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IMPROVING OIL PURCHASING PRACTICES IN EASTERN AND CENTRAL EUROPE

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U.S. EMERGENCY ENERGY PROGRAM FOR EASTERN & CENTRAL EUROPE

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
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Improving Oil Purchasing on Spot and Futures Markets

FINAL REPORT

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LIST OF KEY ACRONYMS

b/d	barrels per day
CMEA	Council for Mutual Economic Assistance
CSFR	Czech and Slovak Federal Republic
ECE	Eastern and Central Europe
IPE	International Petroleum Exchange
IRG	International Resources Group
IEA	International Energy Agency
LP	Linear Programming
NIS	Newly Independent States
NYMEX	New York Mercantile Exchange
OECD	Organization for Economic Cooperation and Development
OTC	Over-the-Counter
PEI	Petrolexport-Import
S&D	Supply and Distribution
TAL	Trans Alpine Pipeline
USAID	U.S. Agency for International Development

EXECUTIVE SUMMARY

In February 1991, in response to the profound economic and political changes occurring in the relations between the nations of Eastern and Central Europe (ECE) and the "Soviet Union," the U.S. Agency for International Development (USAID) launched a program of technical assistance to assist these nations cope with the specter of a cutoff in Soviet oil supplies. The International Resources Group (IRG) and its subcontractor Energy Futures Group (EFG) were selected to examine the changes that were occurring in the region's oil procurement and supply and distribution system, and to assist the ECE nations improve their oil purchasing and management capabilities. In collaboration with senior level officials in the state oil and gas companies, trading firms, refineries, pipeline companies, distribution and marketing organizations, and high-level government planners and policy makers (usually in the Ministry of Industry and/or the Ministry of Finance), IRG implemented a technical assistance program tailored to the particular needs of each nation.

Based on the assessment carried out during an initial reconnaissance trip to each country, in-country training programs were developed covering oil price risk hedging strategies, including the use of futures and futures options markets, over-the-counter (OTC) financial instruments, oil swaps and cash paper markets. In addition, the training focused on: cash (wet barrel) crude oil and refined products markets, which included price formulas for crude and refined products in the spot and term markets, the role of exchanges, and arbitrage trading; fundamental and technical analysis of world oil markets to make price predictions and identify trends, and; implementation and management of hedging programs. For refineries, IRG provided direct technical assistance in optimal refinery planning, including crude oil evaluation/selection, process operations, energy consumption and marginal cost economics. In addition, IRG addressed supply and distribution department organization, new marketing techniques; analysis of processing agreements; ship chartering; pipeline management, and; refinery LP modelling techniques. Subsequent to the initial training, targeted technical assistance was provided as follows:

Bulgaria

IRG worked with Chimimport and Neftochim's Burgas Refinery in the areas of oil procurement, refinery output optimization and logistics system optimization. Training focused on the basics of the cash and forward hedge markets to improve Chimimport's knowledge of logistics, finance and trading principles involved in crude oil and petroleum product markets. The IRG team also provided hands-on training in establishing appropriate computer-based market information and analytical systems to support trading decisions. In addition, IRG provided training on how to use refinery simulation models as effective tools in running a supply and trading department.

Czech and Slovak Federal Republic

IRG provided training to employees of the Litvinov refinery on the use of futures and futures options for hedging the crack spread, the use of OTC financial instruments for hedging, including oil swaps, the use of technical analysis of futures and cash oil markets, use of LP models for refinery optimization and helped to develop the organizational structure for a supply and trading department within the refinery. Similar training was provided to staff of the Kralupy and Slovnaft refineries.

Hungary

At the request of Mineralimpex, IRG conducted an oil purchasing workshop on the subject of oil futures and cash markets, contracting strategies, options, swaps, related "derivative" markets, trading of crack spreads, arbitrage and technical analysis tasks.

Poland

IRG provided Ciech-Petrolimpex training on (1) trading on the futures and option exchanges, (2) strategic application of futures, options and swaps, (3) use of electronic price and market analysis information systems; and (4) financial and accounting topics related to monitoring oil trading activity and documenting a business/trading plan.

Romania

IRG conducted a series of seminars in Romania. Topics included the evaluation of oil processing agreements, alternative approaches to hedge refinery crack spreads, and the role of long-term swap or "over-the-counter" contracts in securing oil costs and refining margins.

In addition to the in-country training and technical assistance, two interns from each country were placed in U.S. companies (refining, trading, banking) involved in spot and futures market operations for a training program of up to one month in the United States. The objective of the internships was to provide hands-on training and exposure to western company operations in the cash and paper spot markets and futures markets. The design and implementation of this training phase required intensive coordination and consultation with U.S. trading companies, large financial institutions, refineries, oil companies (majors and independents), and the New York Mercantile Exchange (NYMEX).

In each country, the provision of technical assistance had a major impact, though in some significant obstacles remain to implementing free market trading practices. In Bulgaria, the Government has taken great strides to privatize the oil sector and move towards free market pricing though the lack of adequate financing remains a major problem. Likewise, the continued imposition of uneven tax, customs and quality standards on the Burgas refinery, in comparison to importers, and the lack of coordination among pricing, fiscal and trading policies remain areas of concern.

In the Czech and Slovak Federal Republic, the major development with respect to oil procurement has been the decentralization of procurement authority and the growing independence of individual refineries. In addition, the traditional monopolistic state distribution and marketing companies have been both partially privatized and subjected to enhanced foreign competition. Despite these profound changes, the success of these refineries as private businesses will depend on how well they manage their day to day crude procurement operations. Either existing management will adopt western style practices or new owners will replace them. There is still much to be done if these entities are to survive under current management.

In Hungary, with the prospect of privatization in the near future, Mineralimpex will see its historic domination of the market increasingly in competition with both the trading arms of MOL, an integrated national oil and gas company created in October 1991, and the western oil companies now engaged in marketing in Hungary. To meet this challenge, Mineralimpex has adopted a business strategy unique in the ECE nations to become a private crude oil and petroleum products company not only in Hungary but also around the world. With direction from Mineralimpex, Hungary has now taken the lead in a proposal to develop a Central European Energy Exchange.

Despite these positive developments, the Government of Hungary still needs to take measures to insure competitive access to the nation's pipeline network to insure that MOL does not utilize its monopoly of Hungarian pipelines to exclude competition. To achieve this, some balance will have to be struck between the pure ideal of common carriage and a closed system. The resolution of this issue will have regional implications with regard to Hungary's trading relations with Russia and the NIS as well as its neighbors in ECE and Western Europe.

In Poland, since January 1, 1990, any end user now has the legal right to procure oil. In practice, however, while refineries are now able to trade directly on the world market, they lack the requisite skills and knowledge to participate in price risk management efforts. While the Polish Government in November 1991 announced plans to auction off major portions of the nation's downstream oil sector to place it on a competitive place with Western Europe, progress has been slow. Indeed, structuring joint venture relationships with foreign companies has been partially resisted owing to the belief that they may hinder the process of controlled privatization. Because of the hesitancy of Government to take bold actions, the coordination and financial investment needed to modernize the sector has been lacking. The lack of downstream integration has made it impossible to streamline or rationalize the gasoline marketing sector. Refineries are frustrated by their lack of control over sales at the refinery gate, while domestic production often remains at a price disadvantage to import competition as a result of high production costs and/or a tax and duty structure advantageous to foreign importers.

In Romania, there is considerable experience in purchasing oil and exporting finished products. PEI is responsible for the import and export of energy products and has a virtual monopoly on these activities as a result of its expertise, access to foreign exchange and mandate of the government. While industrial end users, the electric utility company, and PECO (the petroleum products marketing company) are by law allowed to import petroleum products, they have not been involved in the activity owing to lack of in-house marketing skills and PEI's dominance. PEI imports crude for the refineries, some products for end users, and arranges all of the petroleum product exports in return for fees. Although there has been some discussion of privatizing PEI, and possibly the refineries, Romania has been slow to act to date.

While the problems prevailing in each nation varied considerably, as outlined in detail in this report, several common problems emerged that must be addressed if the nations of Eastern and Central Europe are to be integrated fully into the international petroleum market. These issues include the establishment of financial institutions and access to financial resources to allow existing or emerging oil and gas institutional entities to engage in trading and procurement strategies to reduce the cost of energy imports for each nation. Although there are many ways such resources can be provided, clearly until these resources are available countries such as Poland, Bulgaria and Romania will remain seriously constrained in their oil procurement policies.

A second issue demanding attention throughout the region is the rationalization of energy pricing and government regulation to allow market forces to be the determining element in establishing energy supply/demand relationships. To the extent that government price controls, energy price subsidies and/or related tax or custom regulations retard the workings of the market or adversely affect an enterprise's profitability, the motivations to implement profitable oil procurement policies will be reduced.

In addition, because of the inefficiencies pervading the energy sector of the ECE nations owing to the historic energy price subsidies provided by the Soviet Union, the governments of the region will need to provide investment incentives both to upgrade the energy facilities in the region but also to overcome the perceived risks by private entrepreneurs. Such incentives can

take varied forms, such as favorable tax, royalty or fee treatment, advantageous buy in terms, etc., but unless they are available in concert with a rescinding of onerous government regulations, a restructuring of the sector to build a more effective base around which financial performance and investment will grow is unlikely to occur.

Finally, there will have to be major changes in the supply and distribution management of the region's refineries both to rationalize regional supply and demand and to establish measures to ensure investors that sound management practices are in effect.

While there are many other country specific issues addressed in the report, and an agenda for future technical assistance provided, the nature of the ECE market has continued to undergo rapid change which will require continued monitoring by international donor agencies.

Unlike the situation which prevailed in February 1991, when concern centered on the nations of the ECE having a total cutoff of Soviet oil supplies, in May and June 1992, there has been a torrent of "illegal" Russian oil flooding into Poland, Czechoslovakia and Hungary pushing prices to levels as much as $2.50 below levels prevailing in the Brent market. One reason for these developments has been the diversion of oil from Black Sea and Baltic ports owing to transit fees charged by Belarus, the Baltic States and the Ukraine. While these prices are unlikely to last for long, the specter of acute energy shortages has been somewhat alleviated in the near term.

The issues raised in this report demand urgent attention by all the states in the region if they are to integrate their energy sectors into the international petroleum market. While the states are attempting to deal with these problems, the challenges confronting them will require continued donor assistance for some time to come.

PREFACE

During the period 1989-1990, the ECE countries[1] undertook the first steps in the transition to democracy and the development of a free market economy. At an early stage USAID recognized that this process was occurring in the context of momentous international changes which would have serious ramifications for the oil supply system throughout the region. Declines in Soviet (Russian) oil deliveries, the shift to hard currency payments for Soviet oil, the impact of higher international and domestic oil prices, the Persian Gulf crisis and the attendant cutoff of Iraqi crude supplies, and the need to increase trade with Western Europe as well as with Middle East and other producers have created an emergency situation. To compound matters, the ECE countries have limited access to foreign exchange and have a myriad of other pressing economic, environmental and energy needs. In addition, contracting arrangements with the Newly Independent States (NIS) in the former Soviet Union have not been reliable to date.

Confronted with the decreasing reliability of a traditional supply source, the countries of the ECE region have been forced to examine other sources and methods of procuring crude oil and petroleum products on a world market characterized not only by generally higher prices than those they are accustomed to paying, but also by price volatility. Therefore, throughout the region it was recognized that each country would have to secure oil on the spot and futures markets in ways that allow them to offset their price risk and at the same time guarantee supply. However, most ECE countries have very limited experience in these markets and with price risk management techniques commonly employed in the West.

Thus, in order to assist the ECE countries in coping with rising procurement costs and their limited experience in these markets, the USAID, Bureau for Europe, developed a technical assistance program entitled *Improving Oil Purchasing on Spot and Futures Markets* (Component 3) under the USAID-funded Emergency Energy Project in Eastern and Central Europe. The goal of this Component was to assist the ECE countries in developing a practical understanding and capability to purchase oil effectively on the spot and futures markets.

Contractor Team

IRG was selected in February 1991 as USAID's prime contractor to carry out this technical assistance in the six countries of the ECE region. Working with IRG was its subcontractor Energy Futures Group (EFG). Exhibit 1 presents the principal personnel conducting the technical assistance tasks under this contract, along with their primary role and responsibilities.

EXHIBIT 1

IRG TEAM

NAME	ACTIVITIES UNDER CONTRACT
Charles Ebinger, IRG	Project Director
John Banks, IRG	Project Manager; Petroleum Market & Industry Analysis
Arnold Safer, EFG	Energy Economics; Trading & Price Risk Management
Bo Poats, IRG	Energy Economics; Trading & Price Risk Management
Harry Jones, EFG/IRG	Trading & Price Risk Management; S&D Optimization
Meg Annesley, IRG	Trading & Price Risk Management
Charles Boudrye, EFG/IRG	Refinery LP Modeling

[1] *Countries covered under this contract were Bulgaria, the Czech and Slovak Federal Republic, Hungary, Poland, Romania and Yugoslavia. However, during the course of project implementation, all technical assistance to Yugoslavia was halted.*

INTRODUCTION

After the conclusion of World War II, energy played a major role in facilitating the Soviet Union's hegemony over the ECE countries. As members of the Council for Mutual Economic Assistance (CMEA), these nations received the major portion of their oil, gas and electricity on relatively favorable, soft currency terms. In return, they sold industrial goods which were largely non-competitive on the world market to the U.S.S.R. Today, the ECE countries still rely heavily on Soviet supplies: of the approximately 745,000 barrels per day (b/d) of crude oil and petroleum products consumed by these nations in 1991, 64 percent came from Russia and the NIS (See Annex F).

This dependence is enhanced by the lack of an oil supply infrastructure linking Eastern and Western Europe. Since the end of World War II, the flow of crude oil and petroleum products between east and west in Europe has been virtually non-existent. In addition, the poor integration of the West European crude oil and petroleum products pipeline system, owing to the limited connections between northern and southern networks, has created a market where crude and petroleum products flowing south from Rotterdam and Wilhelmshaven do not generally compete with oil moving north from Mediterranean ports.

The nature of the West European pipeline network for crude oil and petroleum products makes it logistically difficult and economically costly for the ECE economies to diversify their energy supply sources. At the same time, the painful transition process from planned to market economies has created an acute economic downturn. While economic recession has led to a significant drop in industrial energy consumption, residential and commercial consumers throughout the region are finding it difficult to pay the skyrocketing electricity and heating bills for their homes and small businesses.

Despite the technical and financial obstacles to building a new oil, gas and electricity infrastructure, these countries are looking toward Western Europe, North Africa, and the Middle East to secure additional supplies of energy. In addition, the ECE nations are looking towards the West for (1) financial aid, (2) technical expertise in privatization, (3) an infusion of up-to-date technology to restructure their economies away from energy intensive heavy industry, and (4) investment in energy conservation and end-use efficiency programs in order to reduce their GDP/energy coefficients which in general are several times higher than those of the most efficient West European economies.

While in the immediate aftermath of political independence most of the ECE nations moved to diversify their energy supplies away from the Soviet Union, the collapse of communism in the Soviet Union following the aborted coup has led to an embryonic change in perception regarding future energy trading relationships with Moscow. While all the ECE nations continue to worry about the short- to medium-term reliability of Russian and NIS energy supplies, the collapse of central authority has led to new direct negotiations both between the ECE nations and some constituent republics for energy supplies (bypassing Moscow), and between the ECE nations and the newly independent Baltic nations.

