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File Folder USSR-PIPELINE 6/6

FOIA

F06-114/9

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ID	Doc Type	Document Description	No of Pages	Doc Date	Restrictions
10766	MEMO	CASEY TO MCFARLANE RE PIPELINE PAR 9/25/2012 F2006-114/9	1	10/18/1982	B3
10767	MEMO	COMMENTS ON NSC CRITIQUE OF "OUTLOOK FOR THE SIBERIA TO WESTERN EUROPE NATURAL GAS PIPELINE" PAR 9/25/2012 F2006-114/9	27	10/7/1982	B3
10769	PAPER	REVISED VERSION ON NON-PAPER RE USSR R 3/24/2011 F2006-114/9	4	10/27/1982	B1
10771	CABLE	USSR GAS PIPELINE D 9/25/2012 F2006-114/9	2	10/29/1982	B1 B3
10770	CABLE	121320Z JAN 83 R 3/24/2011 F2006-114/9	9	1/12/1983	B1
10768	PAPER	USSR: STATUS OF MAJOR ENERGY PROJECTS WITH THE WEST	1	8/5/1983	B1

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White House Guidelines, August 20, 1997
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KEYWORDS: EAST WEST ECONOMICS SIG
GAS USSR
SANCTIONS

SUBJECT: COMMENTS ON NSC CRITIQUE RE OUTLOOK FOR THE SIBERIA TO WESTERN EUROPE
NATURAL GAS PIPELINE

ACTION: PREPARE MEMO FOR CLARK DUE: 25 OCT 82 STATUS S FILES

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The Director of Central Intelligence

Washington, D.C. 20505

7311

18 October 1982

Dear Bud,

A few weeks ago you gave me an NSC critique on analysis of the Siberian to Europe pipeline. This detailed response arrived on my desk. You may find it of some value.

Yours,



William J. Casey

Attachment

The Honorable Robert McFarlane
Deputy Assistant to the President
for National Security Affairs
The White House
Washington, D.C. 20500

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NLRR F06-114/9#10767

FOIA(b)(3)

7 October 1982

BY KWL NARA DATE 9/25/12

MEMORANDUM FOR THE RECORD

SUBJECT: Comments on NSC Critique of "Outlook for the
Siberia-to-Western Europe Natural Gas Pipeline,"
DDI SOV 82-10120/EUR82-10078, August 1982

Background

In late August, the Senior Indepartmental Group International Economic Policy (SIG-IEP) was scheduled to review the status of the Siberia-to-Western Europe gas pipeline in the wake of expanded US sanctions. CIA's Office of Soviet Analysis and Office of European Analysis prepared a briefing paper for an IG meeting leading up to the SIG-IEP meeting. The briefing paper was then published as an intelligence assessment. The purpose of the briefing paper and the assessment was to set out as clearly as possible our judgments regarding the impact of US sanctions on the ability of the USSR to deliver gas to Western Europe during the 1980s. We wanted to (1) present our analysis of likely West European reaction to the expanded US embargo and (2) review our analysis of the options open to the USSR in completing the pipeline and meeting its gas delivery commitments. We believed that our analysis, which had been developed over several months, needed to be brought into focus. For several weeks we had been responding piecemeal to State, NSC, and Treasury requests for information.

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The National Security Council Staff disagreed strongly with our assessment. In a critique, they maintained that the CIA assessment greatly overstated the ability of the USSR to overcome the US sanctions and failed to put the export pipeline in proper perspective. According to the critique, the DDI assessment gives inadequate guidance on "several critical policy questions." The deficiencies are traced to questionable assumptions (successful circumvention of US export controls and surplus capacity in existing Soviet gas pipelines to Western Europe) and to an underestimate of the cost to Moscow of adjusting to the sanctions on deliveries of oil and gas equipment to the Soviet Union.

In reply, we first address the criticisms and questions that apply to the analysis contained in the DDI assessment. We then respond to the NSC criticisms regarding omissions in the assessment.

Criticism of the Key Judgments of the DDI Assessment

The NSC critique finds fault with most of the key judgments in the assessment. We restate these key judgments, summarize the NSC criticism, and give our response.

* * * * *

DDI Assessment: "Deliveries of gas to Western Europe could begin in late 1984, as scheduled, by using existing pipelines, which have excess capacity of at least 6 billion cubic meters annually."

NSC: The NSC critique argues that even if the USSR has surplus gas delivery capacity amounting to 6 billion m³ now,

rising deliveries to Eastern Europe could absorb all of the surplus capacity by late 1984 or early 1985.

Response: We estimated present surplus capacity in the Czechoslovak transit pipeline system at 6 billion m³/yr and believe this to be a conservative estimate in that the capacity of the system is expected to increase through 1985 and beyond, if necessary. Our estimate of surplus capacity took into account the planned increase in deliveries to East Germany, Czechoslovakia, and Yugoslavia. The NSC critique apparently assumed that all East European gas exports passed through Czechoslovakia. Actually, only about 17 billion m³/year of some 33 billion m³ delivered to Eastern Europe in 1981 passed through Czechoslovakia. The remainder was shipped via other, dedicated pipelines to Poland, Hungary, Romania, and Bulgaria. Finland also receives gas through a separate line.

At present, four large lines enter Czechoslovakia near Uzhgorod on the Soviet border. These lines have an aggregate design capacity of about 70 billion m³/year, only 60 percent of which is currently being used. The pipelines connecting Czechoslovakia with the FRG, the GDR, Austria, Italy, and Yugoslavia have a combined design capacity of 53 billion m³/year. Total Soviet gas exports through the Czechoslovak system to East Germany, Yugoslavia, Czechoslovakia and to Western Europe were approximately 42 billion m³ in 1981, of which 34 billion was delivered to countries other than Czechoslovakia.

We infer that current spare capacity of the lines leaving Czechoslovakia could be as much as 19 billion m³ (53 minus 34) if

compressors are added to bring operating capacity up to design capacity. (In this connection, Exxon officials put current excess capacity of these lines at 14-15 billion m³/year, assuming the diversion of some gas from domestic use and a few minor improvements in existing infrastructure.) By 1985, the capacity of trunklines within Czechoslovakia will be increased by the addition of a new transit pipeline. The likely increment in Soviet deliveries of natural gas to Czechoslovakia--and through Czechoslovakia to the GDR and Yugoslavia--in 1981-85 is 5.5 billion m³; the deliveries to Western Europe under new contracts will rise by almost 10 billion m³. While it becomes progressively more expensive to install compressors to bring operating capacity up to design capacity, we believe that the Soviets have plenty of margin to work with in ensuring deliveries of gas to Western Europe through existing lines through 1985. Indeed, if the new transit line through Czechoslovakia is built as planned, the over-capacity in the Czech system could become an embarrassing frozen asset unless the USSR finds more buyers for its gas.

Soviet Gas Deliveries Through Czech System,
by Country

(billion m³/year)

	<u>1981</u>	<u>1985</u> <u>Estimated</u>
Czechoslovakia	8.2	11.5
East Germany	6.3	7.5
Yugoslavia	2.0	3.0
Austria	3.0	3.5
West Germany	11.8	18.0
Italy	7.0	7.0 ¹
France	4.0	4.0 ²
 Total Gas Entering CSSR	 42.3	 54.5
Total Gas Leaving CSSR	34.1	43.0

¹ Italy has not yet signed a new gas purchase contract with the USSR.

² French deliveries under new contract will commence in 1986.

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DDI Assessment: "Using some combination of Soviet and West European equipment, deliveries through the new export pipeline could probably begin in late 1985 and reach nearly full volume in 1987--about one year later than if the sanctions had not been imposed."

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NSC: The second key judgment seems not to take into account all the available evidence and glosses over substantial uncertainties surrounding: (1) the potential production rate of existing small (10 MW) and notoriously unreliable Soviet turbines, (2) the ability of the Soviets to reconfigure (i.e., without the G.E. 25-MW turbines) a massive project such as the Siberian pipeline within a reasonable amount of time, and (3) the damage to the Soviet economy in delaying or cannibalizing planned domestic natural gas projects in pursuit of the export project. This key judgment also is based on the assumption, made explicit in Table 3 (page 6), that all our allies will violate our export control laws. The substantial business risks to Western European companies of following this course are not treated in this context although they are mentioned in another portion of the paper.

Response: Soviet production of turbine-compressor assemblies rated at 10 megawatts (MW) is expected to increase through 1985 as a result of the expanded US sanctions. Our base-case scenario assumed that the USSR would push production of the 10-MW units --now used on large-diameter pipelines in the domestic gas trunkline system--in the short term and develop the larger, more efficient domestic 25-MW units for longer term requirements. Uncertainty as to meeting production goals and questionable reliability of the product are endemic in the Soviet economy. Nonetheless, the Soviets have completed over 20,000 km of 56-inch gas pipeline--mostly powered with their 10-MW turbines--in the past decade. Maintenance problems are

encountered more frequently than with Western equipment and costs are high, but the gas flows.

Based on the evidence available, we concluded that strong pressure would be exerted on Western governments and firms to obtain the 40 spare Alsthom-Atlantique rotors and the 22 GE rotors already in Western Europe. Thus, half of the 25-MW GE type rotors ordered for the export pipeline could become available by the time they are needed to support gas exports to Western Europe.

Since our analysis was carried out, 10 of the embargoed 25-MW turbines and 6 compressors have been shipped to the Soviet Union, and more are on the way. The Soviets have said they would cannibalize existing gas pipelines if necessary and transfer spare, or redundant turbine compressors to the export line--implying that they will accept the costs involved. Recently, Moscow announced plans to produce up to 130 of the domestic 25-MW and 16-MW turbine compressors and to fill in with 10-MW units as needed. Thus, current plans call for steadily rising output of both old and new units through 1985. Our analysis assumed that output of 10-MW units would have to double to permit the Soviets to produce and transmit about 570-590 billion m³ of natural gas in 1985 and still meet their export commitments.

