West Europeans and the US to agree on certain key issues. But West European sensitivity to Soviet pressure on military issues

related to national security would be a major barrier to Soviet exploitation of European energy dependence in this area. [redacted]

West European Benefits

Despite increased East-West tensions over Poland, the West Europeans see greater use of Soviet gas as a clear cut economic gain, and an acceptable political risk.

Economic Gains. Economically, the West Europeans argue that the Siberian gas pipeline project offers several advantages:

- At roughly $5.40 per 1,000 cf, Soviet gas is priced competitively with alternative gas sources.
- The approximately $10 billion in pipe and equipment orders for just the first pipeline will go primarily to Western Europe, possibly providing up to 50,000 jobs at a time of high unemployment. (This amount, however, is less than one percent of the 10 million West Europeans currently unemployed.) (b)(1) (b)(3)
- Most of the hard currency earned by the Soviets through the pipeline deal in later years will be spent in Western Europe. [redacted]

The Political Calculus. The political risks of the project, the West Europeans have long maintained, will be outweighed by the political gains. Increased use of Soviet gas will reduce West European dependence on oil and gas from less developed countries, whom the Europeans consider less reliable suppliers than Moscow. The Europeans also contend that prompting Soviet reliance on the West European market for hard currency sales and for imports of critical goods and technology will raise the costs

of aggressive Soviet behavior in Europe. If continued Soviet imports of Western equipment aid Soviet energy production, the Europeans also argue, Moscow may be less inclined to meddle in the Persian Gulf region. [redacted]

Although West Europeans recognize that their potential vulnerability to an interruption in Soviet energy supplies will be greater as a result of the pipeline deal, they argue that the risks of a major gas cutoff are small. First, they count on Moscow's growing need for hard currency. Second, they believe that the impact of any interruptions that do occur would be cushioned substantially by several back-up supply systems:

- Dutch gas fields have some surge production capacity that could be tapped in an emergency, (b)(1) (b)(3)
- Norwegian gas from the North may be available in much greater quantities by the late 1980s or early 1990s.
- West Germany and France are planning to increase considerably their gas storage capacity.
- Many West European industries--the most likely targets of gas cutbacks during reduced Soviet deliveries--can switch rapidly to alternative fuels. At least 15 percent of French industry does this each winter when gas supplies are tight, and this percentage is much higher in West Germany. [redacted]

Nonetheless, West European ability to counter successfully a Soviet gas denial is not assured. The Europeans did not respond in a unified manner to the 1973-74 oil crisis and could follow divergent policies in the future. Countries with some surge

capacity, such as the Netherlands and the UK, may be unwilling or unable to divert substantial supplies to other countries for a prolonged period. Norway, moreover, may not expand its gas deliveries in Europe substantially if the price of Soviet gas remains considerably below the prices at which new Norwegian gas would be profitable for Oslo. Moreover, because Soviet gas probably will be delivered through Czechoslovakia and Hungary, Moscow could create divisions in Western Europe by denying gas to some countries instead of to all. [redacted]

Current Status of the Project

Financial and contractual arrangements for the export pipeline are nearly completed. West Germany and France have signed gas purchase contracts, and Italy, despite a "pause" for reflection, is likely to sign soon. Credits sufficient to cover the pipeline's imported equipment needs have been extended, and most of the contracts for pipe and equipment delivery have been initialed. [redacted] (b)(1) (b)(3)

Pipe and Equipment Orders

Moscow has initialed contracts for almost $4.3 billion in pipeline equipment, excluding pipe (see table 2). Although Japan is intensely interested in obtaining large equipment contracts, West European firms hold most of the supply agreements. Non-pipe contracts have been signed specifically for the export pipeline, while existing contracts with European and Japanese firms (listed in table 2) will supply pipe for both domestic and export lines. The value of the pipe required for the export pipeline,

however, should be roughly $2-3 billion. Final delivery of most of the equipment is reportedly scheduled for late 1983 or early 1984. [redacted] (b)(1) (b)(3)