However, these developments have raised vexing questions as to the sanctity of existing oil supply contracts between Moscow and the nations of ECE, as well as with Western Europe. In the case of the Friendship Pipeline network, Russia's largest export pipeline, crude oil originating in Russia's Volga-Ural fields has to cross Belarus and Ukraine to reach refineries in the CSFR, Hungary, Poland and the former East Germany, making these exports subject to contract re-negotiation. These two new countries are demanding an enhanced share of the hard currency profits or increased transit fees on exports through their territories: for example, the Ukrainian government has demanded a 25 percent fee on the oil's value to be paid in dollars. In addition, the independence of the Baltic states has led Moscow to lose control of two major oil export outlets (Ventspils in Latvia and Klaipeda in Lithuania), while the independence of Georgia has affected a vital oil export link: Tbilisi wants to levy a fee of $3.42/barrel at the port of Batumi on Russian exports.

While these new developments pose challenges for the ECE nations and in the near-term may exacerbate already difficult problems, in the longer term the changes occurring in the former USSR may reduce concern over dependence on "Soviet" energy supplies as increasingly sources are diversified among a combination of newly independent states and a loose confederation of republics within a residual Soviet Union.

The need for restructuring the energy sector in the ECE nations has been seized upon by the European Economic Community (Lubbers Plan) and the Economic Commission for Europe as a unique opportunity to accelerate the integration of the oil, gas and electricity networks of the USSR with those of Western, Central and Eastern Europe. The involvement of the West Europeans has, in turn, generated acute debate over whether the future of the European energy industry rests with large state-owned entities or private companies. Advocates of state involvement argue that the large infrastructure costs of developing and transporting crude and petroleum products and integrating domestic oil markets mandate a role for government. In contrast, proponents of privatization contend that only through a competitive private sector can least cost energy planning, technological innovation and competitiveness in world markets be insured. The ECE nations stand in the middle of this debate.

Interest in privatization among the ECE countries arises from the fact that across the energy sector, they no longer have the option to rely on the state to insure their long-term energy futures. The high energy cost in industrial production, pipeline leakages of oil and gas, refinery bottlenecks, and product shortages can no longer be tolerated if these nations are to move into the western economic system.

While the goals of privatization are laudable and necessary to insure its success, the short-term economic consequences of privatization can create significant societal disruptions such as rising unemployment and short-term commodity scarcities. The problem of energy privatization in the ECE region is further exacerbated by the close link between current patterns of energy consumption and environmental degradation. At the core of these problems is the region's dependence on lignite and, with little domestic oil and gas available outside Romania and little hard coal available outside Poland, the process of energy restructuring and/or privatization is particularly complex. While the ECE nations could use more oil and gas, the cutoff of the Adria pipeline through Yugoslavia, inadequate pipeline access, port and refinery bottlenecks and financing constraints make this option at least problematic in the near-term.

The ECE nations face a cruel choice. On the one hand, they have to invest to meet their nation's future energy requirements at a time of economic constraints, the prospect of a growing political backlash (as witnessed in several recent elections), and enhanced uncertainty over the reliability of "Soviet" exports. On the other hand, they have to satisfy growing domestic and international

pressures to halt environmental degradation — a process which often means closing plants, exacerbating unemployment and thus eroding public support for economic restructuring, privatization and environmental concerns.

On balance, it is becoming increasingly clear that a high degree of uncertainty prevails about the way individual nations will introduce the concepts of market forces, privatization, environmental responsibility and economic restructuring. Although the collapse of Communism has rendered the historical Soviet-ECE trading network obsolete, the prodigious financial costs of new infrastructure projects, combined with acute ethnic differences within and between nations, runs the serious risk that economic restructuring may lead to investment not to optimize economic benefits, but to avoid dependence on historic adversaries.

2

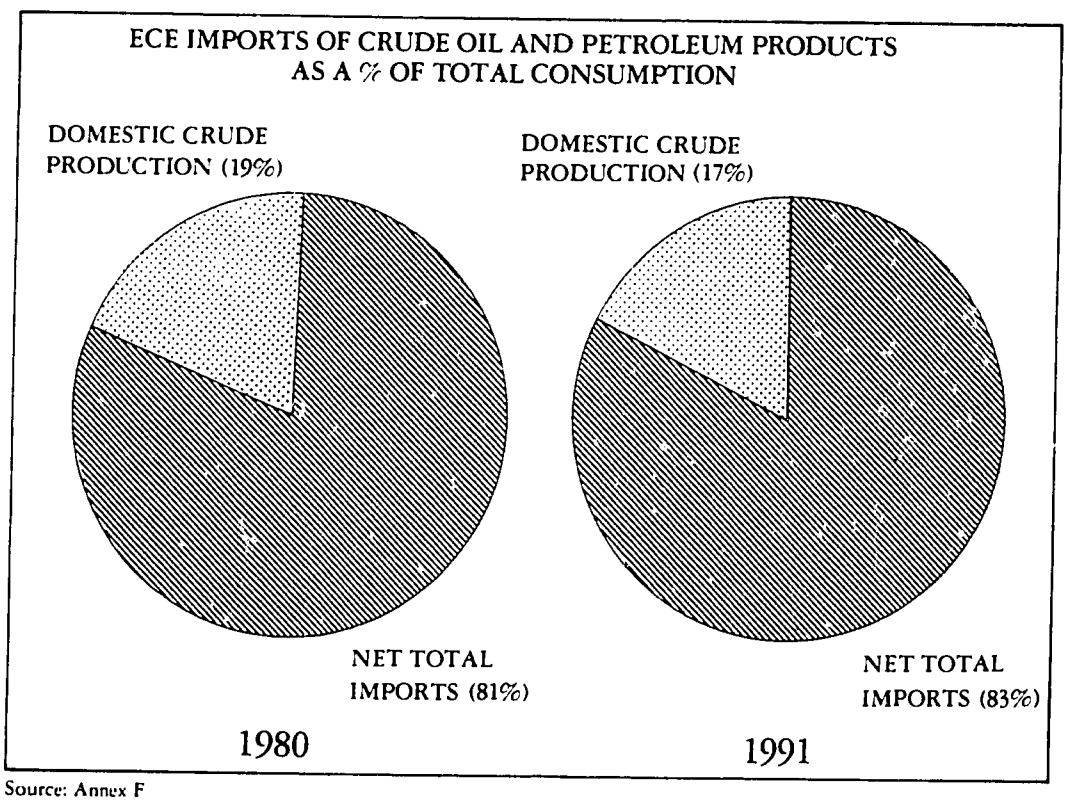
REGIONAL OVERVIEW

This chapter provides an overview of the major issues and trends in oil purchasing activities throughout the ECE region, including the primary organizational and commercial changes affecting the industry. Particular attention is given to dependence on Russian crude supplies and how this relationship has evolved, the emerging contractual arrangements in oil purchasing, and a summary of industry structure and institutional capabilities and how these have changed over the course of the contract. A final section provides a view of how effective the program activities have been in addressing the technical assistance needs of key host-country counterpart organizations.

1. Dependence on Soviet Supplies

Over the past decade, the ECE countries as a region have relied consistently on imports of crude and products for about 80 percent of total consumption (See Exhibit 2). Bulgaria, the CSFR, and Poland lack significant domestic oil production resulting in almost complete dependence on imported crude and petroleum products to meet demand. A small amount of domestic crude production in Hungary has resulted in dependence on imports for 70-80 percent of total consumption, while large indigenous reserves of oil in Romania have limited its total crude and products imports to 30-40 percent of domestic demand (See Exhibit 3).

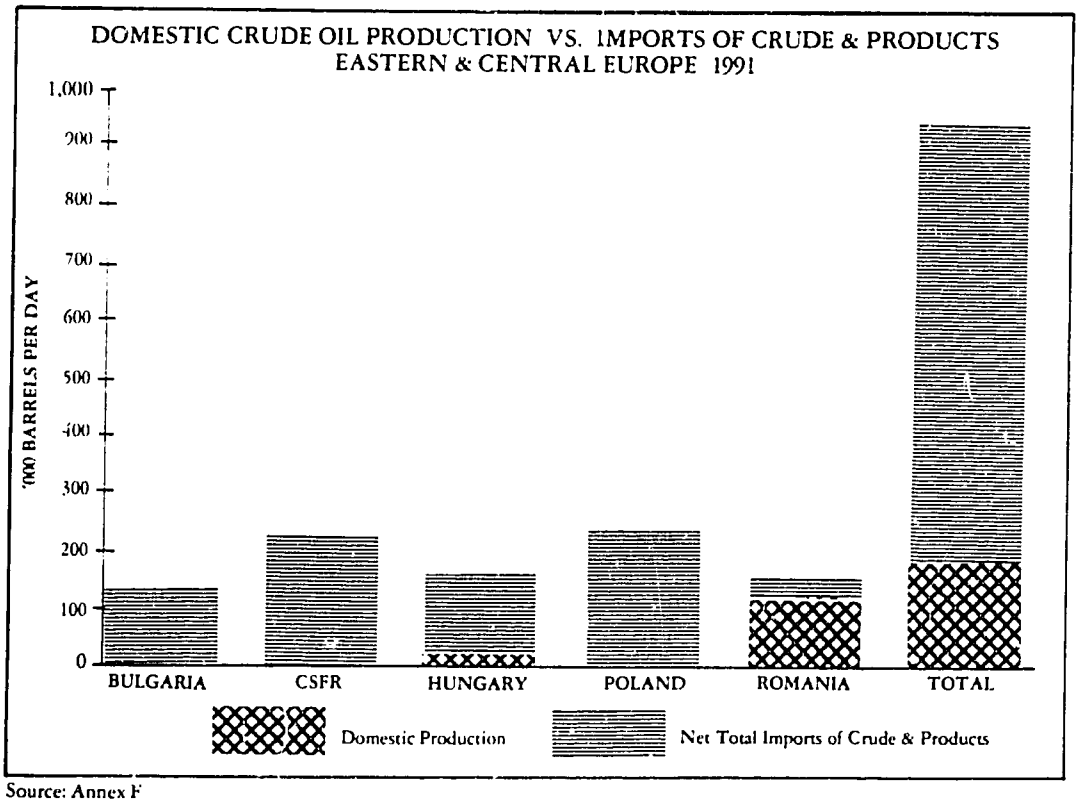
EXHIBIT 2



Source: Annex F

Another constant feature of the oil and product supply system in the ECE countries has been overwhelming reliance on the Soviet Union for imports of crude and products. This dependence has been supported by the extensive Friendship Pipeline network linking the former USSR with ECE, and the lack of any pipeline links with Western Europe (See Exhibit 4). The Friendship I Pipeline enters eastern Poland through Belarus and services the Petrochemia Plock Refinery before continuing on to the refinery at Schwedt in the former East Germany. The Friendship II Pipeline enters eastern Slovakia and continues to the Slovnaft Refinery at Bratislava, and then on to the Kralupy and Litvinov Refineries north of Prague. The Friendship III Pipeline enters north-eastern Hungary and services the Tiszai Refinery and then continues on to the large DKV Refinery at Szazhalombatta outside of Budapest.

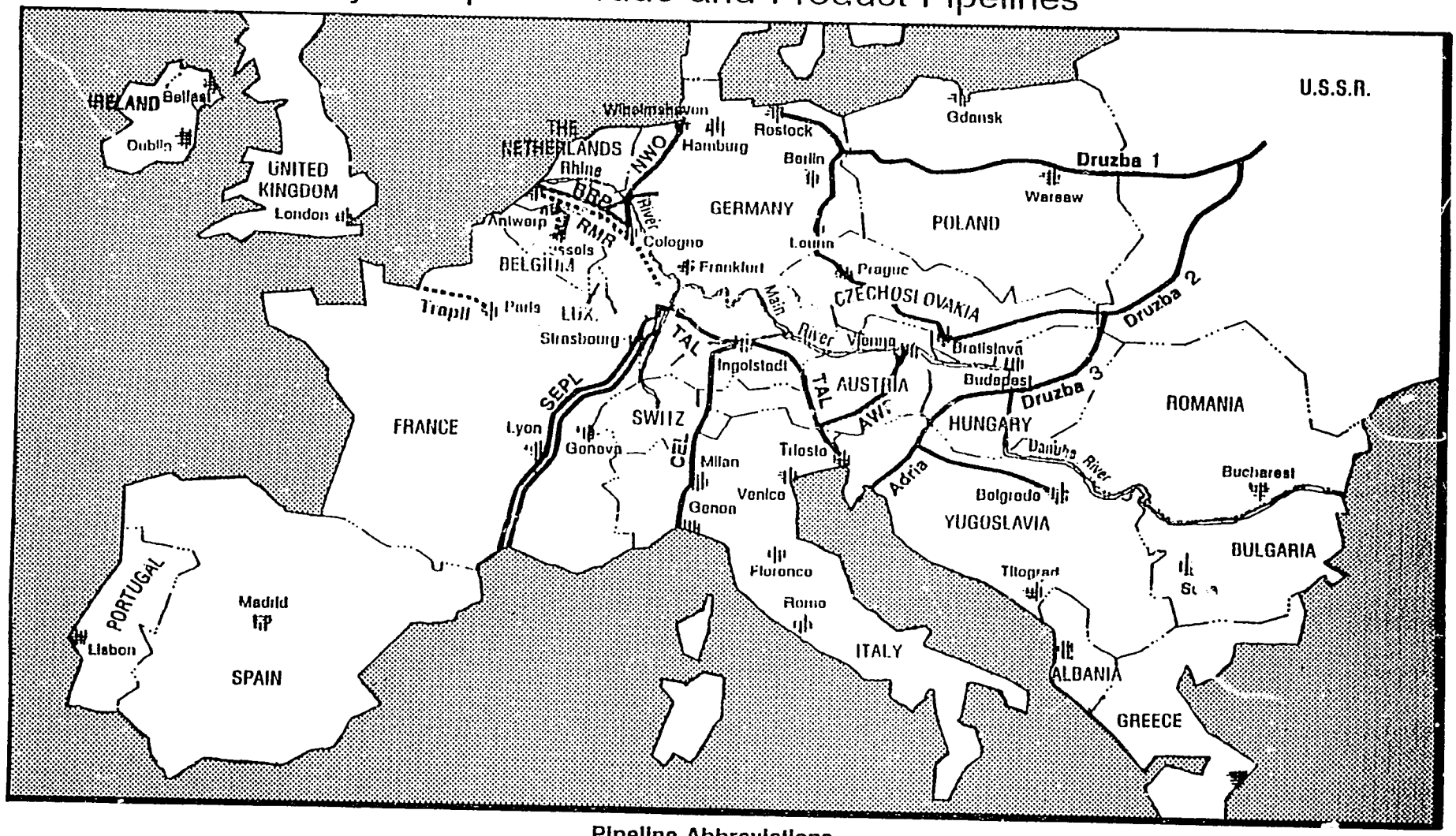
EXHIBIT 3



Source: Annex F

For the ECE region as a whole, Soviet imports accounted for 79 percent of total net imports of crude and products in 1990 (See Exhibit 5). In the period 1989-1990, all of the ECE countries were substantial importers of Soviet crude oil and petroleum products, with Bulgaria, the CSFR, Hungary, and Poland importing between 70-100 percent of their total net imports from the USSR. Romania, with significant volumes of local production, imported 20 percent of its foreign supplies from the USSR (See Exhibit 6).