We did not assume or predict that France, the UK, the FRG, and Italy would violate US export laws. Instead, on the basis of the evidence available to us, we judged the use of Western turbines was clearly one of the options (and the best) still open to the USSR in building the export pipeline (pp. 10-12 of the

Intelligence Assessment). By buying the Western equipment, moreover, the USSR reinforces West European interest in abiding by the gas purchase contracts. Obtaining turbines with the GE and Alsthom rotors would enable the Soviets to meet required deliveries in the early years of the contracts, providing time for any reconfiguration necessary to accommodate Soviet or Western substitutes for turbines not delivered as a result of the US embargo.

We also took into account business risks to West European companies that violate US export control. Based on the experience of the pipe embargo of 1962-64, we believed that Machinoimport would sue the West European equipment companies for breach of contract if they complied with US export regulations. Regardless of the decision made, the equipment firms expected to be hauled into court. Therefore, we concluded that the equipment suppliers would see their own interests served best by honoring those contracts which were entered into in good faith. We also indicated that the positions of the UK, FRG, Italian, and French governments would largely determine whether the turbines were delivered to the Soviet Union. But having closely monitored the evolving positions of the West European companies and governments from the beginning, it was our carefully considered collective judgment that they very probably would not obey the US sanctions.

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DDI Assessment: "At substantial cost to the domestic economy, the USSR could divert construction crews and compressor-station equipment from new domestic pipelines to the export

pipeline or even dedicate a domestic pipeline for export use to ensure capacity adequate to meet contractual delivery obligations."

NSC: The third key judgment seems not to account for the fact that all other Soviet options (set out in Table 3 of the Assessment) delay full throughput capacity at least one to two years beyond the 1987 date mentioned. There is evidence that the Soviets are more skeptical than the report concerning their ability to domestically produce large turbines--hence the intense and continuing Soviet pressure to obtain Western equipment. New and untested Soviet machines seem an option for which the Soviets have little enthusiasm despite Soviet press announcements.

Response: Reliance on its own resources, would--as we said--be costly to the Soviet Union, but the scale of Soviet pipeline construction is large enough to permit Moscow to reorder priorities so that the export pipeline could be completed by 1987. (Five of the six major trunklines being built in 1981-85 were, from the beginning, to be equipped with Soviet turbine-compressors.) The completion dates associated with each of the options in Table 3 assume, as the footnote to the table says, that none of the other options is pursued. The discussion indicates that the Soviets would probably follow up on most of the options--use Western equipment and step up production of their own turbines (10-MW, 16-MW, and 25-MW).

We agree with the NSC comment that there is room for considerable skepticism about Soviet ability to master the production of the 16-MW and 25-MW turbines. We reported that

prototypes of these units have been built and tested and still believe that the high-level attention now focused on these turbines will result in some usable output in 1984-86--soon enough to help in equipping the export pipeline.

Nonetheless, the US embargo might prevent the Soviets from reaching full capacity throughput on the export pipeline before 1988. According to our analysis of export scheduling, however, the export pipeline would not have to reach full capacity to meet all existing contracts of up to 21 billion m³/year (to Austria, West Germany, and France) through 1990. Operating without spares, about 400 MW of installed compressor capacity--i.e., 16 of the 120 25-MW turbine compressors planned (80 on line, 40 spares)--would be required to transmit this amount of gas to the West. If Italy signs a gas purchase contract for 6 billion m³ per year, the export pipeline could deliver the required total of 27 billion m³/year in 1990 with normal rates of build-up and only 1,000 MW of installed capacity. For this, 40 of the planned 25 MW-turbine compressors would suffice. If 62 of the GE 25-MW turbine compressors are obtained (22 with GE rotors, 40 with Alsthom-Atlantique rotors), there will be sufficient compression to service the export contracts now envisioned through 1990 and still provide substantial reserve capacity (spares). In addition, the excess capacity in existing lines exiting Czechoslovakia could be used in emergencies. In sum, delays experienced in reaching full capacity after the pipe is laid are highly unlikely to interfere with gas deliveries on the scale now foreseen.

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DDI Assessment: "Only the last outcome--primary reliance on their own resources--would cause the USSR much difficulty. The costs to them will be much higher if they have to build their own gas turbines and compressors for the export pipeline. Specifically, diverting from the domestic pipeline program Soviet equipment sufficient to equip the export line could reduce gas delivery to the domestic economy by as much as 30 billion m³ annually for a year or two. Other Soviet equipment options would have considerably smaller impact on domestic gas supply."

NSC: This key judgment does not appear to assess adequately the costs and risks to the Soviets of a go-it-alone approach to the pipeline. The Soviets, since the inception of the project, have indicated a strong aversion to developing indigenously an export pipeline. In the first instance, no Western financing would be available--cheap, subsidized or otherwise--for domestically produced equipment. All resource costs would have to be paid in advance by diverting capital from other scheduled projects. This case, which is ranked as an outside possibility by the Directorate of Intelligence, could cost the Soviets 30 BCM in deliveries to their own economy (or Eastern Europe) for at least a year or two. That could represent more gas than the export project--valued at about \$5 billion per year. If the Soviets encounter delays, and it is more likely that they will than that they will not, the cost to the Soviet economy could run from \$10-20 billion. Conservative Kremlin planners might well decide to scale back their gas export

ambitions rather than jeopardize ongoing and planned domestic gas pipeline projects aimed at substituting for declining oil resources, not to mention providing natural gas to planned petrochemical, fertilizer, metal and military-related production already scheduled.

Response: Moscow has consistently tried to promote compensation deals in which Western firms provide plant and equipment in return for future product exports. The enthusiasm of Western companies for such agreements outside the energy field has cooled considerably, however. If financing for the import of equipment for the export pipeline failed to materialize, the USSR would almost certainly not abandon the export pipeline as long as it had a market for the gas. Expanded gas earnings are vital to its hard currency earnings in the 1980s, and--as in other commodities--Moscow would shoulder the costs of developing the capacity to export to hard currency areas.

In the assessment we said, "In the extreme case--denial of all Western compressor equipment coupled with a crash Soviet effort on the export pipeline--the USSR could lose roughly 30 billion m³ of gas production in 1985 because of reduced compressor power on domestic transmission lines." This loss would represent nearly 5 percent of planned gas production in 1985 and 1.5 percent of planned energy production. This was a worst case view of Soviet options, that is, it assumed Moscow would draw necessary equipment from only one domestic pipeline. Unless Soviet Gas Ministry officials were to behave in an uncharacteristically obtuse manner, they would draw smaller

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amounts of equipment from each of several domestic lines, taking advantage of the power input-to-gas throughput relationship so as to reduce the impact on domestic availability of gas. In any event, when the need for export delivery of gas materializes, the USSR could have as many as 62 Western turbines at its disposal. This equipment would be sufficient to power the transmission of all of the gas likely to be required under the new contracts in 1985 and all of the deliveries likely to be scheduled in 1988.

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Specific Issues and Questions

NSC: Table 1 in the Background section (page 1) is unclear as to whether it portrays actual contract dates or potential Soviet delivery capabilities. While the text indicates the latter, the title of Table 1 implies the former.

Comment: Table 1 portrays neither actual contract dates nor Soviet delivery capability. The text and the footnotes to the table indicate that the data represent potential maximum gas deliveries to individual countries based on levels discussed with the Soviets during contract negotiations. Although the Soviets have committed themselves to begin deliveries under new contracts in 1984 and our assessment concludes they will be able to do so, we cannot predict the rate at which deliveries will increase to full volumes or, indeed, the specific volumes that will be set by periodic negotiations between contracting parties once deliveries have begun.

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NSC: The 30-to-1 ratio between the failure rate of U.S. and

Soviet industrial turbines obviously was a major factor in the Soviet choice of G. E. Frame V engines. Table 3 acknowledges that pipeline reliability would be "low" if the USSR used its own 16-MW and 25-MW turbines. Yet, the report does not provide a detailed assessment of the impact of a Soviet equipment switch on gas delivery prices and reliability. How many Soviet engines of various sized (10-MW, 16-MW, 25-MW) would be necessary to provide comparable reliability levels to smaller numbers of G.E.-type machines?

Comment: Regarding the relative failure rates of Soviet and Western turbines, we have information indicating that the ratio is more on the order of 4-to-1. In this instance, as in others, the evidence is conflicting and none too reliable. We are familiar with the report on which the 30-to-1 ratio is based; in the evidence available, it appears to be an outlier. In our judgment, a switch to sole reliance on Soviet equipment would not, in any event, affect the price of Soviet gas delivered to Western Europe, which is already governed by existing contracts.

We doubt that the Soviets would install enough of the domestically built turbines in each compressor station to achieve reliability fully comparable to that of Western turbines. In their domestic pipeline stations using 10-MW units, the Soviets typically install 7 (4 on line, 3 standby) or 8 (5 on line, 3 standby) turbines.

On the downside, the eventual price will be determined by a number of other factors, including the market situation, Soviet hard currency needs, and a perception of what the West Europeans

are willing to pay based on an analysis of the cost of competing fuels. The Soviets are firmly committed to this project and would be extremely reluctant to jeopardize follow-on deals with an excessively rigid stance on "market-out" negotiations initiated by the West Europeans should the price of oil continue to fall.

As for reduced system reliability, the impact would be very small at the margin. The export line will only need to operate at 50 percent of full power to satisfy foreseeable gas export contracts to the West through 1990. At this point the marginal cost of adding more reserve power is small. To repeat, if the Soviets obtain all 40 Alsthom-Atlantique rotors plus the 22 GE rotors on hand in Western Europe, they can service all contracts and still have one spare turbine compressor for every two units on line. This is the optimum ratio originally planned for the first export pipeline; with two lines they expected to have only one spare for every four units on line.

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NSC: How does the conclusion on page 7 that project delays would cost the Soviets \$1.5-3.0 billion square with judgment on page 8 that displaced gas would cost the Soviets \$6 billion (\$200 million times 30 BCM) per year?