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Table 2

[redacted]

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Table 2 (continued)

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Credits

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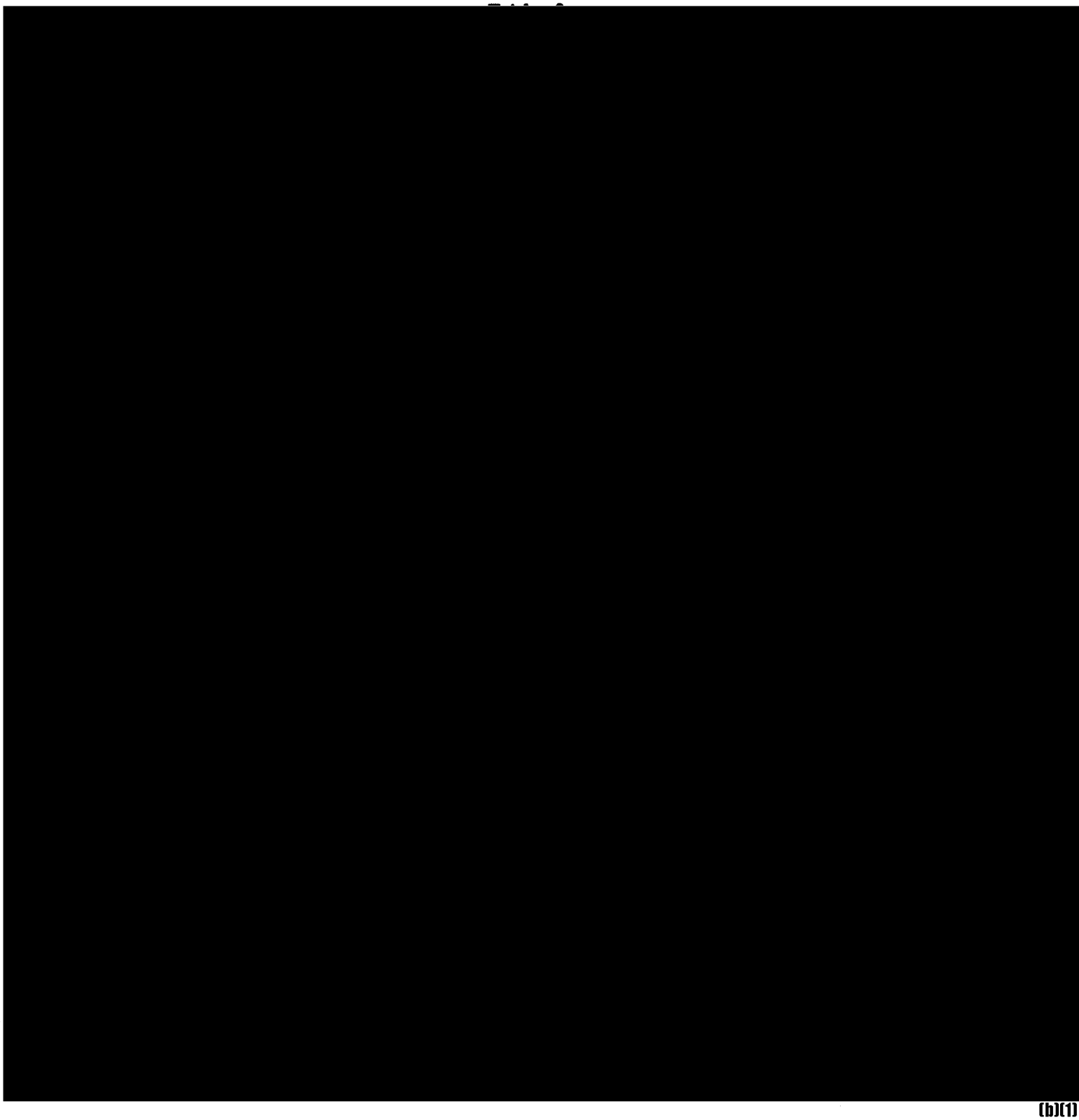
Western Europe and Japan have extended approximately $13 billion in credits for purchase of equipment for the export pipeline, excluding pipe (see table 3). The lines of credit cover 85 percent of the value of the equipment contracts, and all the credits are government-guaranteed. West Germany, Italy, and France togehter have each extended almost two-thirds of the total credits offered. The offerings will be reduced as final equipment supply contracts are worked out. Credits for pipe will be negotiated annually at market rates of interest. [redacted]