Exhibit 4. Key European Crude and Product Pipelines

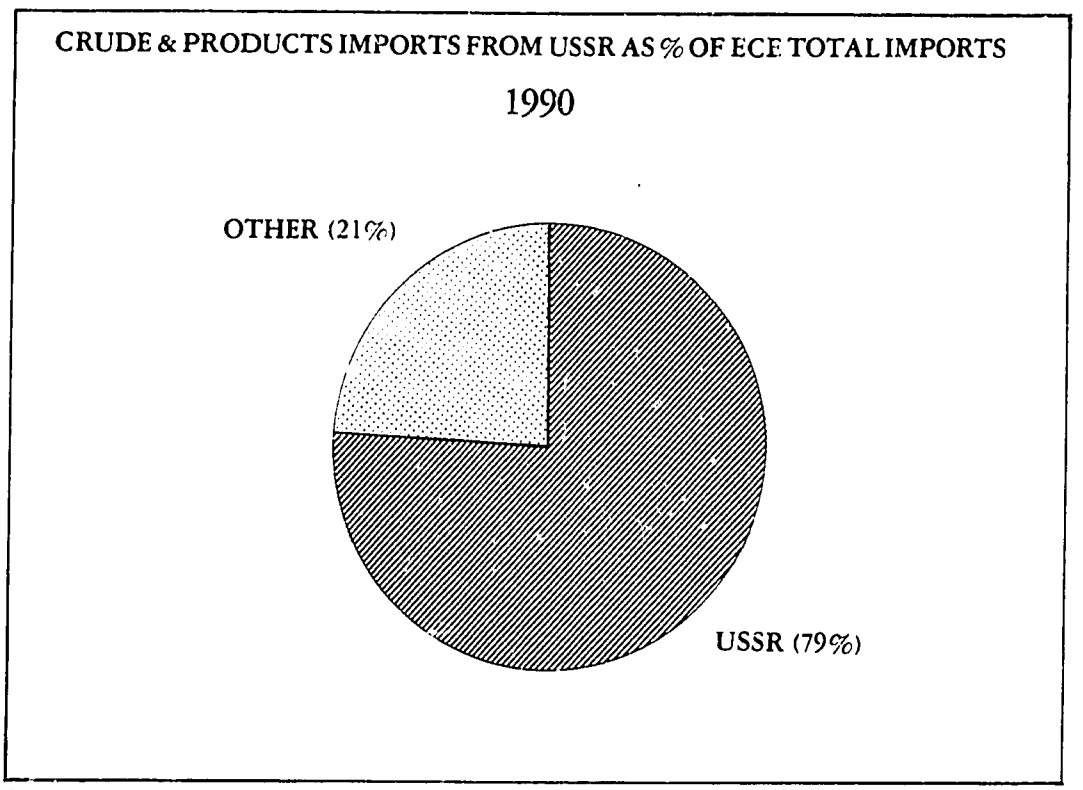


Pipeline Abbreviations

RRP	Rotterdam - Rhine Pipeline (crude)	**CEL**	Central European Pipeline (crude)
NWO	Northwest Oil Pipeline (crude)	**TAL**	Transalpine Pipeline (crude)
RMR	Rhein-Main Rohrleitung (product)	**AWP**	Adrian-Wein Pipeline (crude)
Druzba	1,2,3 (crude)	·····	Product Pipeline
Adria	(crude)	——	Crude Oil Pipeline
SEPL	Southern European Pipeline (crude)		

Exhibit 7 indicates that in 1991 overall region-wide consumption and exports represented approximately 50 percent of gross refining capacity. Romania had the majority of the excess

EXHIBIT 5

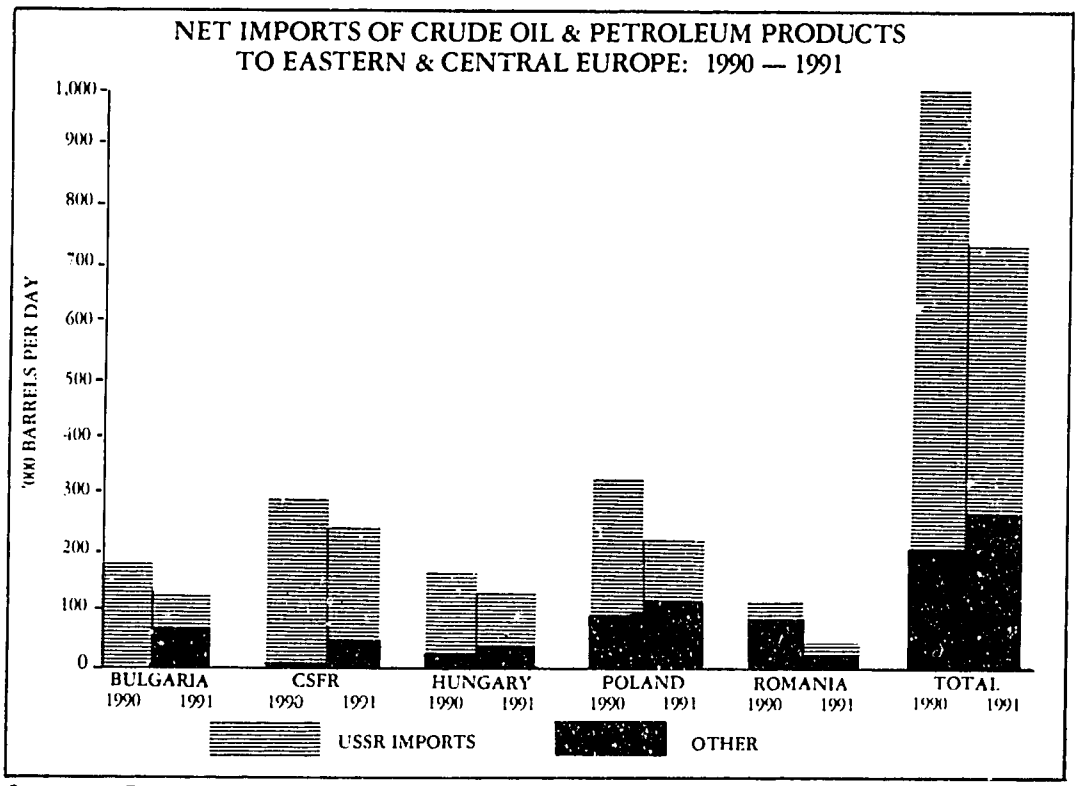


Source: Annex F

refining capacity with a utilization rate of around 25 percent while the other four countries had a combined utilization rate of around 60 percent. For Romania, net imports were 17 percent of net consumption, while for the other four countries imports of crude and petroleum products were 95 percent of net total consumption. Thus, the country with substantial local production had built-up most of the excess refining capacity, with a portion of that capacity devoted to petroleum product exports. Romania, nevertheless, has been experiencing substantial declines in domestic production over the past 10 years, and especially since 1989, owing primarily to the lack of the best available technology as well as investment.

The ECE countries are fully aware of the dangers of overwhelming dependence on Russian crude supplies, as well as the increasing unreliability of crude deliveries from the NIS. Thus, in each of the countries covered under this contract, there has been a concerted effort to diversify sources of supply. Exhibit 6 illustrates that in 1991, Russian and NIS supplies to the ECE region had decreased to 64 percent of total net crude and product imports, from 79 percent in 1990, and from 84 percent in 1988. The decrease in Russian and NIS supplies has been offset by other sources as well as by the economic downturn throughout the region. As economic output has declined (especially in the industrial sector), brought on and compounded by energy price increases, inflation, disrupted trade patterns, and labor unrest, the demand for petroleum products has plummeted by an estimated 20 percent across the ECE region.

EXHIBIT 6



Source: Annex F

EXHIBIT 7

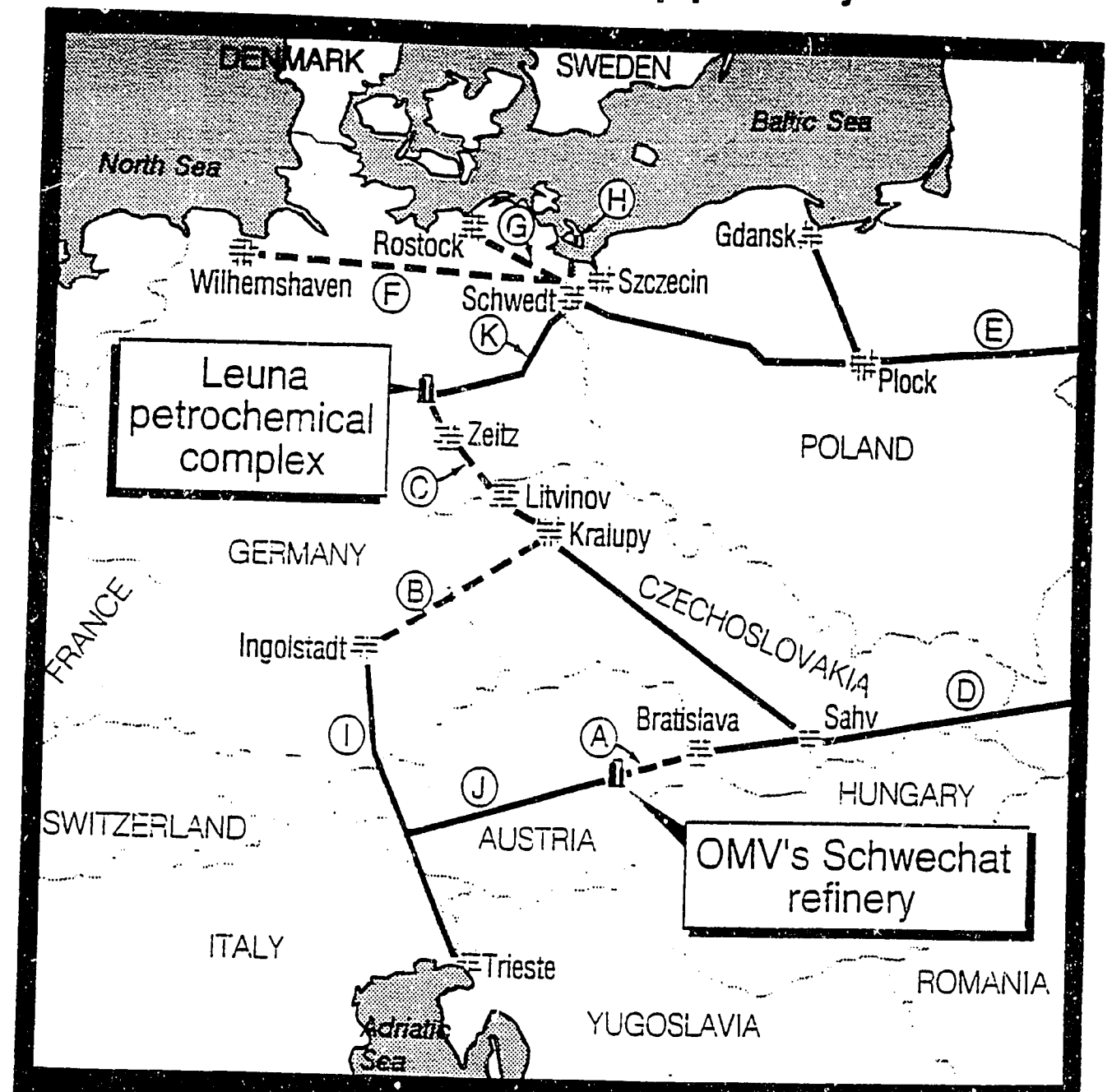
1991 EASTERN EUROPE REFINERY CAPACITIES, PETROLEUM PRODUCT CONSUMPTION & EXPORTS, and NET IMPORTS OF CRUDE & PRODUCTS (000 B/D)[2]

COUNTRY	CRUDE OIL DISTILLATION CAPACITY	DOMESTIC PETROLEUM CONS & EXPORTS	CRUDE & PRODUCT IMPORTS
Bulgaria	309	133	132
CSFR	375	232	229
Hungary	220	157	122
Poland	373	240	237
Romania	656	161	27
	1933	923	747

One manifestation of the attempt to diversify crude supplies has been a policy effort to change traditional crude flow and trade patterns as well as the oil supply infrastructure. Hungary and the CSFR have sought to increase crude shipments through the Adria Pipeline with its origin in Yugoslavia on the Adriatic Sea. This will allow these countries to import crude from North Africa and the Middle East directly to their major refineries (DKV in Hungary and Slovnaft, Litvinov and Kralupy in the CSFR). In fact, both countries have significantly increased their contacts and discussions with Middle East producers, particularly Iran. However, the hostilities in Yugoslavia have led to a shut-down of the Adria Pipeline in June 1991.

[2] *1991 estimates by IRG, EFG, and other sources listed in Annex F. Figures are rounded.*

Part of Europe's crude oil pipeline system



Map key

- (A) Possible Bratislava to Adria-Wein line
- (B) Proposed Ingolstadt-Kralupy line, 210 miles of 28"
- (C) Proposed Zeitz-Litvinov line, 62 miles of 20"
- (D) Druzba 2, in place
- (E) Druzba 1, in place
- (F) Possible Schwedt-Wilhelmshaven line
- (G) Possible Schwedt-Rostock line
- (H) Possible Schwedt-new Baltic oil port
- (I) TAL line , in place
- (J) Adria-Wein line, in place
- (K) Schwedt-Leuna line, in place

Exhibit 8

Source: Oil & Gas Journal, Nov. 4, 1991

Seeking other options, the CSFR has embarked on plans to establish pipeline links with the Western European network to allow access to the Trans Alpine Pipeline (TAL) which originates in Trieste (See Exhibit 8). Slovnaft has been involved in discussions with OMV of Austria to build a pipeline from the Schwechat Refinery in Austria to Bratislava, and approval already has been granted to construct a link between the German refinery at Ingolstadt and the Litnnov and Kralupy Refineries. Also, an Arab-British consortium has proposed building a pipeline from Schwedt-Leuna-Zeitz (Germany) to the Litvinov Refinery, and connecting Schwedt with a Baltic Port so that North Sea crude (and other waterborne supplies) could flow into the CSFR. Poland is also investigating the option of additional pipeline links with the Baltic port of Rostock (through Schwedt). In addition, there are plans to double the capacity of the pipeline between Petrochemia Plock and the Gdansk refinery, as well as to increase the tonnage capacity at Gdansk to handle larger cargo ships. Finally, Bulgaria and Romania have attempted to exploit their access to Black Sea ports by diversifying contacts with Middle East suppliers, as well as entering processing agreements which take advantage of their port facilities.

These and other efforts also are described in the respective country sections outlined in Chapter 3.

2. Industry Structure and Institutional Capabilities

In contrast to the Western model of an integrated oil company, the ECE countries had evolved separate state-owned business entities for crude purchasing, refinery operations, pipeline transportation, and marketing.[3] This separation diffused responsibility to such an extent that no one entity could fully control its business operations. Each organization reported to a government ministry, which was ultimately responsible for the performance of the operations. Political considerations took precedence over economic success, within the context of the ruling communist party.

A critical result of communist management practices was the excessive number of workers in the refineries and other operating entities. For example, a 120,000 b/d ECE refinery/petrochemical complex employs 8,000-10,000 workers, compared to 800-1,000 in the West. While 20 percent to 30 percent of these workers are involved in providing such vital support services as food, housing, transportation, and even medical care, massive restructuring is required to organize these refineries in a more efficient manner.