Comment: The \$6-billion figure cited is an NSC inference based on an NSC assumption that the displaced gas would be 30 BCM. The 30 BCM-per-year loss to the Soviet economy is, as we point out elsewhere, a maximum impact based on improbable Soviet management of the situation. If project delays were to force the

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Comment: Soviet planners are always concerned--with good reason--about their ability to meet plans. With greater effort and the commitment of more resources they hope to do much better in turbine production. The export pipeline project clearly has an extremely high priority.

Within the USSR several major trunkline systems connect the important gas producing regions with the export terminal at Uzhgorod. Gas from the Tyumen', Komi, Volgograd, Central Asian, and Ukrainian fields can be tapped for export needs. Incremental compressor needs on the existing trunkline systems in the USSR should be minimal since all the major lines have been commissioned and fully operational for several years. In order to raise throughput of the relevant Czech transit pipelines from 34 billion m³ annually up to full design capacity of 53 billion m³/year, it would be necessary to add about 240 MW of installed compressor capacity; or roughly 24 10-MW units, 15 16-MW units, or 10 25-MW units. The units could be ordered from the Western firms now soliciting orders from the Czechs. If another transit pipeline is built as planned, it would take up to 12 more 25-MW units to deliver 25-28 billion m³ of gas.

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NSC: The Directorate of Intelligence does not provide sufficient analytical attention to the implications and costs of these choices. For example, it takes time and money to switch industrial consumers of energy from gas to oil in the event priority is given to the gas export pipeline. The downstream political and economic costs of these policy options could

potentially reduce or neutralize earnings from sales of natural gas to Western Europe.

Comment: In discussing the potential loss of gas to the domestic economy, the intelligence assessment indicated that, as part of the internal adjustment process, the Soviets could "curb efforts to substitute gas for oil and coal." A failure to switch an oil-consuming enterprise to gas involves no direct cost. The enterprise merely goes on using oil. Moreover, many industrial boilers and power plants are already configured to burn either fuel. The text did not imply that existing users of gas--without dual-fuel capability--would be required to switch back to oil through replacement of equipment.

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NSC: The report describes the success of the US embargo (page 12) as a "remote contingency" after pages of discussion (pages 8-10) in which costs of violation of the embargo are clearly delineated.

Comment: Our assessment (pages 8-10) clearly delineated the costs to the companies of complying with the embargo. Our overall judgment on page 8 was that "In the absence of government intervention, most of the firms probably would obey the sanctions." But the handwriting was already on the wall. On pages 10-11 we pointed out that two governments (Paris and London) had already ordered firms in their countries to ignore the embargo; that a third (Rome) would stall as long as possible but if forced to take a stand probably would follow the French

and British lead; and that the fourth (Bonn) was encouraging its firms to do the same.

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NSC: The Directorate of Intelligence should clearly describe the evolution of the project since its inception in order that the impact of U.S. opposition and the changes in European demand for gas can be accurately assessed. Original versus currently projected delivery volumes, price, hard currency earnings, number of participating countries, financial packages, and gas dependency percentages should all be addressed. The influence of the President's announced opposition to the project in July 1981 at the Ottawa Summit and subsequent actions should be estimated on the current scaling-down and withdrawals from the project, e.g., Belgium. What is the percentage of the scale-down from its original dimensions?

Comment: The role of US policy in the scaling down of the pipeline project over the last year or so is difficult to isolate. Originally the pipeline was to consist of one 48-inch, 100-atmosphere line. This single-line system could have moved up to 40 billion m³ of gas to Western Europe. By late 1980, Moscow favored a dual, 56-inch system operating at lower pressure. The subsequent scaling down to the current single, 56-inch, 75-atmosphere line was almost entirely due to a reexamination by the West Europeans of the prospects for gas demand in the 1980s. Increased West European gas prices and lowered economic growth projections led to lower projected gas requirements and a

reexamination of the desired level of imports from the Soviet Union.

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NSC: The report should provide a more detailed estimate of the match or mismatch between hypothetical Soviet gas export capabilities and contracted delivery schedules for the period 1984-1995. The conclusion that the Soviets can pump some gas westward in late 1984 remains unpersuasive. The more critical question is whether they can meet European demands as they arise throughout the life of the contract. The report assumes that with only 60 of the imported turbines the Soviets will deliver 90 percent of the gas. Other experts estimate, however, that between 80-90 turbines would be required to achieve this throughput.

Comment: The difference between ourselves and NSC on the compressor-power requirements to achieve 90 percent of design throughput capacity may arise from the inclusion of stand-by capacity in the NSC figure. According to the relationship between compressor power and throughput that we obtained from an industry source (and which was not challenged in two meetings of industry experts), only 54 25-MW turbine compressors would be required to achieve 90 percent throughput. Fourteen more 25-MW units would provide substantial back-up power in the event of outages.

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NSC: A technical assessment of the types of problems the Soviets are likely to encounter in reengineering the export

pipeline to deal with fewer or a mix of compressors/turbines would be most useful. For example, if the main control computer is designed for a GE machine, many experts believe you cannot substitute a Soviet machine and expect it to function adequately. The layouts of Soviet and Western-designed compressor stations are different and Soviet and Western equipment also differ in drive characteristics and power and air intake requirements. The report fails to assess who would be responsible for designing and implementing these changes and how the price of the gas might be affected. Would redesigning the project change its economic attractiveness from either the Soviets and West Europeans?

Comment: The Soviets will encounter technical problems if they use a smaller number and a different mix of turbine compressors than originally planned. Matching controls with a mix of domestic and foreign compressor equipment will be difficult. The Soviets, however, have produced about 30 of their own control systems. Their first automatic control system, the A705-15 system, was developed in 1974 for the GTK-10MW turbine compressor. Some of the systems operate with a mixed array of foreign and domestic compressor equipment. It is quite feasible to use compressors of various sizes as well as compressors from different countries on a pipeline as long as any given station is equipped with only one model of compressors.

Omissions in the Assessment

Over and above its review of the material included in the CIA assessment, the NSC critique suggests that several topics

that were not covered should have been. In particular:

- o "Notably absent is an historical analysis of the project and the likelihood of it being potentially rescaled upward to its original dimensions or more over the life of the project."
- o "The report should attempt to quantify the costs of disruptions to the Soviet and East European economies if current energy development plans need to be restructured in order to meet the Soviet delivery commitments to the West in the mid-80s and beyond."
- o "An assessment should be made of the longer term effects and costs of the uncertainties introduced by current U.S. policies (opposition) on future purchases or off-take rates by existing or potential European purchasers of Soviet gas."
- o "The geopolitical, energy and economic security advantages to Moscow need to be spelled out more precisely including the Soviets' use of trade incentives to neutralize or roll-back Western strategic interests during a period of rapid military buildup and the current crisis in Eastern Europe and Afghanistan." (The NSC critique, in this connection, asks for analysis of the effect of dependence on Soviet gas of West German states on "alliance cohesion and resolve," the USSR's record of manipulating energy supplies, of the USSR's history of technical reliability in supplying gas.)

- o "The Directorate of Intelligence should address some of the problems in using Alsthom rotors, including its financial impact on the turbine producers."
- o "An assessment should be made of the potential impact of North Sea gas and the development of other non-Soviet sources to diminish the marketability of Soviet gas to Western Europe."

Most of these topics are central to a full-blown treatment of the implications of the export pipeline for political, economic, and security considerations. The August assessment, however, was an update specifically addressing Soviet and West European reactions to the sanctions and the options open to them. In any event, we have tried to speak to these larger questions in the recent SNIE ("The Soviet Gas Pipeline in Perspective," SNIE 3-11/2-82, 21 September 1982.)

The SNIE, in particular, addresses the issue of a second strand ("scaling up"), noting that "factors that led the Soviets to conclude the recent Siberia-to-Western Europe gas deal--huge gas reserves and continued need for hard currency earnings-- almost certainly will lead to a proposal for new export contracts that will require additional export pipelines." The new estimate provides further discussion of the issue of follow-on gas projects. This subject was also covered in our study, "West European Natural Gas Requirements: Looking to the 1990s," May 1982. Although a brief historical background of the pipeline project is found in the SNIE, a more thorough treatment may have been useful.

It is our judgment that current Soviet energy development plans will not need to be restructured to meet gas delivery commitments to Western Europe at least through the late 1980s. The SNIE makes this point early on. Because enough Western equipment has been delivered or soon will be, the diversion of Soviet equipment from domestic use is much less likely. At the time the original assessment was written, we were not certain that the West European equipment manufacturers would violate the US embargo.

We did not attempt, either in the August assessment or the SNIE, to assess explicitly the longer term effects of US opposition to future purchases of Soviet gas by West European countries. When the Intelligence Assessment was prepared, we saw the potential delivery of Western compressor equipment (at least to the extent possible utilizing the 22 GE turbine rotors then in Western Europe) as likely to reduce substantially the impact of the US embargo on the current Soviet pipeline project. We considered the longer term effects of US opposition to be very much an open question. Future West European gas demand, alternative sources of supply, and the whole range of factors bearing on West European consideration of a possible follow-on gas pipeline deal with the Soviets are highly uncertain. Nonetheless, several considerations militate against optimism regarding potential US influence. The past performance of some of our NATO allies suggests a substantial capacity for evaluating priorities independently and choosing courses of action at variance with US desires or US interpretation of agreements.

West European consideration of energy relations with the Soviet Union will continue to be strongly influenced by European perceptions of the risks involved. In future gas contract negotiations, moreover, the demand situation and the degree of attractiveness of the Soviet selling price for gas might weigh more heavily than US objectives, however well founded.

In addition, the ability of the United States to exert leverage over West European decisions by exercise of an embargo on oil and gas goods and technology is subject to fairly rapid erosion. Within a few years, manufacturers in other Western countries can probably replicate nearly all of the oil and gas goods that now are the product of US technology. Because the US domestic market has been the major market for much drilling equipment, there has been relatively little incentive to set up production of many specialty items elsewhere. As illustrated by the consequences of past embargoes, denial of supply of needed equipment from the United States tends to provide a strong incentive for production elsewhere. Given the long lead times necessary for developing alternative gas supplies and the likelihood the Soviets would continue to price their gas at or below existing or potential alternatives--issues covered in both the August assessment and the SNIE--the implication was that if additional gas were offered at an attractive price and demand were sufficient, the West Europeans would opt for additional Soviet gas. The domestic political and economic impact of US sanctions on our West European allies, while an issue certainly worthy of examination, was considered a subject to be outside the

scope of the August paper. The short-term, immediate reactions of the Europeans were addressed in both the August assessment and the SNIE.