Work on the Pipeline to Date

No part of the export pipeline has been built so far, but Moscow has assigned its construction very high priority. The Soviets plan to build six gas trunklines from Siberia during 1981-85, including the export line. These lines will average more than 3,000 km (2,000) in length. The lines will carry virtually the entire 18.9 billion cf/d increment in Soviet gas production during 1981-85. One domestic line (Urengoy-Petrovsk)



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has just been laid, and the Soviets are trying to finish another domestic line (Urengoy-Novopskov) by mid-1982, instead of January 1983, as initially planned. In 1982 the Soviets will also constructing the Urengoy-Uzhgorod export line. Thus far the right of way for the export line has been cleared, and some infrastructure and pipe-laying equipment has been placed along the route. To permit initial exports to Western Europe by late 1984 or early 1985, however, the Soviets may build the pipeline "backwards." Most likely, the pipeline crews now finishing the Urengoy-Petrovsk line will build the last leg of the export line first by continuing from Petrovsk to Uzhgorod, completing a link-up with Czechoslovakia within two years. [redacted]

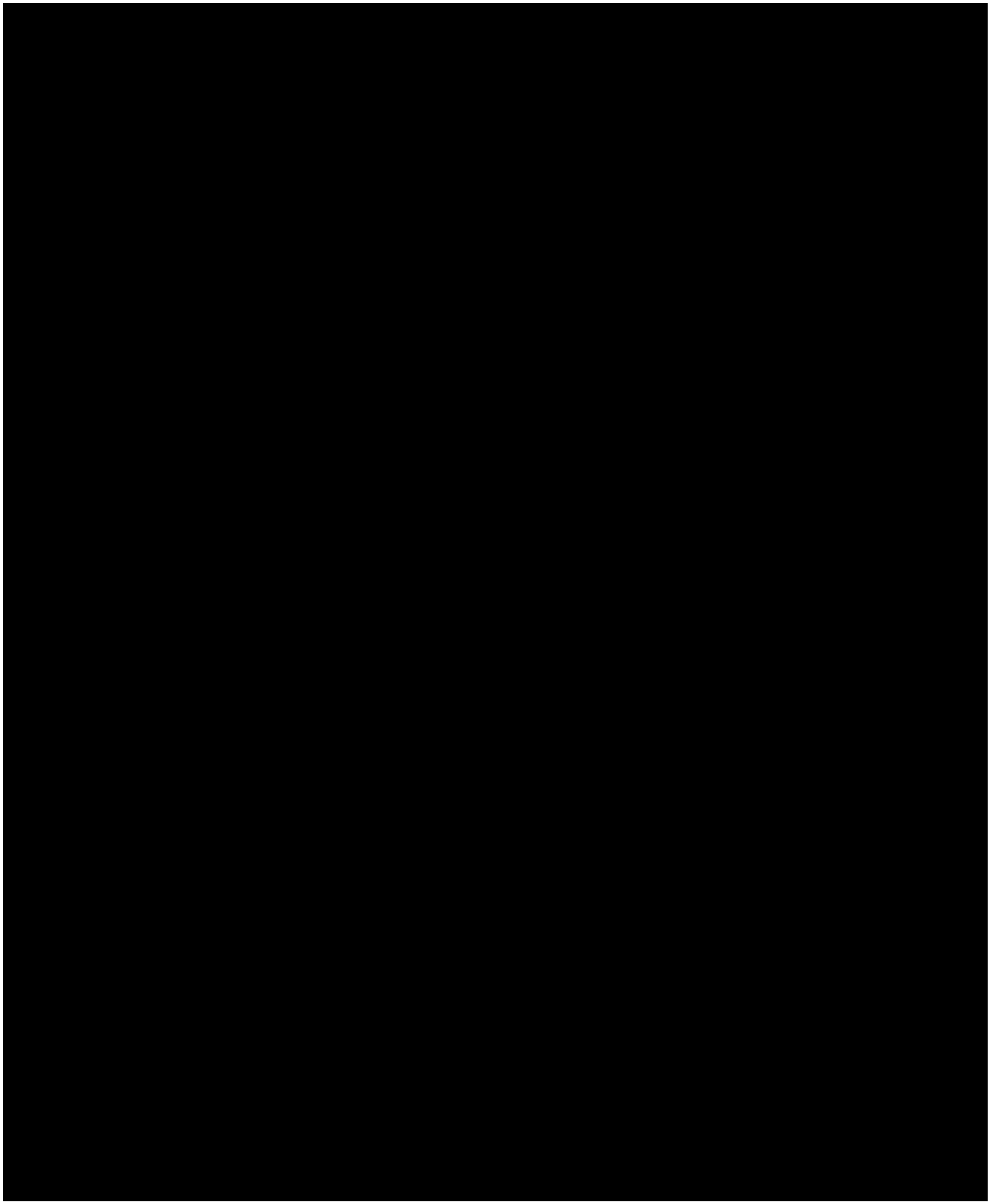
The US Embargo and Soviet Options

Should US sanctions substantially reduce the availability of Western turbines to the USSR, Moscow would encounter much greater but not insurmountable difficulty in building the export pipeline. An expanded embargo preventing Western sales to Moscow of equipment embodying US technology would increase considerably the cost to the USSR of continuing with the project. The Soviets could still complete the pipeline, however, if Western Europe were willing to purchase the gas. Moscow could reconfigure orders placed with Western turbine suppliers and divert additional domestic resources to the export pipeline project. [redacted] (b)(1) (b)(3)

[redacted]

The Possible Options

The USSR probably has not decided how to counteract the US embargo already imposed. Moscow is currently exploring technical