Foreign Trading Companies

Foreign trading companies were also set up as state-owned business enterprises, typically with one company holding a monopoly position in the foreign trade of crude oil and refined products, petrochemicals and related products (See Exhibit 9). In each country these companies functioned as the sole source of petroleum imports, with the refineries dependent on them for their feedstock selection and scheduling. In the process of carrying out their responsibility as the sole foreign trade organization in the petroleum sector of each country, a network of relationships developed among the state trading companies of the CMEA nations well before 1989. This network continues to function as the primary basis for trading and coordinating supply activity within the ECE countries, despite the introduction of competition internally and externally from western firms.

As seen in the established state-monopoly trading companies, the evolution to an open competitive petroleum industry has varied substantially among the five ECE countries examined. In the case of Bulgaria, Chimimport is the state foreign trading company which traditionally has been responsible for crude and petroleum products trade. However, a separate state-owned trading company (Neftoimpex) was created specifically to serve the petroleum trading interests of Neftochim, the state refining company, dominated by the Burgas Refinery. Nevertheless, Neftoimpex, despite its partial ownership by Neftochim, operates independently, and is viewed as another potential source of crude supply or product outlet by Neftochim.

[3] *The exception was Yugoslavia, where each Republic had its own integrated oil company.*

EXHIBIT 9 **ECE FOREIGN TRADING COMPANIES**

Country	Trading Company	Status
Bulgaria	Chimimport	Still manages state-to-state activity, but has lost monopoly position in petroleum through the state's creation of Neftoimpex, which primarily serves the two main Bulgarian refineries' crude and product import needs; also has lost share to new private import/export competition
CSFR	Chemapol and Petramex	These are the only companies that are allowed to purchase oil. Slovnaft (in Slovakia) is being privatized and expects to obtain the necessary license to import/export this year.
Hungary	Mineralimpex	Lost monopoly status with the creation of MOL and the introduction of competition from western participants.
Poland	Ciech Petrolimpex	Still enjoys a monopolist position serving the refineries, but must now compete with private refined products importers.
Romania	Petrolexport-Import	Also still nominally a monopolist serving refiners needs, but now competes with large western firms for the processing business of those refiners.

In Poland, Ciech Petrolimpex still dominates crude oil acquisition, but is somewhat exposed to foreign competition in refined products imports, particularly gasoline. Ciech Petrolimpex is positioned to play a more active role as the central organization around which a national oil company may be organized. Although the Polish government is still considering various structural and organizational alternatives, the expertise and traditional financial strength of the company offers a cornerstone on which an integrated firm, in the mold of Hungary's national oil company, might be structured.

In the CSFR the oil industry has essentially been split along regional political boundaries which now threatens to separate Slovakia from the Czech region. Chemapol in Prague and Petramex in Bratislava are the only companies licensed to import crude oil and import/export refined petroleum products and petrochemicals. The Slovnaft Refinery in Slovakia is in the process of being privatized and has requested a license to import/export. In addition, it expects to develop an in-house capability for trading and refinery planning. The Litvinov and Kralupy Refineries in the Czech Republic are also engaged in efforts to privatize, but have not yet made a decision to establish an in-house oil procurement and trading capability.

These developments correspond to recently announced plans to diversify the CSFR refiners' access to crude oil through pipeline projects providing connections to Ingolstadt in Germany and the TAL Pipeline near Schwechat, Austria (as described above). With supply alternatives,

the traditional reliance on Chemapol to negotiate contracts via Russia's Friendship Pipeline will be reduced. As the refining companies are privatized, it is likely that Chemapol and Petramex will have a diminishing role in serving the refining sector.

In Hungary, Mineralimpex has emerged as a semi-private competitor[4]/supplier to the refiners, while expanding its role to include product trade, joint venture marketing and other activities with foreign companies. Mineralimpex's role as a regional trader and private sector player has resulted largely from the government's creation of a vertically integrated national oil company (MOL) from the old national oil and gas trust, OKGT. MOL has assumed control of oil and gas production, transportation, refining, distribution, and marketing (with the exception of local gas distribution) functions. Mineralimpex was left to compete with MOL through import/export and select joint venture activities in petroleum marketing. At the same time, Mineralimpex's lock on foreign trade was broken with the government's acceptance of foreign company activity. Meanwhile, MOL is attempting to develop its in-house capabilities to compete with Mineralimpex as a crude oil importer and refined products importer/exporter. These efforts are a natural, healthy result of an integrated company wanting to diversify and better plan its crude supply, refining and product sales activities in an effort to maximize profits. Thus, in Hungary, the traditional state trading monopoly has evolved into a lean, joint venture-based competitor with the state oil company. How well Hungary negotiates the competitive balance between independent private sector companies and the integrated state-owned oil company will provide an indication of how other ECE countries may attempt to restructure their oil industries, and particularly the link between the traditional state trading companies and their refiner "clients."

Romania stands at the other end of the spectrum, with Petrolexport-Import (PEI) retaining the state monopoly over crude purchases and product supply (the primary importer of refined products). In contrast to the CSFR and Hungary, where both privatization and foreign competition are changing the structure of the oil supply and distribution business, the approach in Romania remains centrally controlled. All refiners are registered joint-stock companies, with all of the stock held by a holding company, Rafirom, S.A., which also owns companies engaged in research, transportation, storage, and marketing. PEI is a part of Rafirom, and the latter itself is in part owned by the government and the refineries, making for interlocking management directorates effectively controlled by both the technocrats in the operating units and the political appointees in the ministries. This effectively blocks other entities within Romania from competing with the Rafirom operating units. The Romanian approach is close to the French model of economic statism, while the CSFR and Hungary are moving closer to the U.S. (and German) models of greater competition and privatization.

However, PEI must still compete with major foreign trading and refining interests supplying crude oil to the principal Romanian refiners. This competition has taken the form of processing agreements, whereby a foreign company pays a fee to the refiner in hard currency or in the form of refined products "kept" by the refinery in exchange for the refinery processing crude oil with a pre-negotiated slate of refined products. For refiners with declining domestic markets, low capacity utilization and poor access to hard currency, processing arrangements have become a necessary survival strategy. This is particularly true for the Romanian and Bulgarian refineries operating in or near the Black Sea (e.g., Burgas and Midia).

In general, as an agent for the refineries, trading companies need to know on a continuous basis what refineries will need in terms of crude quantities, qualities, timing, and prices they can afford to pay. Few of these issues arose in the past, when the central government maintained strict control and prices were stable for the single Russian crude to which they had access. At present, however, with each of the entities (crude procurement, refining, and product marketing) being managed independently, these S&D coordination issues are now at the forefront of the policy

[4] *A management buyout of up to 47 percent of the stock will take place by the end of 1992.*

agenda. The trading companies cannot implement a successful crude procurement program without knowing the needs of the refineries, which themselves are subject to the unknown demands of the marketing companies. Thus, the physical procurement of crude oil and the management of its price risk cannot be conducted effectively without a better coordination system between the independent operating entities.

Financial Institutions

Because of the heavy dependence on Soviet oil supplies and the emphasis on barter within the COMECON trade structure, ECE banks had little knowledge of Western oil financing practices, especially as related to the use of financial hedging techniques which today are widely used in Western oil markets. Nevertheless, in the CSFR and Hungary, Mineralimpex and Chemapol are actively involving banking interests in their trading, hedging, and related ventures. Obchodni Banka in Prague (the Czech Foreign Trade Bank) has established a small oil trading department to support Chemapol and eventually the refineries in their oil futures and options trading. It is expected that a Slovak counterpart will be established to support Slovnaft's eventual entry into the oil futures trading. In Hungary, the Foreign Trade Bank and the National Bank both have staff skilled in currency and gold trading who are beginning to learn the oil trade as well and actively support Mineralimpex's trading activities.

In the other ECE countries, however, there is a general lack of knowledge and interest within the banking sector in becoming involved in these activities at this time. Foreign banks recognize the need and potential business presented by oil finance, but are faced with government restrictions on lending to state-owned companies or are discouraged by lack of performance guarantees that can be obtained from state-run companies.

Refining Sector

IRG worked with most of the principal refineries in the ECE nations (See Exhibit 10) and identified several key problems throughout the regional refining sector that must be addressed if the oil industry in these countries is to attract Western (specifically U.S.) investors and be able to compete with Western oil companies planning become commercially active in the region. Most importantly the refining sector must attract investments to upgrade the refineries, without which the refining sector will have difficulty competing with Western oil companies. The necessary technical expertise exists in each country to operate the refineries properly, but not to manage them as commercial enterprises. None of the refineries to date have applied LP models in a manner which would begin to optimize the economics of the refinery's operations. The appropriate structure and use of such models is essential if the refinery is to maximize profitability. The models should be used to assist not only in the proper process operation of the refinery and to guide feedstock selection in the short-term, but also to develop strategic and investment plans essential to manage the business in the long-term.[5] Indeed, one critical strategic planning function of such models may be the selection of which refineries to shut down. Owing to spare capacity as well as older and simpler process units, it will be necessary for some ECE countries to determine which refineries should be closed.

Another critical problem is the lack of acceptable accounting systems. Several refineries that were visited treated the refinery as a black box — the staff knows what the total cost and revenues are but not the operating costs of the various refining units, or the marginal costs of running additional capacity or varying the feedstock. Proper accounting systems will contribute to improving LP model accuracy, lending more credibility to evaluation assessments of refineries and making it easier to attract foreign investors.

[5] *There are at least six vendors that have such models that can be tailored for each refinery. The initial cost of such a model will be about $70,000 for the license fee, and could require additional annual maintenance fees. However, the cost to tailor the model to describe a specific refinery and to train the personnel to operate the model, including how to devise case studies necessary to obtain optimum feedstock selection, could easily exceed $100,000.*

The refineries visited do not appear to have staff with the necessary expertise to develop proper business plans and strategies, to set up and operate proper accounting and management information systems, or to market the refinery output. Therefore, it is essential

EXHIBIT 10

MAJOR ECE REFINERIES*

COUNTRY	REFINERY
Bulgaria	Neftochim Burgas Plama Pleven
CSFR	Slovnaft Litvinov Kralupy
Hungary	DKV Tiszai
Poland	Petrochemia Plock Gdansk
Romania	Arpechim Pitesti Petromidia Constanza

* IRG provided technical assistance to staff of these refineries.

that those refineries that will operate as separate entities add Marketing and S&D Departments.[6] The S&D Department takes the key role in planning the business, optimizing the refinery, purchasing the feedstock, arranging for and scheduling the shipments, export sales, and overall coordination of the refinery operation. At this point refineries in Exhibit 10 are only starting to add personnel with the expertise to manage a Marketing or S&D Department. Furthermore, none of the refineries visited had staff with sufficient knowledge to buy crude oil or arrange for transportation to its destination. If the refineries use the country's foreign trade company, the refineries will not necessarily have to execute crude oil trades, but they still must have an S&D Department to manage the other key roles enumerated above.

3. Changing Contractual Relationships in Oil Purchasing

Prior to 1991, crude oil imports to the region had been purchased under government-to-government contracts within the framework of the CMEA pact between the Soviet Union and its former Socialist allies. Under their agreement, the CMEA nations had been paying the equivalent of around $10 per barrel in either their own non-convertible currencies, rubles, or through barter arrangements.[7] Until that time, supplies had been ample, and the crude procurement function had been largely one of monitoring pipeline flows, coordinating tanker shipments, and performing financial administration. Because oil trade with the West had taken place over previous years, some expertise in Western oil procurement and trading practices existed in each country within the state-owned foreign trade companies.

Late in 1990, with the disintegration of the Soviet Union and its movement toward western style business practices, these oil supply contracts were renegotiated to reflect declining quantities of

[6] *These efforts in themselves will make it easier for ECE oil companies to complete effectively. In order to attract investment, independednt refinery management must have control over feedtsock purchases and marketing the refined products and petrochemicals.*

[7] *Barter goods were often priced at lower than market levels.*

available Russian oil, with prices reflecting Western market levels and payment required in hard currency. In addition, ECE currencies were heavily devalued, sharply increasing oil costs in local currencies. At the beginning of 1991, therefore, all the ECE countries were faced with the problems of reduced Soviet supplies, the need to pay in hard currency, and the risks associated with highly volatile world market prices.

Comparison of Oil Import Costs

In 1990, IRG estimates that around 80 percent of the region's net imports of crude oil and petroleum products came from the Soviet Union. As shown above, these were paid for in rubles or their barter value equivalent, at an estimated cost of around $10 per barrel.[8] The remainder was paid in dollars at an estimated weighted average cost of $21 per barrel. Thus the total cost of oil imports to the region in 1990, based on an estimated volume of about 1 million b/d, was about $4.6 billion.[9]

As a result of the sharp decline in economic activity in the region in 1991, oil consumption has been estimated to have declined by 20-30 percent[10] with an equivalent decrease in oil imports to the region. In 1991, total imports, from Russia or elsewhere, were paid for in dollars (or their equivalent) at an estimated price of around $19 per barrel. As a result, the oil import cost to the region in 1991 is estimated at around $5.2 billion. In other words, the decline in oil consumption just about offset the increase in price resulting from the new Russian price formula and the growing diversity of other oil import sources. Continued economic stagnation throughout the region in 1992 and only slightly higher oil prices, likely will continue to defray sharp increases in oil import costs.

Key Emerging Commercial Trading and Procurement Issues

Hedging Crude Oil Purchases. The trading companies in Hungary and the CSFR are now using oil futures to a limited degree. As buyers of crude oil at volatile world prices, either from the Russians or from other sources, the trading companies recognize the risk of price increases while the oil is in transit and are beginning to use the futures markets to hedge that risk. As Russian oil supplies were reduced, Hungary and the CSFR turned to purchasing crude in the Mideast, and either 1) shipping through the Suez Canal, and unloading at the Croatian port of Omishai (south of Trieste), and shipping through the Adria Pipeline, or; 2) exchanging this crude for delivered Russian supplies via the Friendship Pipeline, or the Black Sea in the case of Bulgaria and Romania. In either case, it takes at least 30-45 days for the crude oil to reach the ECE refineries, so that considerable price risk is incurred in transit.

Thus, hedging applications are likely to grow in size and scope as alternative crude sources become available. For example, the proposed pipeline connection between Schwechat and Slovnaft will make available some Mideast and North African crude supplies currently imported into Western Europe through Italian ports.Romania imports all of its crude by tanker through the Black Sea port of Constanza, then ships it to its inland refineries through domestic pipelines. Bulgaria imports crude oil primarily to its large coastal refinery at Burgas, also on the Black Sea. These waterborne cargo shipments present opportunities for use of futures, options or other financial instruments to manage price risk.

Urals Crude. Since early in 1991, the Russians have been selling crude oil on the basis of a formula linked to spot prices of Brent crude oil traded in London.[11] The CSFR and Hungary traditionally fix their annual quantities in advance for shipment through the Friendship Pipeline system. A strategy of fixing the cost of this oil in advance, or paying a premium for a price ceiling through the purchase of call options, is being discussed in these countries. With limited foreign

[8] *Based on an estimate in a study by the Petroleum Industry Research Foundation on the oil industry in the CIS.*

[9] *See Annex F, Table 12 for data.*

[10] *Based on a number of OECD and World Bank economic studies.*

[11] *The formula uses a monthly average of daily Brent prices, adjusted for transportation and quality by a weighted average of the spot prices of Iranian Light, Urals, and Suez Blend.*

exchange reserves, budget certainty or budget ceilings will allow better planning by the banks who must finance these oil imports by the companies and governments.