We feel the geopolitical and economic security advantages of the pipeline project to Moscow are clearly spelled out in the SNIE. The benefits to Soviet military programs and the advantages to the Soviet Union of trade with the West are covered. The issues of dependence of individual West German states on Soviet gas, the USSR's record of "manipulating" energy supplies, and Moscow's technical reliability as a gas supplier have not been addressed specifically. But in the DDI assessment and in other papers, we noted that the West Europeand believed that these considerations were unimportant or that adequate safeguards were available to prevent Moscow from exercising leverage.

We do not think there would be serious difficulties in using the 40 Alsthom rotors already contracted for. Their price has been set, and we expect that their technical qualityu will approximate that of GE-built rotors. There may be some problems in deciding exactly where and how the French rotors should be used, but these should be surmountable. In an earlier version of the August assessment we dealt with the potential problem of using Alsthom-Atlantique rotors beyond the 40 already contracted for, indicating that such a solution "would probably require some type of subsidy for the higher-priced Alsthom rotor, either by direct-equity financing on the part of the Soviets, Soviet acceptance of higher prices, or a subsidy on the part of the

French Government." This statement, while not adequately addressing the issue, did not survive the final round of editing. We should and will do more work on this issue.

The new estimate takes another look at the issue of alternative sources of natural gas including North Sea gas and supplies from African and Middle Eastern producers. The issues of potential West European gas demand, which should also be considered, and alternative supplies are dealt with in detail in the following DDI Intelligence Assessments:

West European Natural Gas Requirements: Looking to the 1990s, GI 82-10108, May 1982 [redacted]

Africa-Middle East Gas: A Western Alternative?, GI 82-10184C, August 1982 [redacted]

North Sea Gas: Development Options, GI 82-10178, September 1982 [redacted]

PIPELINE - 20

DEPARTMENT OF STATE

1982 OCT 27 PM 7 38

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Department of State Guidelines, July 21, 1997

CVS NARA, Date 7/24/02

October 27, 1982

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NLRR E06-114/9 #10769

BY KML NARA DATE 4/7/2011REVISED VERSION OF NON-PAPER

1. Our Governments recognize the necessity of conducting their relations with the USSR on the basis of a global and comprehensive policy designed to serve our own fundamental security interests. They are particularly conscious of the need for a common approach in the economic field, where actions must be coordinated within the framework of their global strategy. They are resolved together to take the necessary steps to remove differences and to ensure that future decisions by their governments on these issues are taken on the basis of an analysis of the East-West relationship as a whole, with due regard for their respective interests and in a spirit of mutual trust and confidence.

2. They agree that the following criteria should govern the economic dealings of their countries with the Soviet Union and Eastern European countries.

-- That they will not undertake trade arrangements which contribute to the military capabilities of the USSR.

-- That it is not in their interest to subsidize the Soviet economy; trade should be conducted in a prudent manner without preferential treatment.

-- That they will take no steps that contribute to the strategic advantage of the Soviet Union.

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-- That it is not their purpose to engage in economic warfare against the Soviet Union. Trade with the Soviet Union and Eastern Europe should proceed on the basis of a strict balance of advantages.

They agree to examine thoroughly how to apply these criteria, taking into account the various economic and political problems involved, with the view to agreeing on a common line of action. They will pay due attention in the course of this work to the question of how best to tailor their economic relations with Eastern European countries to the specific situation of each of them, recognizing the different political and economic conditions that prevail in each of these Eastern European countries.

This overall analysis will touch in particular on the following areas:

- Strategic goods and technology of military significance (COCOM);
- Other high technology items;
- Credit policy;
- Energy;
- Agricultural products.

In their analysis of other high technology items, the Allied governments agree to examine immediately whether their security interests require controls on the export to the Soviet Union and Eastern Europe of advanced technology and equipment, to be jointly determined, but including controls on technology with direct application to the oil and gas sector. Any actions as a consequence of the examination would be agreed upon and

In the field of energy, the European Governments, as they are heavily dependent on imports of energy, will initiate a study of projected energy requirements over the next decade and beyond and possible means of meeting those requirements. Projected U.S. and Japanese energy requirements will be taken into account in this study, and the U.S. and Japanese governments will participate in its preparation. It will be prepared under the auspices of the OECD.

3. As an immediate decision and following decisions already made, they have further agreed on the following:

(a) They will work together within the framework of the Coordinating Committee (COCOM) to protect the contemporary security interests of the Alliance. The list of strategic items will be evaluated and, if necessary, adjusted. This objective will be pursued at the COCOM Review now under way. They further agree to take the necessary measures to strengthen the effectiveness and responsiveness of COCOM and to enhance their national mechanisms as necessary to enforce COCOM decisions.

(b) It was agreed at Versailles that the development of economic and financial relations with the Soviet Union and Eastern Europe would be subject to periodic ex post review. The Allies are agreed on the need to establish without delay the necessary mechanism for this purpose. Having in mind the criteria in paragraph two above, Allied Governments will also establish the means to harmonize national policies with respect to the extension of credits, covering interest rates, maturities, down payments, and fees.

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-4-

(c) Allied governments have informed each other that during the course of the study on energy requirements, they will not sign, or approve the signing by their companies, of new contracts with the Soviet Union for the purchase of natural gas.

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10/27/82

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37
NATIONAL SECURITY COUNCIL

November 23, 1982

TO:

BOB SIMS
WALT RAYMOND
~~DICK PIPES~~
ROGER ROBINSON
NORMAN BAILEY

FROM:

CARY LORD

FYI.

Summary of VOA Editorial for 17 Nov. 82

Lifting the Ban and Lowering the Boom

President Reagan announced an agreement between the United States and its major allies this past Saturday. The ban in effect since last December on American pipeline technology to the Soviet Union will be lifted.

And our allies have agreed in principle to three specific steps that will limit the strategic advantage the Soviets have enjoyed as of late in the East-West trade relationship.

The USG-ed outlines these three provisions and observes that the unified policy they represent "should exact and even higher price on the Kremlin than the pipeline sanctions did."

→ Sims 38
Raymond
Piper
Robinson
Bailey

LIFTING THE BAN AND LOWERING THE BOOM (OUR03)

ANNCR: Next, a VOA Editorial, reflecting the views of the U.S. Government.

VOICE: For more than a decade now, the Soviet Union has been the beneficiary of preferential trade arrangements with the West. Moscow has been using the hard currency it earns this way to buy Western high technology that can be used for military purposes.

The Reagan Administration has put a high priority on changing this one-sided trade relationship, and on restricting both legal and illegal Soviet acquisition of strategic technology. On Saturday, President Reagan announced an understanding with its major allies which should go a long way toward achieving that important goal.

The President said that the United States will lift the prohibition that has been in effect since last December on the use of American technology in the natural gas pipeline that the Soviet Union is constructing between Siberia and Western Europe. For their part, the democratic governments affected by the American ban have agreed to take three specific steps to limit the strategic advantage the Soviet Union is receiving in the East-West trade relationship.

The first element of the agreement will help reduce the threat of Western European dependence on Soviet supplies of energy. The Western European governments have agreed not to sign any new contracts for the purchase of Soviet natural gas pending a thorough study of energy alternatives. As things now stand,

Moscow hopes that orders not yet contracted for will provide approximately 20 percent of its projected pipeline revenue.

The second element in the agreement is to try to harmonize export credit policies. Cheap credit from the West amounts to a subsidy for the Soviet economy. At the request of the United States, the Organization for Economic Cooperation and Development has already increased the rate of interest it charges the Soviet Union by more than 50 percent to reflect current market rates. But much more can be done.

The third element in the agreement among the industrial democracies is to strengthen controls on the transfer of high technology to the Soviet Union. Soviet spy rings acquire some technology illicitly, but legal trade agreements also provide Moscow with a great deal of technology that has military implications. And the line should not be drawn too narrowly. Technology for energy exploration and extraction is also of strategic importance.

This country imposed its unilateral pipeline sanctions after the imposition of martial law in Poland. But even before the imposition of the Polish military regime there were other solid reasons for the industrial democracies to take a long hard look at the effects of East-West trade. The repression in Poland helped focus the attention of other Western governments on the trade issue. The unified policies that result should exact an even higher price on the Kremlin than the pipeline sanctions did.

ANNCR: That was a VOA Editorial, reflecting the views of the U.S. Government.

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ALSO FOR USOECD AND USEC
USOECD PASS FERRITER, IEP
E.O. 12356: DECL: OADR
TAGS: ENRG, GE
SUBJ: FRG NATURAL GAS: HOW VULNERABLE IS SOUTHERN
GERMANY TO A SOVIET CUT-OFF?
REF: 82 PARIS 43850

1. ~~CONFIDENTIAL~~ ENTIRE TEXT.

2. INTRODUCTION AND SUMMARY:

THE GERMAN GOVERNMENT BELIEVES THAT THROUGH A COMBINATION OF FLEXIBLE IMPORT CONTRACTS WITH THE DUTCH, EXTENSIVE TRANSMISSION FACILITIES, STORAGE, DEMAND CURTAILMENT, AND LEGAL AUTHORITIES, THEY HAVE ESTABLISHED AN INTEGRATED (AND CENTRALLY MANAGED) NATURAL GAS MARKET COVERING THE ENTIRE COUNTRY. THEY DO NOT BELIEVE THE SOUTHERN REGION, OR BAVARIA IN PARTICULAR, BEARS A DIFFERENTIAL RISK ASSOCIATED WITH IMPORTS OF SOVIET NATURAL GAS. THIS ISSUE CAME UP DURING DECEMBER 17 IEA/SLT DISCUSSIONS OF THE GAS STUDY REPORTED REFTTEL. THIS MESSAGE SEEKS TO EXAMINE "THE BAVARIAN PROBLEM", DRAWING ON INDUSTRY AND GOVERNMENT SOURCES AS WELL AS THE MOST RECENT DISAGGREGATED GAS MARKET DATA AVAILABLE. OUR CONCLUSION IS THAT WHILE THE MAJORITY OF GAS CUSTOMERS IN GERMANY'S SOUTHERN REGION WILL BE SUPPLIED WITH SOVIET NATURAL GAS UNDER NORMAL CONDITIONS, THIS DOES NOT NECESSARILY IMPLY THAT THESE CUSTOMERS BEAR A DISPROPORTIONATE SHARE OF THE ENERGY SECURITY RISK ASSOCIATED WITH SOVIET GAS IMPORTS.