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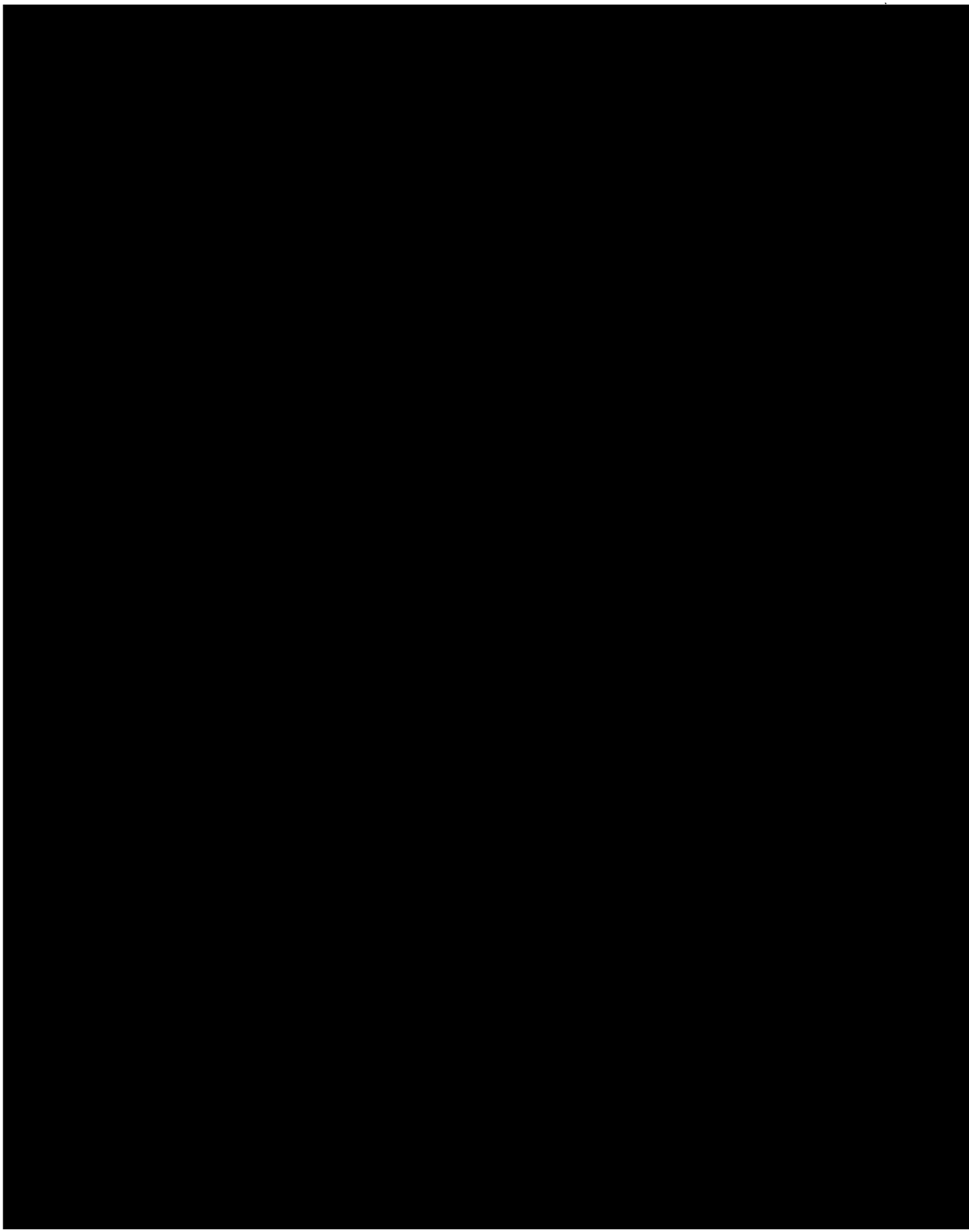

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Relying on Domestic Production

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Even if expanded US sanctions severely reduced the number of foreign-made turbines available to the USSR, gas deliveries to Western Europe could probably begin by late-1984 or early 1985 at up to one-third of planned capacity. Moscow has several options. It could:

- Transfer surplus turbines and compressors to the export pipeline from existing lines.
- Reallocate to the export pipeline material, labor, and domestically produced turbines intended for building compressor stations on domestic lines.
- Increase, with some difficulty, the rate of conversion of retired aircraft turbine engines to pipeline service.
- Extend an existing trunkline in the European USSR to the Czech border for West European linkup by 1984-85 while continuing to build the export pipeline as was discussed above. [redacted]

Nonetheless, the domestic cost would be substantial. Completion dates for reaching full capacity on one, and possibly

two, of the five planned domestic trunklines would have to be postponed as turbines, labor, and compressor station materials and equipment were transferred to the export pipeline. If, as we believe, the Soviets do not produce nearly as much turbine capacity for their domestic gas lines as they apparently are planning, an all-out effort on the export line might delay for one or more years gas deliveries of up to 3.2 billion cf/d (or the equivalent of 500,000 b/d of oil). [redacted]

The USSR's projected tight energy position through most of the 1980s would make Moscow extremely reluctant to risk making such a sacrifice. The Soviets almost certainly would have to sharply curtail oil exports to the West or be forced to reduce oil deliveries to Eastern Europe more rapidly during 1981-85 than Moscow now deems politically feasible. The Soviets especially want to avoid a situation in which they get two to three years into construction of the export line and then have to divert equipment from domestic line construction at short notice with all the disruption and potential hardship that might cause. (b)(1) (b)(3) Nonetheless, the importance of substantially increased hard currency earnings from gas could prompt the Soviets to restrict the growth of domestic gas supplies, particularly if Moscow believed that it had no other way of retaining a sizable share of the West European gas market in the late 1980s. [redacted]

[redacted]