Fixed or Ceiling Prices for Large End-Users and Product-Exporters. On the petroleum products side, with regard to imports or exports, there is considerable interest in buying or selling at fixed or ceiling prices. Several large end-users such as airlines and utilities may want to "lock-in" costs by fixing or limiting the allowed fuel price increases in advance, and the refineries and marketing companies view such strategies as a useful tool to compete with Western companies in their export markets.

Processing Arrangements. Joint venture processing deals are being discussed between the trading companies, the refineries, and third parties in the West. This is particularly true in Romania and Bulgaria, but is also being discussed in Poland, Hungary and the CSFR. Processing agreements can take a variety of structures: a basic form might, for example, involve the purchase of crude oil by the trading company, a processing fee paid to the refiner for a predetermined quantity of product taken by a Western firm for export, with the balance of the product slate sold locally at the refiner's risk. Comparable to the notion of a fixed processing fee, the use of futures to "lock-in" the refiner's processing economics, or at least the sales price on the refiner's portion of the barrel, has become a subject of great interest for several refineries.

By early 1992, the Neftochim Burgas Refinery in Bulgaria was without sufficient resources to purchase crude oil directly and was therefore totally relying on third party processing with western firms to keep the plant operating. In April 1992, the Romanian Government was only able to purchase one 80,000 tonne (575,000 barrels) crude oil cargo. As a result, by May the Pitesti refinery was shut-down, although some crude was available for processing through a third party processing arrangement. Petrochemical feedstock derived from the processing is retained by the refinery to permit continuous operation of the petrochemical plant. Both Arpechim Pitesti and the Petromidia Refinery at Constanza are currently involved in negotiating processing agreements. In addition, Petrochemia Plock, DKV, and Slovnaft are all interested in such arrangements and have been approached by western companies.

4. Program Description

The training provided to the host-country organizations directly addressed the most pressing issues and problems confronting the various players as the oil supply system evolved in the ECE nations since February 1991. IRG focussed its efforts on consulting with the major oil procurement entities in each country (including relevant government ministries), receiving feedback directly from key decision and policy makers, and then developing appropriate technical assistance tasks. Throughout the project, IRG trained approximately 280-300 persons in five countries.

Despite the highly technical and applied nature of the topics, IRG developed the initial workshops and seminars to address as wide a cross section of the oil procurement industry as possible. Thus. the individuals trained represented not only traditional oil sector institutions such as trading companies, refineries, and pipeline firms, but also end-users such as utilities, airlines, and chemical firms. Also, banking organizations, private importers, and related joint venture companies participated.

Follow-up training sessions were also extremely effective in addressing the major concerns of the decision-makers at trading companies and refineries. These sessions were generally designed as workshops, where a working group comprising a smaller, more technical audience of mid- to senior-level management staff were provided hands-on and state-of-the-art assistance in critical

issues affecting their commercial activities. This included a variety of technical procurement, trading and refinery supply and distribution issues. For example, IRG approached optimization and S&D problems in a two-fold manner: first, refinery optimization models were presented to illustrate how Western refineries select optimum crude quantities and crude types to maximize gross profitability, and; second, examples of Western S&D organizations and functions were discussed to show how the planning results can be translated into a day-to-day operational decision-making management system.

Development of these two areas is critical to the operational management of the ECE refining and marketing sectors. These changes will come about as a result of both privatization and competition from Western oil companies. Many major oil companies, already dominant in Western European markets, are beginning to enter the gasoline and fuel oil markets in the ECE countries. Until now these companies have been required to purchase product from the local refineries; without doubt, this will change over the next several years, as these oil companies bring in product from their own refineries in Western Europe or become owners of the existing ECE refineries. Consequently, as the managements of independent refineries in the ECE countries undertake their own crude purchasing, the oil trading companies may evolve into oil brokerage companies and/or companies trading purely for profit.

The internship program was a highly effective mechanism in providing host-country institutions with access to western trading practices, technical capabilities, and current trends in price risk management techniques. Over the period September 1991-May 1992, IRG arranged for 11 mid- to senior-level oil industry professionals (traders and refiners) in the five countries to come to the U.S. for training sessions with U.S.-based companies. The response was overwhelmingly positive: in general, the participants were "Very Satisfied" with virtually every aspect of the training program. In particular, they were very pleased with the substance of the training program and concurred that it accomplished its goal of providing a first-hand look at how various types of companies involved in the oil trading industry in the U.S. buy and sell in the cash and paper spot markets as well as utilize futures markets.

The participants indicate that the greatest benefits of the training program are "enhanced professional capabilities" and the establishment of "professional contacts." In addition, the principal contributions that the interns will be able to make to their respective organizations are to "initiate new projects or services, to improve operational procedures, programs, or services, or to manage a project, office, division, or company." These responses testify to the success of the training program in accomplishing the goals of building in-country skills in the area of price risk management, improving organizational and management capabilities, establishing commercial relationships with western firms, and integrating the operations of markets in the East and West.

Specific feedback from the participants indicated that training at several different companies in the U.S. was a valuable business experience and that the program provided an opportunity to examine different business and strategic approaches to similar problems. The interns agreed that scheduling part of the program in Houston was very effective in comparing/contrasting the different attitudes and styles of corporate operations in the oil belt centered in Texas versus the financial community in New York. In addition, exposure to the trading activities and approaches of a producer, was a positive contribution to the program. Also, all of the participants agreed that the day spent at NYMEX was an excellent component of the program, providing an in-depth and first-hand view of how one of the world's largest futures exchanges functions.

The participants from ECE refineries indicated that the program was very beneficial and provided excellent exposure to the various oil procurement functions undertaken by a western refineries. They gained first-hand knowledge of how LP models are used to optimize refinery supply and distribution systems (as part of the economic function in refinery oil purchasing) and how refineries utilize oil trading, acquiring experience in issues such as handling crude cargoes, scheduling, and the use of futures markets.

The internship training also led to the establishment of valuable commercial relationships with western companies. Several of the ECE trading companies subsequently have pursued business transactions with U.S. firms, thus serving to bolster and solidify the integration of East and West.

The ultimate success of the Component 3 program is not only measured in terms of the appropriateness of the training provided to host-country organizations, but also by the impact which the technical assistance has had on various key commercial, financial, organizational, and institutional parameters. With regard to the latter, perhaps the most tangible evidence of success is demonstrated in the proposed creation of an energy futures exchange, based in Hungary and trading pipeline-delivered crude oil as well as refined products via both pipeline and barge delivery. This proposal, initiated by Mineralimpex, would link eastern with western markets both financially and physically via planned pipeline connections and the linkage of the Danube River to Rhine River waterways. This market, if developed, would effectively place the ECE countries in the middle of an integrated East-West market, from the North Sea to the Black Sea via river connections, and from Russia to the Mediterranean- and North Sea-accessible crude oil pipeline systems.

To further identify program effectiveness, within each of the country sections presented in Chapter 3 IRG addresses such questions as: Are price risk management techniques now being used? Have organizational and management capabilities improved? Do relevant organizations have the capability to hedge against harmful price increases or decreases? How have government policies evolved toward purchasing activities? Have processing deals been entered as revenue makers? Has the credit and currency access situation changed? Finally, have working relationships with foreign companies been established?

3

COUNTRY-BY-COUNTRY REVIEW

BULGARIA

1. Summary of Technical Assistance Conducted

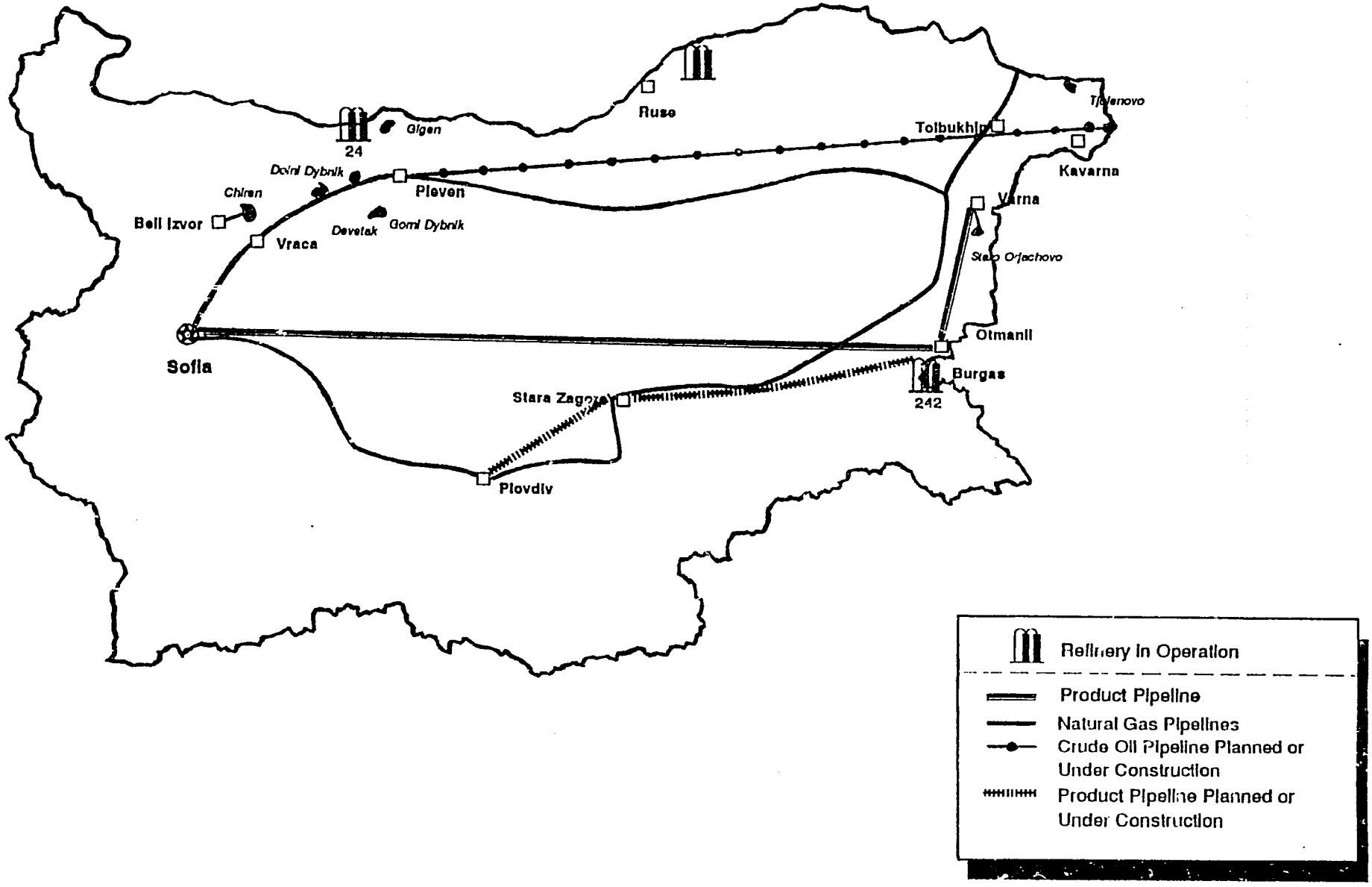
Definitional Mission — During the week of April 6-13, 1991 Dr. Ebinger, Executive Vice President of IRG and Ms. Annesley, an independent oil trading specialist, visited Bulgaria to commence project activities. The purpose of the visit was to meet with appropriate entities and assess current oil purchasing practices, identify and evaluate training and technical assistance needs, outline training course content, discuss the U.S. internship training program, and develop an overall project implementation schedule. Dr. Ebinger and Ms. Annesley met with the Ministry of Industry, Trade and Services, the Ministry of Foreign Economics Relations (now defunct), Chimimport, Neftoimpex, Shell Oil/Sofia, Petrol (state-owned marketing and distribution company), as well as with U.S. Embassy staff. See Annex A.1 for a list of individuals contacted during the trip.

Oil Purchasing Seminar — Based on observations made and information gathered during the Definitional Mission as well as continuous monitoring efforts, IRG developed a training seminar. After a long postponement requested by the Government of Bulgaria, this *Oil Purchasing Seminar* was held in Sofia on March 17-19, 1992. The seminar sessions were conducted by Mr. Poats, Mr. Boudrye, Ms. Annesley, and Mr. Banks. Representatives from the Ministry of Industry, Trade and Services, the Commission on Pricing, the Ministry of Finance, Chimimport, Neftoimpex, Plama Pleven Refinery, Petrol, Boulvaria (private trading company), Sotirov & Son (private trading company), and the University of Mining and Geology attended the sessions. A List of Training Participants for the entire project is presented in Annex A.2.

Seminar topics encompassed an overview of current international oil market structure, oil futures markets and price risk management, cash oil and forward markets, price formation and reporting, cash/futures contracting applications, hedging, the mechanics of trading crude and products, crude oil pricing, implementation issues, basis risk management, technical analysis systems, crack spread trading system, supply optimization and refining margins, role of the refinery in crude oil purchasing, and refinery economics. All the participants showed a keen interest in the seminar subjects, particularly officials from the Ministry of Industry who were interested in the price fixation and insurance aspects of the seminar for purposes of protecting key manufacturing or service industries from oil price shocks.

Follow-Up Technical Assistance — Based on the initial seminar and in collaboration with host-country counterparts, IRG identified additional technical assistance opportunities with two key oil sector entities: Chimimport and the Neftochim Burgas Refinery. During the period April 28 to May 6, 1992 IRG conducted two separate seminars with these organizations in Bulgaria on the subjects of oil procurement, refinery optimization and logistics system optimization. The first *Oil Procurement Workshop* was conducted at the offices of Chimimport in Sofia where, during a two-day period, Mr. Banks, Mr. Jones and Mr. Poats conducted focused training on the basics of the cash and forward hedge markets to improve Chimimport's understanding of logistics, finance and trading principles involved in crude and petroleum products markets. The IRG team also provided hands-on training in establishing appropriate computer-based market information and analytical systems to support trading decisions and hedge strategy development. Discussions also included identification and evaluation of refinery valuation models and more simplistic materials balanced algorithms used to evaluate refinery economics in support of crude acquisition decisions. The Workshop was attended by about twelve mid- to senior-level individuals from the crude oil, petroleum products, and tanker chartering divisions.

BULGARIA


Ruse
Tolbukhin
Kavarna
Varna
Otmanli
Burgas
242
Stara Zagora
Plovdiv
Sofia
Vraca
Bell Izvor
Chiren
Doini Dybnik
Pleven
Devetak
Gorni Dybnik
Gigen
24
Refinery In Operation
Product Pipeline
Natural Gas Pipelines
Crude Oil Pipeline Planned or Under Construction
Product Pipeline Planned or Under Construction

During the period May 4-6, 1992 IRG conducted an *Oil Procurement and Refinery Economics Seminar* at the Burgas Refinery in Burgas, Bulgaria. Mssrs. Banks, Jones, Poats, and Boudrye conducted this training on the use and evaluation of refinery simulation models and the coordinating role of an S&D/trading department. A case study application of a refinery simulation/optimization model was presented and discussions also included a focused evaluation of refinery processing agreements, alternative structures, negotiating points, incentives and impacts on overall refinery optimization. Approximately twenty people from the refinery computer and modeling center attended. This center, called Neftosoft, serves as the central modeling and computer analysis/design operation at the refinery.

In addition, the IRG Team met with Dr. Ivan Sariev and Georgi Stankov both Deputy General Directors of the Neftochim Burgas Refinery. They provided an overall perspective of the major problems and issues facing the refinery, a summary of recent history and performance, and a synopsis of their plans for improving the refinery's operating economics.