END INTRODUCTION AND SUMMARY.

3. BACKGROUND:

DURING THE EARLY DISCUSSION OF THE LATEST ROUND OF

WESTERN EUROPEAN CONTRACTS WITH THE SOVIET UNION FOR NATURAL GAS, SEVERAL REFERENCES WERE MADE TO THE DEPENDENCE OF THE SOUTHERN REGION OF GERMANY (THE LAENDER OF BAVARIA AND BADEN-WUETTEMBERG) ON SOVIET SUPPLIES. USING DISAGGREGATED DATA FOR 1981 (THE MOST RECENT AVAILABLE) FROM FRG GAS INDUSTRY AND TRADE ASSOCIATION SOURCES, AS WELL AS INFORMATION FROM TECHNICAL PUBLICATIONS AND THE ECONOMICS MINISTRY, WE HAVE ATTEMPTED TO EXAMINE THIS ISSUE. THE FOCUS IS ON THE ABILITY OF THE GERMAN GOVERNMENT AND GAS INDUSTRY TO COPE WITH ANY SERIOUS SUPPLY SHORTFALL, INCLUDING A TOTAL CUT-OFF OF SOVIET GAS. A CERTAIN AMOUNT OF CRYSTAL BALL GAZING IS INVOLVED AS THE GERMAN GAS MARKET IS UNDERGOING A MAJOR STRUCTURAL CHANGE AT THIS TIME, MAKING THE FORECASTING OF CONSUMPTION PATTERNS IN THE 1990'S DIFFICULT, AT BEST. NONETHELESS, WE BELIEVE AN EXAMINATION OF CONTRACT FLEXIBILITY, TRANSMISSION POSSIBILITIES, DEMAND, AND EMERGENCY MEASURES MAY AID IN SEEING IF THERE IS INDEED A "BAVARIAN PROBLEM."

4. NORMAL GAS DISTRIBUTION PATTERNS:

NORMAL GAS DISTRIBUTION IN THE FRG, AS ELSEWHERE, REPRESENTS AN OPTIMAL SOLUTION TO A FAIRLY STRAIGHT FORWARD TRANSPORTATION ECONOMICS PROBLEM. NORTHEAST AND NORTH CENTRAL GERMANY ARE SUPPLIED MAINLY FROM INDIGENOUS PRODUCTION. THE RUHR AREA IS SUPPLIED FROM THE NETHERLANDS AND NORWAY, WHILE THE SOUTHERN REGION RECEIVES MOSTLY SOVIET GAS. THE BOUNDARY OF THESE ROUGH AREAS SHIFTS CONTINUOUSLY DEPENDING ON SEASONAL AND DAILY DEMAND. SWAPS AMONG GAS DISTRIBUTION COMPANIES ARE COMMON, WITH INDUSTRIAL CUSTOMERS FREQUENTLY RECEIVING GAS FROM A COMPANY OTHER THAN THAT WITH WHICH THEY HAVE CONCLUDED A CONTRACT. THE PIPELINE NETWORK IN THE FRG IS EXTENSIVE, INTER-CONNECTED AND REVERSIBLE.

5. THE NORMAL DISTRIBUTION PATTERN GIVES THE IMPRESSION THAT BAVARIA IS HEAVILY DEPENDENT ON SOVIET GAS. AS LONG AS SOVIET DELIVERIES CONTINUE WITHOUT INTERRUPTION BT

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THIS POSES NO PARTICULAR PROBLEM AND UNDER NORMAL SUPPLY CONDITIONS, NO ONE IS PREPARED TO PAY THE ADDITIONAL COSTS WHICH WOULD ARISE FROM MIXING GAS SOURCES ON A NATIONAL BASIS. OVER THE PAST SEVERAL YEARS, NATURAL GAS AT THE CONSUMER LEVEL HAS LOST SOME OF ITS PRICE ADVANTAGE OVER OIL IN GERMANY, CONTRIBUTING TO THE RELUCTANCE OF THE GAS INDUSTRY TO IMPOSE SUCH AN ADDITIONAL CHARGE ON ITS CONSUMERS. DURING THE 1975-79 PERIOD GAS COST 62.7 PERCENT OF THE COST OF IMPORTED OIL; BY 1982 GAS COST ABOUT 74 PERCENT OF IMPORTED OIL. WITH THE INDEXATION OF IMPORTED GAS CONTRACTS (INCLUDING THE NEW SOVIET CONTRACT) TO LANDED OIL PRICES, THIS TREND IS NOT LIKELY TO BE REVERSED.

6. SOUTHERN REGION GAS DEMAND:

AS TABLE 1 ILLUSTRATES, GAS DEMAND IN THE SOUTHERN REGION OF THE FRG DIFFERS MARKEDLY FROM THE NATIONAL AVERAGE. (NOTE: THE PERCENTAGES IN THIS TABLE WERE CALCULATED ON THE BASIS OF KILOWATT/HOUR GAS CONSUMPTION. THEY MAY DIFFER FROM OTHER CONSUMPTION FIGURES, INCLUDING SOME OF THE GERMAN GOVERNMENT, WHICH CALCULATE CUBIC METER CONSUMPTION ASSUMING A UNIFORM ENERGY CONTENT OF 8400 KILOCALORIES PER CUBIC METER. SOVIET GAS CONTAINS 9200 KCAL, WHILE NORWEGIAN GAS HAS A 10,000 KCAL RATING. THE CUBIC METER FIGURES GIVEN IN TABLE 2 ARE NOTIONAL ONLY AND FOLLOW THE 8400 KCAL CONVENTION.)

7. TABLE 1
NATURAL GAS CONSUMPTION BY SECTOR AS A PERCENTAGE OF
TOTAL GERMAN GAS CONSUMPTION - 1981

	FRG	SOUTHERN	BAVARIA	BADEN
INDUSTRY	48.69	38.37	42.11	32.76
POWER PLANTS	11.75	20.85	24.26	15.74
HOUSEHOLDS	24.91	22.47	18.68	28.15
COMMERCE	5.29	6.33	5.84	7.05
HEAT PLANTS	4.06	5.32	3.52	8.00
OTHER	5.31	6.67	5.58	8.30

8. GAS USE IN HOUSEHOLDS IS LESS EXTENSIVE IN BAVARIA THAN ELSEWHERE IN THE FRG. FEWER HOUSES ARE WITHIN GAS SERVICE AREAS, AND OF THESE FEWER ARE CURRENTLY SUPPLIED. TOTAL HOUSEHOLD CONSUMPTION IS ONLY ABOUT 1.11 BCM IN BAVARIA AND 1.17 BCM IN BADEN-WUERTEMBERG, IN PART BECAUSE PER HOUSEHOLD GAS USE IN THE SOUTHERN REGION IS ONLY 80 PERCENT OF THE NATIONAL AVERAGE. (WE ARE AT A LOSS TO EXPLAIN WHY SOUTHERN REGION HOUSEHOLD GAS CONSUMPTION IS BELOW THE NATURAL AVERAGE. SOUTHERN GERMANY IS COLDER THAN OTHER AREAS IN THE FRG ON A DEGREE-DAY BASIS, SO WEATHER MUST BE RULED OUT. DISPOSABLE INCOME IS REPORTEDLY HIGHER THAN THE NATIONAL AVERAGE TENDING TO ELIMINATE RELATIVE POVERTY AS A CAUSE. TRADE ASSOCIATION SOURCES WERE ALSO UNABLE TO EXPLAIN THE DIFFERENCE.)

9. TABLE 2 PROVIDES A COMPARISON OF SOUTHERN REGION DOMESTIC GAS CONSUMPTION AND NATIONAL DATA.

10. TABLE 2
HOUSEHOLD CONSUMPTION OF NATURAL GAS - 1981

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	FRG	BAVARIA	BADEN-
TOTAL HOUSEHOLDS (000'S)	25,100	4,352	3,702
WITHIN GAS SERVICE AREAS (000'S)	19,366	2,800	2,076
PERCENTAGE WITHIN SERVICE AREAS	77	64	56
HOUSEHOLDS SUPPLIED (000'S)	7,881	790	884
PERCENTAGE OF TOTAL	31	18	24
PERCENTAGE OF HOUSE- HOLDS WITHIN GAS SERVICE AREAS	41	28	43
TOTAL GAS SUPPLIED (IN BCM AT 8400 KCAL)	14.02	1.11	1.17
AVERAGE ANNUAL CONSUMP- TION/HOUSEHOLD IN CUBIC METERS	1,779	1,409	1,409

11. COPING WITH A SUPPLY CUT-OFF:

THE FRG INTENDS TO MEET ANY SHORTFALL IN SOVIET
DELIVERIES THROUGH A COMBINATION OF INCREASED IMPORTS
FROM WESTERN SOURCES, INCREASED DOMESTIC PRODUCTION,
DEMAND CURTAILMENT, REDISTRIBUTION OF SUPPLIES
AND STOCK DRAW DOWN. IN SO DOING, THE GOVERNMENT
INTENDS TO RELY EXTENSIVELY ON THE GAS INDUSTRY WHICH
BEARS THE RESPONSIBILITY FOR PROVIDING ADEQUATE SUPPLIES