Internship Training—After the initial training seminar, IRG identified two individuals for participation in the internship training program in the United States. They were Mr. Konstantin Karadjov, Manager of the Crude Oil Division at Chimimport, and Mr. Nikolai Nedelchev, Head of Crude Oil Trading at Neftoimpex. Both individuals were at Phibro International in Greenwich, Connecticut, AIG Trading in Fort Lee, New Jersey, NYMEX in New York City, and Enron Trading in Houston during the period May 18-29, 1992.

2. Status of Oil Procurement Activities and Capabilities

A. Background/Overview

Of all the nations of the ECE region, Bulgaria is the most dependent on imported energy. In 1990, Bulgaria met only about 34 percent of its total energy requirements from domestic energy sources. Historically, imports have accounted for nearly all the oil and natural gas consumed in the country, with the Soviet Union supplying well over 90 percent of all oil and gas imports. IRG estimates Soviet crude and product imports at 244,000 b/d in 1988, 249,000 b/d in 1989, and then dropped to 171,000 b/d in 1990. Late in 1990, in response to the continued crisis inside the Soviet Union, Moscow announced that it would only guarantee deliveries of between 70,000 b/d - 100,000 b/d of crude oil in 1991. Despite these ominous trends and the expectation that the USSR would dramatically cut oil exports to Bulgaria, the Soviet Union delivered about 66,000 b/d in 1991, approximately reaching the low end of guaranteed levels. This accounted for 50 percent of total imports, a sharp decrease in Soviet supplies reflecting increasing efforts to diversify sources and a severe fall in domestic demand. Although Moscow supplied this crude to Bulgaria through barter trade — providing Sofia with $300 million of crude oil and petroleum products through March 1991 — the arrangement was not without pitfalls; Bulgaria had only exported $50 million of goods in the same time frame and it was unclear what exchange rate the Soviets were using for the goods Bulgaria exports. Whereas the official exchange rate was 15.5 leva to the dollar, IRG estimated that the Soviets were pricing their oil at 18-22 leva/dollar.

In the Bulgarian market, gasoline, diesel and fuel oil are the most important products. Historically, it has been more efficient for Bulgaria to bring in crude rather than products because of the poor state of the logistics and storage system for oil products. Prior to 1990-1991, when the nation's oil refineries were operating at near full capacity, Bulgaria needed to import a minimum of 30,000 b/d of fuel oil to meet internal demand. It was also importing gasoline, aviation fuels, and lubricants, mostly from the West. Product imports from the USSR centered on special lube oils.

However, over the 1990-1991 period, precipitous decreases in demand, caused by rising nominal and real prices as well as serious declines in economic output, have dramatically altered this traditional scenario. Domestic Bulgarian oil consumption in 1990, estimated at around 175,000

b/d,[13] fell an estimated 20 percent in 1991, and is expected to decline further in 1992. In 1991, Bulgaria imported only a small volume of light products, and a small quantity of fuel oil from the Soviets (because this was part of the barter arrangement, not owing to shortages). Through May 1992, Bulgaria had not imported any crude from Russia or the other new republics.[14] In the past when the Burgas refinery shut down for routine maintenance, there were shortages in the market. However, when this occurred in the Spring 1992 there were no shortages since consumption was so low and product imports were available from other, new sources. Bulgaria also initiated its first processing deals in 1991, processing approximately 40,000 b/d through agreements with Marc Rich and Bay Oil and Neftochim's own trading affiliate, Neftoimpex. This demonstrates that Bulgaria is operating increasingly on a purely commercial basis.

In early April 1991, IRG learned that although the Government of Bulgaria (GOB) had made a commitment not to raise gasoline prices before the end of April, prices would be raised prior to the privatization of retail gasoline stations.[15] In fact, the GOB increased energy prices modestly during the period January to March 1991. However, gasoline prices still remained extremely low — 3.8 leva/liter for 93 Octane gasoline, at an official exchange rate of 15 leva/dollar. As a result, the GOB, in anticipation of a major crude oil and petroleum product import shortage, imposed a rationing system of 30 liters/month. While spot shortages at major petrol stations existed, gasoline was available on the black market at prices of 15 leva/liter. At the same time, there were several stations where gasoline was available for hard currency. Although during the Definitional Mission IRG was told that these had been closed down in April, they remained open during the visit. While the gasoline shortage was quite serious in January and nearly brought the country to a halt, the situation had eased by the Spring 1991.

In this same time-frame, at least a dozen international oil companies expressed interest in entering Bulgaria's retail gasoline market, buying into the petroleum product distribution market (e.g. oil pipelines) and/or in providing crude oil and petroleum products to the country. An initial decision to auction off 15-20 gasoline stations in Sofia as a precursor to full privatization of the sector was made in mid-February but was rapidly abandoned owing to tensions within the GOB over how far and fast to proceed with reforms.

Since IRG's Definitional Mission, oil prices have increased significantly and now closely reflect world market levels, with the exceptions of certain excise tax, trade duties and mark-up incentives which vary among the petroleum products. The Commission on Pricing has gone to a floating (15 calendar day, 11 business day) Mediterranean market-based price formula, using Platt's Euroscan as the basis for setting refinery gate prices. From this base a fixed freight charge is added (e.g., $1.40/barrel), followed by insurance at 0.52 percent and duties at 5.0-5.3 percent to give a landed cost. At this point a distribution/marketing fee of $2-$3/barrel (using current official exchange rate of 22 leva/$), an excise tax of 25-50 percent (higher end for gasoline), and a 5 percent retail mark-up are added to produce a maximum allowable sales price for each product.

B. Organizational Capabilities

During the final quarter of 1990 and the first quarter 1991, the structure of petroleum trade in Bulgaria was undergoing great change. The GOB declared that it was actively committed to pursuing privatization in the oil sector and, as a general policy, was committed to breaking up all large monopolies. In addition, the Government liberalized official policy so that it is possible for any entity or individual to import gasoline either as a retailer or wholesaler. Another key, stated goal of Bulgarian oil policy is to expand the nation's oil trading partners in order to gain access to new fuel sources.[16]

[13] *Of this, 45 percent is fuel oil, 30 percent diesel, 12 percent gasoline, and 12 percent lubes and other specialty products.*

[14] *This is due not only to sharply decreasing consumption, but also to restructuring an uncertainty in the ex-Soviet oil sector, as well as to price changes. In the case of shipments from the Soviets, the cost of freight had been only $5/ton as opposed to $12.50-$15.00/ton from the Gulf. Furthermore, big tankers from the Gulf (240,000 tons) cannot be unloaded in Bulgarian ports, so offloading on to smaller ships is required, with requisite demurrage charges incurred. Thus, although it had been cheap to rely on Soviet supplies, Russia and the NIS are now charging world level rates and are officially demanding hard currency payments.*

[15] *At project commencement, gasoline prices were below international market levels encouraging motorists from other countries. See below for how the price levels have changed over the course of the contract.*

[16] *Bulgaria has had long-standing trading relationships with Shell, BP, Mobil and Elf but these were mainly for lubricant imports.*

Chimimport

At the beginning of the project in the Spring 1991, oil procurement was the domain only of Chimimport, the traditional state trading monopoly, and the use of forward oil pricing and trading techniques was limited. With twenty-five offices around the world and new branches soon to open in the Baltic countries, it reported a profit of between $20-$30 million on gross revenue of $6.5-$7.0 billion in 1990. Chimimport currently is still responsible for arranging direct state-to-state transactions of crude oil and petroleum products, including barter arrangements. In 1991 Chimimport engaged in state-to-state deals with the USSR, Libya and Iran, and in the past has purchased fuel oil for Petrol. However, Chimimport is moving away from the government-to-government arrangements and is operating more commercially. Both Total and Repsol have expressed interest in joint venture deals with Chimimport, and it has looked into privatizing the organization and selling shares in the company to 400 of its employees. This issue, nevertheless, remains in the domain of the GOB and as yet no decision has been made.

Chimimport's activity is centered primarily on the purchase and sale of petrochemical and specialty products, both imported and domestic, but it is also interested in maintaining a competitive presence in the major bulk oil commodities, including crude oil, fuel oils and gasoline. It also serves the Burgas refinery, for which it arranges petroleum supply terms, including barter, and recently is pursuing processing deals. However, Chimimport has lost some of its expertise in crude oil and product trading to Neftoimpex, and is not yet as well equipped with the necessary computer terminals and in-house analysis tools to aggressively compete for Burgas' discretionary (open market) crude and product supply business. As the primary state petrochemical and special products company for the Bulgarian oil market, Chimimport is seeking to maintain its capabilities in the crude and product markets in order to function as a trading company and effectively compete with Neftoimpex and private oil traders in Bulgaria. In fact, Chimimport currently is in the process of negotiating an arms-length agreement with the Burgas Refinery.

Neftoimpex

Neftoimpex was carved out of Chimimport and is a subsidiary of Neftochim, a broad amalgamation of chemical plants, plastics companies, and specialty product companies which owns about 80 percent of Neftoimpex. Prior to contract inception, Neftoimpex had engaged in one hedging deal involving the Brent paper market in a three party agreement with Citgo and Paribas. Neftoimpex also has been involved in paper trading with several large international trading companies, such as Morgan Stanley, Phibro and Marc Rich, and also has had extensive discussions with major integrated companies concerning marketing and distribution ventures.

Although hampered by the fact that it has not received approval to work through any bank other than the National Bank, Neftoimpex is the most adequately financed, trained and equipped to engage in significant oil hedging and aggressive procurement activities in the near future. It is hedging oil prices under "trigger priced"[17] supply contracts, but is otherwise in the process of studying and establishing trading operations in forward cash, futures and options. At least two international banks (Banque Paribas and Bank Indosuez) have offered Neftoimpex a credit line to enter hedging and oil procurement transactions, but to date the GOB has not endorsed its use.

Neftoimpex is primarily responsible for product trading, importing third party crude supplies and negotiating processing arrangements for the Burgas refinery. One of its central roles is to support the Burgas Refinery in balancing its crude oil feedstock and petroleum product needs, and at the same time to provide a source of hard currency and international market access for the refinery through its role in arranging processing agreements, and importing and exporting petroleum products. In addition, Neftoimpex supplies the Plama Pleven Refinery, and is

[17] *Refers to a supply contract allowing the buyer to fix a forward price for delivery at its (the buyer's) timing discretion, based on market price levels prevailing at the time the price is fixed, and subject to pre-specified volume*

involved in importing and exporting petroleum products, including both waterborne and overland supplies. As the primary oil trading arm for the Burgas Refinery, as well as the Bulgarian oil market in general, Neftoimpex's staff, equipment and information access resembles that of an efficient western trading company.

Neftochim Burgas Refinery

As the largest refinery and centerpiece of Bulgaria's oil economy, Neftochim's 242,000 b/d Burgas Refinery is best positioned to make a significant difference in the economic efficiency of Bulgaria's oil procurement, processing, and petroleum product supply operations. The Burgas Refinery and Neftoimpex are under the control of the state company Neftochim, which in turn is overseen by the Ministry of Industry and Trade. In 1991, Burgas expected to receive about 80,000 b/d - 100,000 b/d of crude oil from Russia and the NIS under barter arrangements, but also negotiated processing deals for another 60,000 b/d, and received roughly 20,000 b/d on the spot market through Neftoimpex. Total runs were estimated at around 160,000 b/d, but a substantial portion of the product yield is exported via processing arrangements to provide hard currency earnings needed to finance imports, particularly of fuel oil. To date in 1992, product imports and processing agreements have largely replaced direct bartered crude oil, although a World Bank oil procurement fund allowed for the direct acquisition of approximately 80,000 b/d over the first several months of 1992. With the exception of this fund, the refinery currently relies only on processing arrangements (and occasional spot cargoes). Consequently, utilization rates have declined to less than 50 percent resulting in a substantial loss of market share to imports.

The Burgas Refinery is the largest potential beneficiary and actor in efforts to: 1) lower the average cost of crude oil and petroleum products obtained on the world market, 2) protect refinery margins and operating economics through hedging, and 3) achieve an optimal balance of domestic vs. foreign product supply. However, these activities can only be undertaken if the refinery can compete with imported product supplies, or establish itself as a competitive export refinery.

BULGARIA: REFINING OVERVIEW[18]

Refinery	Crude Distillation Capacity (b/d)
Neftochim Burgas	242,000
Plama Pleven	24,000
Others[19]	43,000
	309,000

Under current tax, customs and quality standards, — which impose stricter compliance requirements on the refinery compared to importers — together with the refinery's need for select upgrading and cost reductions, these will be difficult tasks. Perhaps the central shortcoming to Bulgarian oil policy is the lack of coordination between pricing, fiscal and trade policy goals, with the Burgas refinery the primary vehicle through which this lack of coordination is evident. Specifically: 1) the tax structure encourages imports, particularly if they can be mis-certified to avoid excise taxes; 2) the lack of refinery control over refinery gate sales prices and often delayed payment in leva discourages domestic sales and refinery utilization to meet domestic demand in favor of processing deals which result in hard currency payments (needed to finance imports); 3) previous incentives to export products (retaining 50 percent of hard currency earnings) to finance imports were apparently more than offset by dis-incentives related to below-market real domestic prices and the requirement to sell products at the official leva

[18] *IRG estimates.*

[19] *This capacity is currently shut-down.*

exchange rate. Alternatively the excise tax can be avoided with "certified exempt" imported product, but payment is officially required in leva (at a real rate well-above the official exchange rate) while importers will typically deal in prompt dollar payment at lower real prices. And; 4) the refinery's output also is held to stricter quality inspection standards than imported products. Thus, the Neftochim Burgas Refinery is in a position of losing market share to importers, without either the financial or regulatory support of the government. As a result, the overall oil supply and distribution system suffers from the lack of system optimization and coordination owing to these various price, tax and currency value dis-incentives.

The management at Neftochim Burgas has plans to establish its own in-house capabilities to purchase crude oil, and in general to develop S&D and trading support activities within the refinery organization. Of course, to undertake this direct course, the refinery will have to have reliable credit. Here, either a change in government regulations (e.g., tax rates, treatment of depreciation, customs and mis-certification enforcement, etc.) affecting the refinery's operating return must be made or other incentives for western participation must be introduced.[20] Here, the terms of World Bank and other lending institutions can play an effective role by linking loan terms to government policies which encourage a level playing field among imports and domestic production, thereby helping to insure the long-term financial viability of the Burgas Refinery, as well as the Plama Pleven plant.

Plama Pleven Refinery

Plama Pleven is a 24,000 b/d refinery located in the north-central region near the Danube River. The refinery is primarily a lubricants and specialty chemical plant, but also produces asphalt, relatively low sulfur gasoil, and some gasoline. Pleven runs Libyan and Algerian crude oils (delivered by rail), two excellent gasoline-producing crudes, but perhaps too valuable for making lubricants (Pleven's primary product). The refinery is basically a price and volume "taker" with respect to both crude oil supply and petroleum product sales, meaning that it has little control over the feedstock price received or the price of refined product sales. Recently it has made efforts to market its product slate directly, but often is constrained both by the inability of end-users to commit to long-term purchase agreements, owing to uncertain financing and operating levels, as well as its own inability to optimize refinery operations as a result of the supply mix and price terms imposed at both ends of the refinery (inflow and out-turn). As a result of Pleven's high fixed capital costs, unit operating costs could be substantially reduced if a high rate of capacity utilization could be guaranteed, in part through the control over feedstock selection and product sales. With greater scheduling and sales control, operating economics and utilization levels could be improved. For this reason, officials from Plama Pleven are very interested in developing their own capabilities with regard to feedstock procurement, product sales and long-term hedging of their refinery operations. Western management and financial participation in such a plant, together with control over feedstocks and product sales, would certainly aid its operating economics.

Petrol

In early 1991, reforms in the oil sector were further complicated by the fact that Petrol, the state oil distribution company, was contemplating entering the petroleum procurement business. Simultaneously, the GOB expressed its commitment to the privatization of selected entities in the petroleum sector, and specifically announced its intention to privatize gasoline stations, while insuring that at least a significant proportion was sold to small scale entrepreneurs. Under the proposed program the stations would have been auctioned off with both domestic and foreign firms, as well as individual entrepreneurs, allowed to participate in the bidding process. During the Definitional Mission IRG learned, however, that 90 percent of all gasoline stations were

[20] *For example, tax holidays, investment credits, profit repatriation, equity incentives or other joint venture enticements must be provided if western capital is to support Neftochim's financial solvency and eventually its investment objectives.*

closed and that there was serious doubt as to whether a large number of these stations could ever be commercially profitable. In addition, the GOB acknowledged a lack of requisite expertise to evaluate the worth of individual facilities. IRG determined that the GOB requires assistance in establishing the current value of the existing distribution networks as well as acquiring a better knowledge of the varying methods of evaluating the financial and marketing aspects of running private retail gasoline stations. There is great interest in learning how to set up "mom & pop" shops selling gasoline and other items, how to build commercial relationships with gasoline suppliers, how to select the best locations for new petrol stations, and how to conduct market analyses. Specifically, key issues which need to be addressed are:

(1) What is the value of Petrol's assets, e.g. storage facilities, railroad tracks, trucks, and gasoline stations?

(2) How are private petrol stations operated?

(3) How is a "leased" petrol station operated?

(4) What are the price, terms and conditions to operate a station successfully?

(5) What are traditional import and distribution terms and prices between retailers of gasoline and importers or wholesalers?

(6) What types of business relationships need to be set up between petrol station owners and those who control the infrastructure for the distribution of petroleum products?

(7) What other activities can be associated with operating a petrol station (e.g., run hotels)?

Given this fluid background, the status of Petrol was very uncertain at the start of the project. Despite a policy adopted in early 1991 making it possible for any entity or individual to import gasoline either as a retailer or a wholesaler, Petrol is still the dominant organization dealing with the distribution of crude oil and petroleum products in the domestic market. Petrol has 100 fuel depots, about 550 petrol stations and an extensive infrastructure around the country including two sea terminals, 4 docking berths (3 at Varna and 1 at Burgas) as well as the technical and physical skills to import and export crude oil and petroleum products. Petrol owns the railway tracks within the fuel depot compounds, with connections to the national railroad network. In addition, it has well developed truck networks, repair shops and service facilities. In a typical year (e.g., prior to the collapse in domestic demand) Petrol achieved the following sales levels:

(1) 20,000 - 30,000 b/d of gasoline
(2) 60,000 b/d of diesel fuel for the domestic and transit markets
(3) 80,000 - 90,000 b/d of fuel oil
(4) 30,000 b/d of lube oils
(5) 2,600 - 3,000 b/d of engine oil
(6) 600 - 800 b/d of greases
(7) small volumes of bitumen, brake fluid, antifreeze, etc.

Total 190,000 - 215,000 b/d

There are several oil pipelines in the country which were formerly owned by Petrol but are now owned by the Burgas refinery: 1) Burgas - Sofia (diesel 60,000 b/d capacity), and; 2) Burgas - Varna (also 60,000 b/d). The total length of these pipelines is 530 kilometers and there are branch lines to fuel depots. There is also an ethylene pipeline between Burgas - Varna which parallels the diesel line.

Given that Bulgaria is at the crossroads between the Middle East and Europe, it is estimated that 2 million cars transit the country annually, and with the opening of new expressways, traffic will increase. At the same time, petrol stations along the old highways will see their demand drop

precipitously. It is for this reason that Shell and BP are interested in building mega-stations along the expressways under their own name — but only if fuel supplies can be guaranteed. At project commencement, there were only 50 stations in Sofia for 1.3 million people. For comparative purposes, Vienna is roughly the same size, yet has 11,300 stations. A typical Viennese station sells 2,000 tons of gasoline, while in Sofia the average station sells 15,000 tons. In Sofia one station serves 5,000-6,000 cars, while in the West one station serves 200-300 cars on average.

For most Bulgarian oil sector organizations, there are several fundamental barriers to direct participation in price risk management activities which must be addressed or overcome, perhaps with the assistance of third party trade and financial partners:

(1) Access to sufficient credit lines to purchase bulk quantities and establish hedging accounts, including access to hard currency;

(2) Inability to control both the pricing and physical distribution of their product, and;

(3) Uncertain future role in the petroleum economy in light of changing price, tax and related government policy decisions.

The problem of insufficient financing is particularly important since it can significantly affect the GOB's ability to achieve its goal of diversifying trading sources. For example, in February 1992, Bulgaria was forced to decline an offer to import Iranian crude owing to lack of hard currency. An option was discussed which would have allowed Bulgaria to begin payments six months after initial delivery if it could find a bank willing to furnish a $50 million guarantee. The National Bank of Bulgaria, however, could not meet the terms.

3. Summary Observations

IRG's technical assistance in Bulgaria focussed on the three entities most active in, and vital to, the country's oil procurement activities: Chimimport, Neftoimpex, and the Neftochim Burgas Refinery.

The overall assistance provided to Chimimport addressed specific needs intended to help rebuild and strengthen its oil procurement capabilities in both crude oil and major petroleum products, thereby providing another source of supply to Bulgaria's oil economy. This included the fundamental operations of the international markets in crude oil and refined products (both physical and paper), so that it will be able to compete more intensively with Neftoimpex in these markets, the evaluation of, and suggested improvements in, Chimimport's internal market analysis and information systems, in order to adequately monitor, analyze and participate in the international markets, and a general overview of refinery modeling procedures to better analyze and negotiate alternative processing deal structures.

Neftoimpex was established as a joint stock company owned largely by Neftochim, but also by major Bulgarian consumers of petroleum products, whom Neftoimpex serves as a petroleum products supplier/trader. It is structured (i.e., staffed, organized and equipped) much like a small western trading company. It is open to joint venture relationships, and has a good record in obtaining financial backing from western banks. Thus, while ostensibly serving the refiner's needs, Neftoimpex is positioned to take advantage of other trading opportunities such as product import and export deals, which may compete directly with the refinery's domestic sales. IRG's assistance was geared to prepare Neftoimpex for these activities as well as to strengthen its access to, and knowledge of advanced price risk management techniques and computer trading software applications.

The Burgas Refinery represents approximately 80 percent of Bulgaria's total refining capacity. However, owing to hard currency limitations and overall poor domestic market conditions (described above), Neftochim Burgas is operating at less than half of its capacity, and largely under processing agreements arranged by Neftoimpex and several western trading companies. These agreements are necessitated by Neftochim's lack of funds to purchase crude oil directly on its own account. Recognizing that this dependency situation should be corrected, the management at the Neftochim Burgas Refinery plans to develop its own in-house capabilities to purchase crude oil.

The focus of IRG's technical assistance was directed to Burgas' pressing need to understand better its processing economics through the use of refinery LP optimization techniques. Specifically, the training covered 1) the use and potential structure of refinery processing agreements to complement overall system optimization objectives, 2) the role of the refinery S&D activity in optimizing refinery economics, and 3) the structure and implementation of LP models to evaluate these issues. In this context, the economics of a processing agreement can be analyzed as an incremental aspect of a refinery's economics, rather than a necessary vehicle by which physical operation is maintained (albeit at low incremental revenues paid under a processing arrangement whereby the refinery's low operating conditions limit its negotiating leverage).

CZECH and SLOVAK FEDERAL REPUBLIC

1. Summary of Technical Assistance Conducted

Definitional Mission — During the week of March 18-22, 1991 Mr. Samuel Hale of IRG and Dr. Safer visited the CSFR to commence Component 3 activities. The purpose of the visit was to meet with appropriate entities and assess current oil purchasing practices, identify and evaluate training and technical assistance needs, outline training course content, discuss the U.S. internship training program, and develop an overall project implementation schedule. Mr. Hale and Dr. Safer met with a number of host country institutions including the CSFR Federal Ministry of Economy, the Czech Ministry of Industry, Chemapol, Obchodni Banka, Statni Banka Ceskoslovenska, and the Slovnaft Refinery in Bratislava. IRG also discussed the project with U.S. Embassy staff. See Annex B.1 for a list of individuals contacted during the trip.

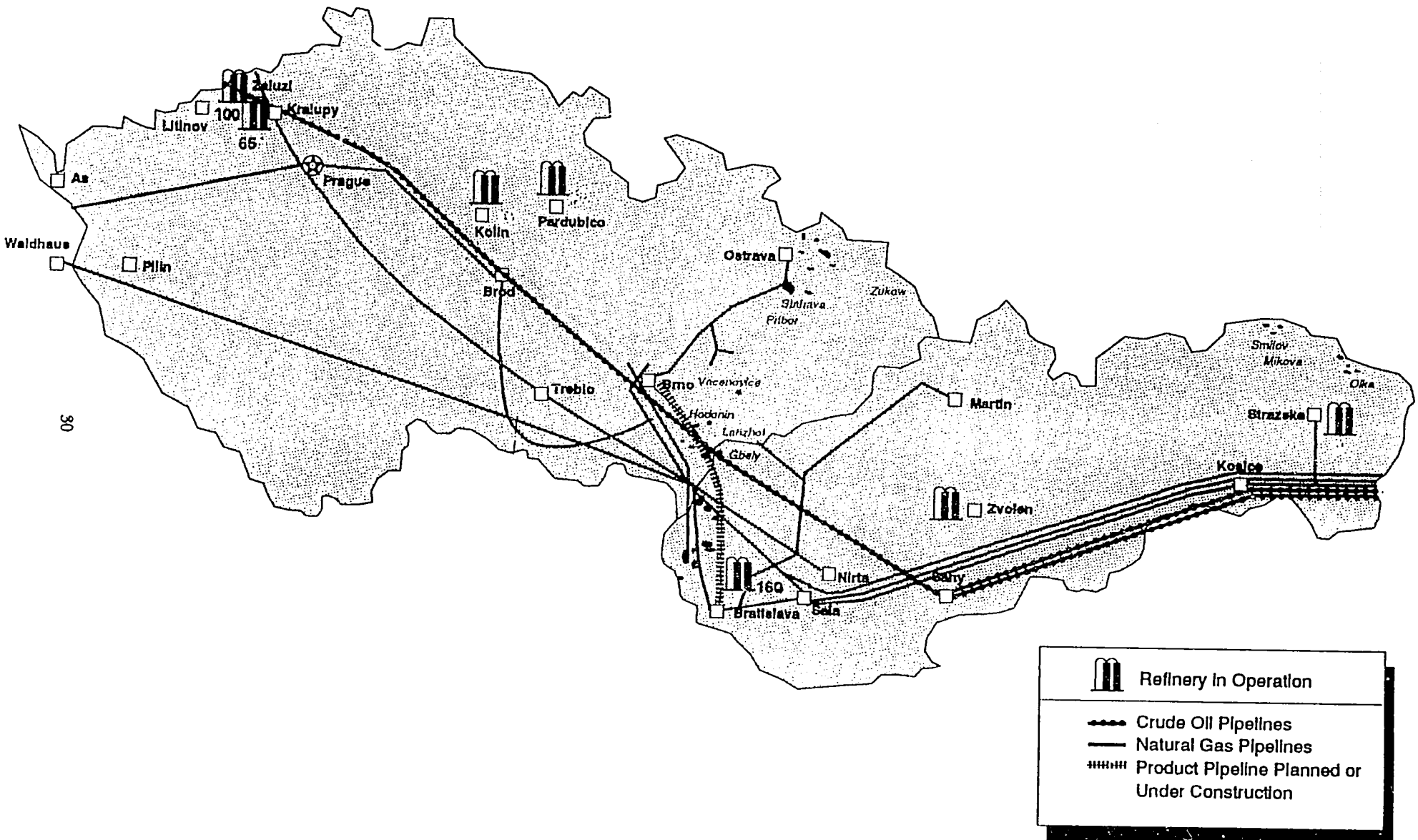
Oil Purchasing Seminar — During the week of June 10, 1991 the *Oil Purchasing Seminar* was held in the CSFR, conducted by Dr. Safer, Mr. Poats, Mr. Boudrye, and Mr. Jones. Two separate sessions were conducted at the offices of Chemapol in Prague and Slovnaft in Bratislava. At the first session in Prague, representatives from Chemapol, the Kralupy and Litvinov Refineries, Czechoslovak Airlines, and the CSFR Ministry of Industry attended. The seminar in Bratislava was attended by individuals from Slovnaft and Petramex, the oil purchasing organization for Slovakia. Topics for both seminars encompassed cash oil markets, cash/futures contracting applications, implementation issues, options and swaps markets, hedging and trading examples, crack spread trading systems, basis risk management, technical analysis systems, and options pricing models. See Annex B.2 for a List of Training Participants for the entire project.

Follow-up Technical Assistance — Based on the initial seminar and in collaboration with host-country counterparts, IRG identified additional technical assistance work which was carried out in August 1991 in Prague and Bratislava: *Refinery Optimization, Procurement, and S&D Workshops.* Dr. Safer and Mr. Jones spent two days with personnel from the Slovnaft Refinery providing assistance in oil futures trading, ship chartering, pipeline management, supply and distribution department organization, function, and management, and new marketing techniques. In addition, Mr. Boudrye presented a discussion of and demonstrated LP optimization software for refinery/petrochemical planning. Over a two-day period, the IRG team met with executives from the Kralupy and Litvinov refineries discussing oil futures trading, refinery models, technical trading, and S&D organization. On the third day, these topics were discussed with executives of Chemopetrol in Prague.

Internship Training — After the initial seminar and the follow-up work, IRG identified two individuals for participation in the internship training program in the United States. They were Mr. Jaromir Burian, Deputy Commercial Director of Chemapol, and Ms. Jana Hejskova, Manager of Crude Oil and Products at Chemapol. Both individuals were at Phibro International in Greenwich, Connecticut, AIG Trading in Fort Lee, New Jersey, and NYMEX and the Chase Manhattan Bank in New York City. Both interns participated in the program from September 15-28, 1991.

Additional Technical Assistance — Based on a request from the Litvinov Refinery, IRG developed an *Oil Procurement Seminar* for the staff of the refinery. During the period May 11-15, 1992 Mr. Jones conducted this seminar for approximately 20 Litvinov personnel from the Production, Marketing, Accounting, Development, and Research Departments. This training focused on the use of futures and futures options for hedging including crack spreads, use of over-the-counter financial instruments for hedging, oil swaps, crude oil paper and cash markets, technical analysis of futures and cash oil markets (including a practical exercise in selecting hedging options and the timing for placing a hedge future deliveries of cruide oil), use of LP models for refinery

CZECH AND SLOVAK FEDERATED REPUBLIC



Sources: IRG, International Petroleum Encyclopedia and Saloman Brothers

optimization (and the methodology for running case studies to select the optimum crude oil feedstocks, to evaluate third party processing deals, and to evaluate investment/divestment options), and developing the organizational structure for an S&D Department within the Litvinov Refinery.