12. IMPORT CONTRACT FLEXIBILITY:

ACCORDING TO INDUSTRY AND ECONOMICS MINISTRY SOURCES,
CONSIDERABLE FLEXIBILITY EXISTS FOR THE GERMAN
PURCHASING COMPANIES TO VARY THE AMOUNTS OF GAS TAKEN
FROM THE NETHERLANDS, AT THEIR OPTION. THIS FLEXI-
BILITY WAS ONE OF THE FRG PURCHASERS' REQUIREMENTS
DURING THE MOST RECENT ROUND OF CONTRACT TALKS WITH
THE DUTCH. GAS TRANSMISSION FACILITIES EXIST, IN
PARALLEL WITH THE CONTRACT FLEXIBILITY, SUFFICIENT TO
DOUBLE THE RATE OF FRG IMPORTS OF DUTCH GAS ON AS
LITTLE AS SEVERAL HOURS NOTICE. (SUCH A REQUEST
WOULD BE COORDINATED WITH GAS UNIE VIA THE FRG NET
CONTROL OPERATION IN ESSEN OVER DATA AND COMMUNICATIONS
LINES BURIED ADJACENT TO THE TRANSMISSION LINES.) THE
SPECIFIC FIGURES AVAILABLE TO EACH INDIVIDUAL PURCHASING
COMPANY ARE A MATTER OF COMMERCIAL SENSITIVITY, BUT
SOURCES HAVE CONFIRMED THAT, AT ANNUAL RATES, DELIVERIES
COULD BE INCREASED FROM 20 TO 40 BILLION CUBIC METERS.
ECONOMICS MINISTRY OFFICIALS EMPHASIZE THAT THE
AVAILABILITY OF THIS ADDITIONAL GAS DOES NOT REPRESENT
A COURTESY ON THE PART OF THE DUTCH, BUT IS A CON-
TRACTURAL RIGHT FOR WHICH THE FRG CONSUMER HAS BEEN
PAYING.

13. LITTLE DELIVERY FLEXIBILITY EXISTS WITH REGARD
TO NORWEGIAN GAS IMPORTS DUE TO TRANSMISSION NINE
CONSTRAINTS. LIFTING RATES FROM THE FRG GAS FIELDS
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E.O. 12356: DECL: OADR
TAGS: ENRG, GE

SUBJ: FRG NATURAL GAS: HOW VULNERABLE IS SOUTHERN
(WHICH IN 1982 PROVIDED APPROXIMATELY 18 BCM, OR
ONE-THIRD OF NATURAL GAS CONSUMPTION) CAN BE VARIED
EXTENSIVELY. THIS FLEXIBILITY IS EXPECTED TO INCREASE
THROUGH THE 1990'S.

14. ACCORDING TO THE SCENARIO SUGGESTED BY ONE INDUSTRY
SOURCE, BY THE LATE 1980'S SOVIET GAS WILL BE SLIGHTLY
CHEAPER THAN DOMESTIC PRODUCTION. IF DEMAND DOES NOT
RESUME THE SHARP UPWARD PATH IT FOLLOWED IN THE 1970'S,
SEVERAL GAS DISTRIBUTION COMPANIES WILL COME UP AGAINST
THE TAKE-OR-PAY PROVISIONS OF THEIR SOVIET CONTRACTS.
AT THIS POINT, THEY WILL CURTAIL DOMESTIC PRODUCTION
AND SEEK FIRST TO USE THEIR MINIMUM SOVIET VOLUMES.
THE INFRASTRUCTURE NEEDED TO MOVE DOMESTIC GAS
FROM FIELD TO CONSUMER, WHICH IS ALREADY IN PLACE,
WILL BE RETAINED AND COULD BE USED IN AN EMERGENCY
SITUATION. AS WITH ALL TRANSMISSION FACILITIES IN
THE FRG, THESE LINES ARE FULLY INTEGRATED AND
ARE MANAGED BY THE NET CONTROL STATION IN ESSEN.

15. GAS PRODUCTION IN THE SOUTHERN REGION:

THERE ARE NATURAL GAS PRODUCTION WELLS SCATTERED
THROUGHOUT THE ALPINE FOOTHILLS. IN 1981, WELLS IN
BAVARIA PRODUCED ABOUT 440 MILLION CUBIC METERS. THOSE
IN BADEN-WUERTTEMBERG PRODUCED LESS THAN A MILLION CUBIC
METERS, GIVING THE SOUTHERN REGION AN INDIGENOUS
PRODUCTION CAPACITY, WHICH WHILE NOT SIGNIFICANT ON A
WORLD SCALE COULD BE USED PARTIALLY TO OFFSET A SUPPLY
SHORTFALL.

16. DEMAND REDUCTION:

RECENT ESTIMATES MADE FOR THE ECONOMICS MINISTRY
INDICATE THAT FROM 20 TO 25 PERCENT OF FRG INDUSTRY
HAS THE CAPABILITY TO SWITCH FROM GAS TO ANOTHER FUEL,
USUALLY OIL, WITHOUT INSTALLING NEW EQUIPMENT. DATA
DISAGGREGATED ON A REGIONAL BASIS ARE NOT AVAILABLE,
BUT THERE IS NO REASON TO SUSPECT LESS DUAL-FIRED CAPABI-
LITY IN THE SOUTHERN REGION. (ONE COULD SPECULATE
THAT SUCH A CAPABILITY MIGHT IN FACT BE HIGHER, GIVEN
THE MORE MODERN INDUSTRIAL BASE OF LIGHT MANUFACTURING
AND ASSEMBLY IN THE REGION.)

17. ALMOST ALL GAS CUSTOMERS, WITH THE EXCEPTION OF
HOUSEHOLDS AND COMMERCIAL ESTABLISHMENTS, ARE NOW
OFFERED ONLY INTERRUPTABLE CONTRACTS. ACCORDING TO
THE GAS INDUSTRY, THE REGIONAL DISTRIBUTION OF IN-
TERRUPTABLE CONTRACTS AND DUAL-FIRING CAPABILITY IS
IMMATERIAL. IN THE EVENT OF A SUPPLY SHORTFALL,
THEY INTEND TO PUT DUAL-FIRED INDUSTRIAL CUSTOMERS
THROUGHOUT GERMANY ON ALTERNATIVE ENERGY SOURCES,
FREEING UP NATURAL GAS FOR HOUSEHOLDS AND OTHER
CUSTOMERS WHICH LACK A FUEL SWITCHING CAPABILITY.

18. POWER PLANT USAGE OF NATURAL GAS HAS DECLINED
MARKEDLY ON A NATIONAL BASIS. GAS IS NOW ALMOST
TOTALLY ABSENT FROM BASELOAD POWER GENERATION, AND ITS
USE AS A SOURCE OF MID-LOAD AND PEAKING POWER IS
DECLINING. FROM 45 TO 50 PERCENT OF FRG POWER PLANTS
WITH A GAS-USE CAPABILITY CAN NOW DELIVER THEIR FULL

RATED LOADS TO THE GRID WITHOUT USING GAS, ACCORDING
TO ECONOMICS MINISTRY ESTIMATES. NATIONALLY IN
1981 GAS WAS THE PRIMARY ENERGY SOURCE FOR ONLY 10.3
PERCENT OF THE ELECTRICITY PRODUCED IN THE FRG.
ALTHOUGH EXACT FIGURES ARE NOT YET AVAILABLE,
ESTIMATES INDICATE THAT THE COMPARABLE FIGURE MAY
BE AS LOW AS 9 PERCENT FOR 1982. POWER PLANTS IN THE
SOUTHERN REGION ARE MORE DEPENDENT ON NATURAL GAS
THAN THOSE IN COAL-RICH AREAS, BUT GAS INDUSTRY SOURCES
ESTIMATE THAT ONLY ABOUT 15 PERCENT OF ELECTRICITY
GENERATION IN THE REGION WAS BASED ON GAS IN 1981.

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19. REDISTRIBUTION OF GAS SUPPLIES:

ACCORDING TO ECONOMICS MINISTRY OFFICIALS, INDUSTRY SOURCES AND ONE PIPELINE ENGINEERING FIRM WITH WHOM WE HAVE SPOKEN, THE FRG GAS TRANSMISSION NETWORK WILL BE ADEQUATE TO HANDLE INTERRUPTIONS OF SOVIET GAS SUPPLIES. AS NOTED ABOVE, THE NETWORK, WHICH AT THE END OF 1981 CONSISTED OF 149,361 KM OF PIPELINES (OVER 42,000 KM OF WHICH WAS HIGH PRESSURE RATED) IS WELL INTEGRATED. THE HIGH PRESSURE TRANSMISSION LINES ARE CONTROLLED FROM A CENTRAL STATION WHICH IS IN DIRECT COMMUNICATION WITH FOREIGN GAS SUPPLIERS. COMPRESSOR STATIONS IN THE FRG, AS WELL AS ALL MAJOR GAS STORAGE FACILITIES, ARE CONTROLLED DIRECTLY FROM ESSEN, ALTHOUGH PROVISION EXISTS FOR THE EMERGENCY TAKE OVER OF THE SYSTEM FROM OTHER LOCATIONS. ALL LONG-DISTANCE TRANSMISSION LINES ARE FULLY REVERSIBLE, BOTH WITH REGARD TO COMPRESSION AND CONTROL.

20. IN THE EVENT OF A CUT-OFF OF SOVIET DELIVERIES, ADDITIONAL GAS WILL BE ORDERED FROM THE NETHERLANDS, AND STORAGE FACILITIES IN THE NORMAL MARKETING AREA FOR SOVIET GAS WILL BE DRAWN DOWN UNTIL THE NEW GAS CAN BE MOVED INTO THE AREA.

21. A VARIETY OF PIPELINES BRING GAS TO THE FRG FROM THE NETHERLANDS. ACCORDING TO INDUSTRY SOURCES, CURRENT PLANS CALL FOR PUSHING DOMESTIC GAS AS FAR INTO THE RUHR AREA AS DEMAND ALLOWS AND THEN SERVICING

CUSTOMERS BEYOND THIS TERRITORY USING THE NORTHERN DUTCH-GERMAN PIPELINE WHICH CROSSES THE BORDER NEAR LEER. (NORWEGIAN SUPPLIES WOULD COVER DEMAND IN THE BREMEN, OLDENBURG AREA.) THE MAIN DUTCH-GERMAN LINES NEAR NIJMEGEN (HIGH PRESSURE LINES OF 36 AND 40 INCHES) WOULD FEED THE NORTH-SOUTH TRUNK LINES FOR DISTRIBUTION TO HESSEN AND THE SOUTHERN REGION. THESE LINES RUN TO THE EAST OF THE RHINE RIVER VALLEY. THE TWO 36 INCH 75 ATMOSPHERE LINES (WHICH ARE SUPPLEMENTED BY SMALLER PARALLEL STRANDS) HAVE A COMBINED THROUGH PUT OF 20 BCM, OR ABOUT 2-2.4 MILLION CUBIC METERS/HOUR. BECAUSE OF THE HEAVY CONCENTRATION OF PIPELINES FROM HOLLAND TO GERMANY AND THROUGHOUT THE RUHR AREA, THE RHINE VALLEY TRUNK LINES CONSTITUTE THE CAPACITY LIMITING FACTOR FOR THE DELIVERY OF DUTCH GAS TO THE SOUTHERN REGION. AN ANNUAL THROUGH PUT AT THIS POINT OF ABOUT 25 PERCENT MORE THAN LIKELY MAXIMUM SOVIET IMPORTS IS CONSIDERED ADEQUATE BY TRANSMISSION CAPABILITY INDUSTRY STANDARDS TO OFFSET A SOVIET DELIVERY SHORT-FALL.

22. THE DOMESTIC NORTH-SOUTH LINES ARE SEPARATED FROM THE 38 INCH 75 ATMOSPHERE TRANS-EUROPEAN NATURAL GAS PIPELINE USED TO SUPPLY DUTCH GAS TO ITALY. THIS LINE RUNS TO THE WEST OF THE RHINE VALLEY ACROSS THE EIFEL PLATEAU. SEVERAL SMALL GERMAN COMMUNITIES ARE CONNECTED TO THIS LINE, AND WOULD PROBABLY CONTINUE TO RECEIVE GAS IN THE EVENT OF AN EMERGENCY, BUT THEIR DEMAND IS MINIMAL. (ALL FRG PLANNING FOR A GAS SUPPLY EMERGENCY ASSUMES FULL COMPLIANCE WITH EXISTING EXPORT AND TRANSIT CONTRACTS.)

23. EAST-WEST TRANSMISSION FROM THE FRG'S MAJOR PIPELINE JUNCTION OUTSIDE OF PFUNGSTAD WOULD UTILIZE THE EXISTING 28 AND 36 INCH PIPELINES WHICH RUN TO THE CZECH BORDER. (IF THE CUT-OFF OF SOVIET GAS WERE COMPLETE, THE FULLY-INTEGRATED MEGAL 48 INCH PIPELINE, WHICH IS OWNED JOINTLY BY GAZ DE FRANCE AND RHURGAS COULD ALSO BE USED FROM WEST TO EAST.) THESE LINES, TOGETHER WITH A SMALLER LINE WHICH DIPS SOUTHWARD TO SERVICE STUTTGART AND AUGSBURG, COULD SUPPLY MUNICH AND THE REMAINING PORTIONS OF THE BAVARIAN NETWORK. NORTHERN BAVARIA CAN BE SUPPLIED BY ITS OWN DIRECT

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CONNECTION TO THE GERMAN GAS FIELDS IN THE HANOVER
AREA.

24. A COMPLETE MAP OF GERMAN NATURAL GAS PIPELINE
SYSTEM IS CONTAINED IN THE "JAHRBACH FUER BERGBAU,
ENERGIE, MINERALOEL AND CHEMIE" PUBLISHED ANNUALLY
BY GLUECKAUF, SHOULD FURTHER INFORMATION BE DESIRED.

25. GAS STORAGE FACILITIES:

GAS STORAGE FACILITIES ARE EXTENSIVE AND WELL DISTRIBUTED
THROUGHOUT THE FRG. STORAGE IN THE SOUTHERN REGION FOR
NATURAL GAS CURRENTLY AMOUNTS TO 1.14 BCM. (THIS IS THE
NORMAL OPERATIONAL RECOVERY VOLUME AND DOES NOT INCLUDE
THE REQUIRED OPERATING "CUSHION".) THE TOTAL GAS CONTENT
OF SOUTHERN REGION STORAGE FACILITIES AT THE END OF
1981 WAS ABOUT 2.51 BCM. SOME PORTION OF THIS OPERATING
CUSHION WOULD PROBABLY BE RECOVERABLE IN THE EVENT OF AN
EMERGENCY.

26. ADDITIONAL OPERATING STORAGE IS PLANNED; ABOUT AN
ADDITIONAL 1 BCM OF CAPACITY SHOULD BE AVAILABLE BY 1988,
THE EARLIEST THAT FULL DELIVERIES UNDER THE NEW SOVIET
CONTRACTS ARE EXPECTED.

27. TABLE 3 PROVIDES DETAILS ON STORAGE CAPACITY,
INCLUDING MAXIMUM INTAKE RATES:

SOUTHERN REGION GAS STORAGE FACILITIES

FACILITY	LOCATION	MAX. OPERATING VOLUME (MILLION CUBIC METERS)	MAX. INTAKE RATE (CUBIC METERS/ HOUR)
BIERWANG I	MUNICH	500	400,000
ESCHENFELDEN	NUERNBERG	45	80,000
FRANKENTHAL	WORMS	110	100,000
HAENLEIN	S. OF DARMSTADT	80	120,000
PLIENING	MUNICH	20	20,000
STOCKSTAD I	DARMSTADT	52.5	50,000
STOCKSTAD II	DARMSTADT	30	10,000
WOLFERSBERG	MUNICH	300	270,000
UNDER CONSTRUCTION			
BIERWANG II	MUNICH	450	
FRONHOFEN-			
ILMENSEE	OBERSCHWABEN	200	
INZENHAM-WEST	ROSENHEIM	400	

28. IN ADDITION TO NATURAL GAS STORAGE FACILITIES, THE
REGION CONTAINS FACILITIES FOR THE STORAGE OF LPG AND A
MAJOR LNG STORAGE FACILITY NEAR STUTTGART.

29. TOTAL FRG NATURAL GAS STORAGE FACILITIES, EXCLUDING
PIPELINE STORAGE AMOUNTED TO AN OPERATIONAL VOLUME OF
NEARLY 2.5 BCM AT THE END OF 1981. THIS IS EXPECTED TO
INCREASE TO ABOUT 5.1 BCM BY 1988. THESE RESERVES
COULD BE COMMITTED AS NEEDED IN THE EVENT OF A SUPPLY
EMERGENCY PROVIDING ADDITIONAL GAS TO THE SOUTHERN
REGION.

30. ADMINISTRATIVE ARRANGEMENTS FOR A GAS SUPPLY

EMERGENCY:

THE FRG INTENDS TO COPE WITH ANY SOVIET GAS CUT-OFF USING
A COMBINATION OF METHODS. COOPERATION WITH THE NATURAL
GAS INDUSTRY WILL BE STRESSED. ACCORDING TO ECONOMICS
MINISTRY SOURCES, THIS IS BECAUSE THE INDUSTRY KNOWS THE
MARKET BEST AND BECAUSE IT IS VERY MUCH IN THESE FIRMS'
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INTEREST TO MINIMIZE ANY MARKET DISRUPTIONS. AS A RESULT
OF THE ENERGY SECURITY LAW OF 1975, AND THE IMPLEMENTING
REGULATIONS FOR NATURAL GAS ADOPTED ON APRIL 26, 1982, THE
ECONOMICS MINISTRY HAS BEEN GRANTED EXTENSIVE POWERS IN
THE EVENT OF A SUPPLY CURTAILMENT. THE FEDERAL AGENCY
FOR TRADE AND INDUSTRY (AN AGENCY SUBORDINATE TO THE FRG
ECONOMICS MINISTRY) MAY ISSUE DECREES GOVERNING THE PRO-
DUCTION, PURCHASE, STORAGE, IMPORT, EXPORT, AND CONSUMPTION
OF GAS DIRECTLY OR INDIRECTLY USED IN THE PUBLIC GAS
SUPPLY. SUCH RESTRICTIVE MEASURES MAY BE RELEASED ONLY
TO REMEDY OR REDUCE DISTURBANCES IN GAS SUPPLY AND ONLY
IF THE FEDERAL GOVERNMENT HAS DETERMINED BEFOREHAND THAT
THE ENERGY SUPPLY IS ENDANGERED OR DISTURBED. IN ORDER
TO AVOID THE BREAKDOWN OF THE GAS SUPPLY NETWORK, IT IS
EVEN POSSIBLE TO CUT OFF A SUPPLY DISTRICT IF A REDUCTION
OF SUPPLY OR OTHER MEASURES ARE NOT SUFFICIENT TO RESOLVE
THE PROBLEM. THE ADEQUACY OF GAS SUPPLY IS CONTINUOUSLY
BEING MONITORED ON THE BASIS OF REPORTS WHICH COMPANIES
PRODUCING OR IMPORTING GAS FOR PUBLIC USE ARE REQUIRED
TO MAKE ON A REGULAR BASIS TO THE FEDERAL AGENCY FOR
TRADE AND INDUSTRY.

31. ON THE GOVERNMENT SIDE, CONTROL AND MONITORING
FUNCTIONS DOWN TO THE COMMUNITY LEVEL WILL BE TAKEN OVER
BY THE CIVIL DEFENSE ESTABLISHMENT. THESE OFFICIALS, WHO
HAVE ALREADY MADE PLANS FOR A WAR-TIME ENERGY CURTAILMENT
WOULD BE RESPONSIBLE FOR LIAISON WITH BOTH GAS SUPPLIERS
AND THE LOCAL (USUALLY CITY GOVERNMENT RUN) GAS
DISTRIBUTION FIRMS.

32. THE 1979-80 "TEST":

DURING THE WINTER OF 1979-80, GAS DELIVERIES FROM THE

SOVIET UNION WERE SHARPLY CURTAILED AS SOVIET DOMESTIC
DEMAND ROSE, AND SOVIET SUPPLIES FROM IRAN WERE CUT-OFF.
PRIOR TO THAT TIME, THE GAS INDUSTRY HAD ASSURED THE
ECONOMICS MINISTRY THAT IT WAS CAPABLE OF COPING WITH A
SOVIET CUT-OFF, AND THIS PROVED TO BE THE CASE.
DELIVERIES WERE CUT AS MUCH AS 50 PERCENT FOR A PERIOD
OF WEEKS, ALTHOUGH BY THE END OF THE CONTRACT YEAR IN
SEPTEMBER THE SOVIETS HAD INCREASED DELIVERIES SO AS TO
PROVIDE THE FULL REQUIRED VOLUME. ACCORDING TO THE
ECONOMICS MINISTRY, THE GAS INDUSTRY DREW DOWN STORAGE
FACILITIES AND MOVED ADDITIONAL DUTCH GAS INTO THE
AFFECTED AREA. NO FIRMS WERE REQUIRED TO SWITCH TO OIL,
AND THE CUTBACK WAS OFFSET WITHOUT INCIDENT. MOST FRG
GAS CONSUMERS HAVE RELATIVELY NEW EQUIPMENT SO THAT
BURNER-TIP CONVERSION WAS NOT REQUIRED TO ACCOMMODATE
THE LESS POWERFUL DUTCH GAS (8400 KILOCALORIES/CUBI
METER AS COMPARED WITH 9200 KCAL FOR SOVIET GAS).
SOMEWHAT TO THE SURPRISE OF INDUSTRY OFFICIALS, NO
COMPLAINTS WERE RECEIVED FROM CONSUMERS, THE MAJORITY OF
WHOM PROBABLY LEARNED OF THE SWITCH (IF AT ALL) BY READING
THE NEWSPAPERS. (GAS IS PRICED ON A KWH BASIS, SO THAT
THE CHANGE WAS NOT REFLECTED IN HOMEOWNERS' BILLS.)

33. FUTURE GAS MARKET DEVELOPMENTS:

FRG GAS DEMAND HAS DECLINED IN EACH OF THE THREE PREVIOUS
YEARS. OBSERVERS BELIEVE THE PRESENT OVER SUPPLY
SITUATION IS LIKELY TO REMAIN THROUGHOUT THE DECADE,
AND PROBABLY LATE INTO THE 1990'S. GAS USE IN POWER
GENERATION HAS DECLINED AND IS UNLIKELY TO RECOVER.
INDUSTRIAL USERS, EVEN AFTER ALLOWING FOR THE CURRENT
RECESSION, ARE INCREASINGLY PRICE SENSITIVE. MORE AND
MORE INDUSTRIAL AND LARGE HEATING CUSTOMERS ARE CONVERTING

TO INTERRUPTABLE CONTRACTS AND INSTALLING EQUIPMENT TO
PERMIT THEM TO CHOOSE BETWEEN GAS AND OIL ON THE BASIS
OF SHORT TERM PRICES. THE GAS FIRMS WITH WHICH WE HAVE
TALKED BELIEVE THEY HAVE SEEN THE END OF THE "EASY
GROWTH ERA" AND THAT FUTURE INCREASES IN DEMAND WILL
COME PRIMARILY FROM THE HOUSEHOLD AND COMMERCIAL SECTORS.
HERE PRICE (BOTH OF THE GAS AND OF CONVERTING FROM THE
PRESENT FUEL SOURCE) WILL BE THE DOMINANT CONSIDERATION.
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34. IT IS PROBABLE THAT THE NEW FRG-SOVIET CONTRACTS WILL BE SCALED DOWN TO A MAXIMUM OF 8 BCM PER YEAR. THIS COULD BE FURTHER REDUCED ON A YEARLY BASIS TO A MINIMUM TAKE OR PAY OF ABOUT 6.5 BCM, MAKING TOTAL SOVIET IMPORTS ABOUT 16 BCM. IF DEMAND DOES NOT PICK UP, THERE WILL BE CONSIDERABLE PRESSURE TO REDUCE DUTCH IMPORTS AND/OR REDUCE DOMESTIC PRODUCTION. SUCH ACTIONS WOULD EXPAND THE AREA NORMALLY SERVICED WITH SOVIET GAS, BUT WOULD AT THE SAME TIME INCREASE THE GAS VOLUMES AVAILABLE TO COPE WITH A SOVIET CUT-OFF. HOUSEHOLD DEMAND IS MORE VARIABLE THAN INDUSTRIAL AND THE PERSONAL (AND POLITICAL) COSTS OF SUPPLY INTERRUPTIONS ARE MORE SEVERE. THE FRG INDUSTRY AND ECONOMICS MINISTRY ARE NOW LOOKING INTO THE IMPLICATIONS OF SUCH A CHANGE IN THE STRUCTURE OF DEMAND, AND PRESSING FORWARD WITH PLANS TO INCREASE GAS STORAGE CAPACITY.

35. SOUTHERN REGION FUTURE DEMAND:

INDUSTRIAL DEMAND IN THE SOUTHERN REGION IS ALREADY WELL BELOW THE NATIONAL NORM, AND IS NOT EXPECTED TO GROW FASTER THAN NATIONAL AVERAGES. POWER PLANT CONSUMPTION OF GAS WILL DECREASE, ALTHOUGH LESS QUICKLY THAN IN THE REST OF THE COUNTRY. FEWER HOUSEHOLDS, ON A PERCENTAGE BASIS, ARE ON THE GAS GRID IN THE SOUTHERN REGION THAN ELSEWHERE IN THE FRG. EXPANSION OF THE GAS GRID (AS OPPOSED TO MAKING ADDITIONAL CONNECTIONS TO AN EXISTING GRID) IS AN EXPENSIVE PROPOSITION. THE MAJORITY OF GAS "RETAILERS" IN THE SOUTHERN REGION ARE OWNED BY REGIONAL GOVERNMENTAL ENTITIES. IN AN ERA OF TIGHT BUDGETS LOCAL GOVERNMENTS ARE UNLIKELY TO HAVE THE FUNDS AVAILABLE TO MAKE SIGNIFICANT NEW INVESTMENTS. AMONG HOUSES WITHIN A GAS SERVICE AREA IN BAVARIA, ONLY 28 PERCENT ARE CURRENTLY

RECEIVING GAS. WHILE THIS MAKES BAVARIA AN OBVIOUS TARGET FOR GAS MARKETING, AVERAGE ANNUAL HOUSEHOLD CONSUMPTION IS ONLY 79 PERCENT OF THE NATIONAL AVERAGE, SO THAT MANY MORE HOUSES WOULD HAVE TO BE CONNECTED BEFORE GAS DEMAND ROSE APPRECIABLY. (AT CURRENT RATES, 700,000 ADDITIONAL HOUSES - NEARLY AS MANY HOUSES AS ARE NOW ON GAS IN BAVARIA - WOULD HAVE TO BE CONNECTED FOR TOTAL GAS CONSUMPTION TO INCREASE BY 1 BCM.)

36. CONCLUSION:

THE FRG'S SOUTHERN REGION CONSUMES ABOUT 8 BILLION CUBIC METERS OF NATURAL GAS EACH YEAR. LOCAL PRODUCTION REDUCES IMPORTS TO THE REGION TO ABOUT 7.5 BILLION CUBIC METERS PER YEAR OR ABOUT 850,000 CUBIC METERS/HOUR ON AVERAGE. THIS FIGURE IS NOT EXPECTED TO GROW MARKEDLY IN THE NEAR FUTURE, BECAUSE INCREASES IN HOUSEHOLD CONSUMPTION SHOULD BE OFFSET BY REDUCTIONS IN POWER PLANT GAS USAGE. IN THE EVENT OF AN EMERGENCY, DEMAND IN THE REGION CAN BE REDUCED UNDER EXISTING GOVERNMENTAL AUTHORITY, USING INTERRUPTABLE SUPPLY CONTRACTS, AND DUAL-FIRING CAPABILITY. SHOULD THIS PROVE INADEQUATE, DEMAND IN OTHER AREAS OF THE COUNTRY CAN ALSO BE REDUCED, LEAVING GAS SUPPLIES FOR THOSE USES WITHOUT IMMEDIATE SUBSTITUTION POSSIBILITIES. FLEXIBLE IMPORT CONTRACTS CURRENTLY EXIST WITH THE DUTCH WHICH WILL PERMIT A NEAR DOUBLING OF THESE GAS IMPORTS. GERMAN PRODUCTION CAN ALSO BE INCREASED, ALTHOUGH HOW MUCH WILL DEPEND ON FUTURE UTILIZATION PLANS FOR THESE SUPPLIES. TRANSMISSION FACILITIES EXIST AND HAVE SUFFICIENT CAPACITY TO MOVE THE NEEDED GAS TO THE SOUTHERN REGION. STORAGE OF NATURAL GAS IN THE REGION IS ALREADY EXTENSIVE AND ADDITIONAL FACILITIES ARE UNDER CONSTRUCTION. ADMINISTRATIVE CONTROL MECHANISMS ARE IN PLACE AND ARE EXERCISED AS PART OF THE GERMAN CIVIL DEFENSE

EFFORT. THE EMERGENCY SYSTEM SUCCESSFULLY SURMOUNTED THE DIFFICULTIES PRESENTED DURING A SEVERE BUT TEMPORARY CURTAILMENT OF SOVIET GAS DELIVERIES IN THE WINTER OF 1979-80.

37. THE GERMAN INDUSTRY AND GOVERNMENT ARE NOT BLIND TO THE ADVERSE EFFECTS OF THE CUT-OFF OF ANY MAJOR ENERGY SOURCE. THEY BELIEVE, HOWEVER, THAT THEY HAVE PREPARED BT

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