2. Status of Oil Procurement Activities and Capabilities

A. Background/Overview

Historically, all aspects of oil and petroleum products supply in the CSFR were heavily centralized. One state trading company, Chemapol, had exclusive responsibility for import and export of all crude and petroleum products. Crude imports came entirely via pipeline from the USSR. Financing was not a problem, since oil imports fell under barter or COMECON ruble clearing agreements. Pricing, using the standard USSR formula for all exports to the ECE countries (See Footnote 11), was based on a five-year moving average price, which insulated importers from the wide fluctuations in world oil prices. Hard currency reserves were sufficient to finance oil purchases and, as a result, immediate payments were made to the Soviet Union. In addition, longer credits had been extended by the Soviets for Czech exports to be offset by future deliveries of oil and gas.

Even before the democratic changes in the ECE nations, it became apparent that oil exports from the USSR would decline and that the ECE could not be assured of sufficient supplies from the USSR. The CSFR, therefore, had for some time sought to barter its industrial goods for crude oil from Syria, Iran, Iraq, and Libya. Most of these barter deals involved swaps for Soviet crude which was then delivered by pipeline along with the quantities purchased directly; the Soviets would then sell the foreign oil in western markets.

On January 1, 1991 the USSR converted to a hard currency basis for all exports to its former client states; pricing, delivery, and other terms of the former barter agreements were changed to such an extent that the CSFR was unable to import oil at levels sustained in the past. The CSFR imported 305,000 b/d of crude oil and petroleum products in 1988, virtually all of it from the USSR. In 1990, total crude and products imports decreased to 280,000 b/d and declined further to about 230,000 in 1991. In early 1991, the government had secured government-to-government commitments to import around 150,000 b/d from the USSR under barter and hard currency purchase agreements. Another 60,000 b/d was secured through the Adria Pipeline, of which Iran was to supply 20,000 b/d, either to be swapped for Soviet crude or delivered via the Adria through Yugoslavia. The balance was to be purchased by Chemapol in the spot market. By the end of 1991, however, the CSFR received only one cargo of Iranian crude through the Adria, before the pipeline was shut-down owing to the civil strife in Yugoslavia. It is not clear how the operating and financial conditions of the pipeline will be settled with the CSFR and Hungary, as well as the new country through which the pipeline passes (Croatia).

Nevertheless, the shut-down of this source of supplies did not have as devastating an effect as feared since, as in the other ECE countries, demand was falling owing to sluggish economic activity and increasing domestic prices: for example, it was estimated that gasoline sales in the CSFR decreased 20 percent through September of 1991 from previous year levels. In addition, the CSFR was able to increase deliveries through the Friendship Pipeline to make-up for lost supplies via the Adria.

Historically, Chemapol delivered all its crude imports to a "trust organization," Chemipetrol, which oversaw all refineries, chemical companies, and the exclusive petroleum marketing and pipeline companies: Benzina for Bohemia and Moravia, and Benzinol for Slovakia. Chemipetrol

was the dominant stockholder in Chemapol whose import quantities were based on requirements provided by Slovnaft and Litvinov and by smaller refineries and petrochemical plants. Until the late 1980s, the USSR encouraged its close ECE allies to import as much crude as their refineries could process, with a view to maximizing hard currency petroleum product exports to western markets. Such exports in effect enabled the countries to earn hard currency to purchase Soviet crude oil. This arrangement contributed to investment in sizable refining overcapacity throughout the ECE nations.

In the CSFR, petroleum products not used as chemical feedstocks were sold to the marketing companies at prices based on a standard mark-up formula over crude prices. A typical refinery slate emphasized the middle and heavier ends of the barrel as follows: gasoline and napthas at 10 percent, gasoil and other middle distillates at 40 percent, heavy fuel oils at 35 percent, and petrochemicals (primarily for export) at 15 percent. Imports of petroleum products and of non-USSR crude oil were negligible. Both crude oil supplies and product demand were sufficiently regular to avoid the need for major investment in storage facilities. At the beginning of 1991, there was reportedly less than 15 days of consumption in inventories of crude and petroleum products. (In the U.S., for example, commercial inventories of crude and major petroleum products averaged 30 days of supply.)

As a landlocked country with no export pipelines and limited use of navigable waterways, the CSFR faces high transport costs to export petroleum products. Consequently, even with the subsidy implicit in the USSR crude oil barter and clearing arrangements, the CSFR exported less petroleum products than its neighbors. Chemapol thus had gained less trading experience than, for example, trading companies in Poland, Romania, or Bulgaria.

In late 1990, Chemipetrol was abolished. Its constituent parts, the refineries, chemical companies, and marketing companies, all became independent companies. (They are also all shareholders in Chemapol.) The import of crude oil and petroleum products remained the exclusive monopoly of Chemapol. The Slovak trading company, Petramex, was also given the right to import for Slovakia, but in practice, owing to its limited experience, Petramex did little oil importation. An application by the Slovnaft refinery to become an importer was reviewed in early 1991, but was not granted. Benzina and Benzinol were still not permitted to import petroleum products, but specialty product exceptions seemed to be emerging even in early 1991. By mid-1991, the CSFR federal government had given up most of its role in the regulation of the oil trade, both domestically and with respect to imports and exports. The responsibility was given to the respective republic ministries.

B. Organization Capabilities
Chemapol and Obchodni Bank

Chemapol has a Crude Oil and Petroleum Products Division and in turn a Crude Oil Department, as well as other departments for various petroleum products. The Division handles all crude oil and petroleum products importation on behalf of the Czech refineries and on occasion for the Benzina marketing company. Chemapol subscribes to Reuters Energy Service and has considered other market information services (e.g., Telerate). Traditionally, Chemapol handled most of the imports for Slovnaft and Benzina, while also buying in the spot market through Phibro, Marc Rich and other traders.

The financing of petroleum trade has been handled exclusively by the Obchodni Banka. The bank relies exclusively on Reuters and on its international trading contacts and two individuals appear to constitute the entire oil trade finance unit. The bank claimed that in early 1991 it had no difficulty financing oil imports and was able to secure short-term trade credits when necessary. Although Obchodni Banka no longer has a monopoly on trade finance, it appears to be the only bank in Prague interested in doing this business. Obchodni Bank also handles the oil trade finance for Slovakia through its branch in Bratislava.

In the middle of 1991, at the time of IRG's seminar in Prague, personnel from Chemapol and Obchodni Banka had been learning about oil futures hedging and had executed one transaction: they hedged 800,000 barrels of Russian crude buying Brent futures in London and subsequently selling an equivalent amount of Brent in the spot market. In addition, a member of Chemapol's senior staff spent several days with Elf Trading Company to learn more about hedging. Both Chemapol and Obchodni Banka have proposed more ambitious hedging strategies, including longer term swaps to lock-in prices for more than the three months or so possible on the London futures market. Until the refineries approve such transactions, however, the hedging will be limited to the smaller quantities which Chemapol imports on its own account for resale.

Slovnaft Refinery

As of May 1992, Slovnaft had not received authority to buy oil and continued to use Chemapol for around 80 percent of its crude oil purchases and Petramex for the remainder.[21] Slovnaft does not now have an LP Model for the purpose of optimizing the operation of the refinery, which will be most important when the Adria Pipeline is reopened. In addition, Slovnaft is confronted with the loss of many high potential young employees to private companies owing to the fact that the state has compelled Slovnaft to continue to pay salaries that are not competitive with private entities established by local entrepreneurs and foreign companies.

It is anticipated that Slovnaft will be privatized in 1992 and effective May 1, 1992 it was designated a "shareholder" company.[22] Voucher holders had until June 8, 1992 to apply for ownership of 30 percent of Slovnaft's equity at book value (approximately $180 million at the current exchange rate of 28 crowns/USD). The state will allow Slovnaft to sell another 35 percent of the company to foreign investors at market value for the purpose of raising capital. Morgan Stanley prepared an evaluation of Slovnaft which is encompassed in a Prospectus which was sent to 35 energy companies both private and some owned by producing countries. As of May 15, 1992 there were 12 companies that expressed a serious interest in Slovnaft, with representatives from each scheduled to visit Slovnaft beginning in June 1992.

Other CSFR energy companies will be privatized over the next few years. It is expected that Chemopetrol, which owns the Litvinov Refinery,[23] and Kaucuk s.p. which owns the Kralupy Refinery, will be privatized as independent entities. Thus, there has been no plan to integrate the industry as in Hungary (see following country section). It should be noted that neither Litvinov nor Kralupy have an LP model for purposes of refinery optimization. In addition, neither refinery has personnel trained to use such models for refinery planning, nor do they have personnel qualified and trained to purchase oil. Both of these issues need to be addressed prior to privatization.

Prior to May 1, 1992 Slovnaft acquired 87 service stations and three terminals from Benzina. Also, Slovnaft and Benzina formed a new company for the purpose of distributing refined petroleum products. Each company holds a 50 percent interest in the new distribution entity.

At the present time Transpetrol operates a small terminal where the Friendship and Adria Pipelines intersect. However, the tankage at the terminal is insufficient to segregate crude oils by type before delivery to the Slovak and Czech refineries. Thus, if one refinery were to buy a heavy crude from the Persian Gulf, and another purchased Urals crude (a light crude) from Russia, the two could be mixed at Transpetrol with neither refinery receiving the crude oil they bought. The company that purchased the heavy crude would receive a windfall, while the company that purchased the light crude would have a lower grade than they paid for. Slovnaft has been lobbying the Federal Government to locate the storage needed to debottleneck the pipeline segregation problem at Slovnaft rather than at the Transpetrol facility. The rationale is that with the connection with the TAL Pipeline, crude oils from the Friendship, Adria, and TAL Pipelines could be segregated at Slovnaft for use there, and for further shipment to Kralupy and Litvinov.

[21] *In early 1991, Petramex entered into an agreement with C. Itoh of Japan to purchase Soviet crude on behalf of Slovnaft for delivery through the Soviet pipeline; C. Itoh had acquired the Soviet supplies in exchange for Japanese goods. However, the driving force in Slovak oil importation is Slovnaft, not Petramex.*

[22] *The Czechoslovakia Federal Government plans to privatize some state-owned companies beginning in 1992. This process will be accomplished in "three waves" over a several year period. The government has decided to divide ownership based on the book value of all state owned companies as follows: the state (67 percent), the people (30 percent), and restitution (3 percent). Restitution of 3 percent is to compensate those entities or individuals that had their properties seized by the state after World War II.*

The government has established the book value of state-owned companies to be approximately 300 billion crowns. All Czechoslovak adult citizens were permitted to request vouchers worth 1,000 investment points each. Approximately 8 million citizens applied to receive the vouchers at a price of $37/voucher. Voucher holders can use them to buy stocks in companies of their choosing within a specified time period after it is announced that a companies shares are available for purchase. Alternatively, voucher holders may surrender them to one or more private investment fund companies that will invest on their behalf. Over 400 private investment companies have been formed. Approximately 5 million of the 8 million voucher holders have surrendered their vouchers to these private investment companies.

[23] *The Litvinov Refinery has begun its privatization studies with the assistance of Credit Suisse/First Boston.*

CSFR: REFINING OVERVIEW[24]

Refinery	Crude Distillation Capacity (b/d)
Slovnaft	160,000
Kralupy	65,000
Litvinov	100,000
Others	50,000
	375,000

Major Changes

The major developments with respect to oil procurement in the CSFR, including petroleum imports and exports, are the decentralization of procurement authority and the independence of individual refineries (the privatization process of the latter is described above). The political tension between the Czech and Slovak Republics has no doubt accelerated this process, as reflected in the Slovnaft Refinery's desire to become more independent in its operations. Formerly, the state monopoly trading company Chemapol was the only entity allowed to import crude oil and petroleum products, but over the past two years this authority also has been extended to Petramex. In addition, the trade finance monopoly of the Obshodni Banka has been broken.

The traditional monopolistic entities Benzina and Benzinol[25] in distribution and marketing are being challenged by the entrance of substantial foreign partners in downstream marketing and the limited increase in petroleum product import and export activity. The Government has decided to privatize two-thirds of Benzina's gasoline stations, offering one-third to foreigners and another one-third to private firms. OMV (Austria) was the first firm to enter joint agreements, operating 35 Benzina stations in the Czech Republic (with a future option to buy), as well as six Benzinol stations in Slovakia. Esso A.G., Exxon's German affiliate, has established a CSFR subsidiary (Esso Czechoslovakia) with offices in Prague and Bratislava, which will market petroleum products and lubricants. The network will include existing service stations bought from Benzina and Benzinol. Through an agreement with Benzina, Conoco will lease and operate 13 service stations in the Czech Republic. TOTAL also has signed an agreement with Benzina making it the operator of 75 stations (about 10 percent of the market) in Bohemia-Moravia.

In general, trade opportunities have expanded, but the CSFR remains quite vulnerable to further loss of former Soviet supplies owing to its total reliance on the Friendship II Pipeline, the war-forced closure of the Adria Pipeline, and its land-locked status. Extensive efforts are underway to diversify the CSFR's crude oil supply alternatives through new pipeline projects. In fact, the Czech government has already approved the plan to build a pipeline connection off the TAL Pipeline from Ingolstadt in Germany to the Kralupy and Litvinov Refineries north of Prague. The 210 mile line, to be built by Chemopetrol and Chemopetrol Pipeline GmbH, is expected to be completed by the end of 1993 and operational by early 1994 at a cost of between $310-$330 million. Capacity is expected to reach 200,000 - 300,000 b/d. Also, as discussed in Chapter 2, the Slovnaft Refinery, in conjunction with OMV, is planning a connection to its facility in Bratislava from the Schwechat Refinery in Austria.

[24] *Source: IRC [illegible] and Slovnaft.*

[25] *Benzina controlled 750 stations in the Czech Republic through August 1991, while Benzinol operated 290 service stations in Slovakia.*

3. Summary Observations

The central targets of IRG's technical assistance in the CSFR were Chemapol and the Litvinov, Kralupy, and Slovnaft Refineries.

Training provided for the staff of Chemapol focussed on enhancing its capabilities in the use of oil futures, options and swaps, as well as expanding Chemapol's understanding of western trading companies' commercial practices. IRG's work served to focus attention on how western oil market activity is conducted and the risks inherent in buying crude oil in volatile markets. The training emphasized how price risks can be managed and what contractual techniques and computer systems are available. These goals were accomplished not only through the seminars but also the internship training program.

Since traditionally the majority of Chemapol's transactions have been on the accounts of the refineries, which bear the price risk with Chemapol acting only as an agent, IRG determined that the refineries should be one of the primary recipients of the technical assistance. There is clearly a need for detailed coordination between Chemapol and the refineries, especially as related to the operational requirements of the S&D function. The success of these refineries as private sector businesses will depend on how they manage their day-to-day crude procurement operations. Either existing management will adopt western style practices, or the new owners will install new managements. In addition to the changes likely to be caused by privatization, the increased competition from western oil companies marketing petroleum products within the CSFR will force refinery managements to focus increasingly on questions of refinery economics. They will have to exercise greater control over the quantity and costs of crude oil and balance these against the quantities and prices of petroleum products.

The training provided to the Kralupy, Litvinov and Slovnaft Refineries served to emphasize these critical issues to the managements of the refineries. It also served to show how refinery optimization models are used in western oil companies, and how the models' quantitative results are used on a day-to-day basis by refinery management. IRG has trained refinery management in these areas so that as the restructuring and privatization process unfolds, they will be prepared to undertake the functions of the new organizations and maintain and build their competitive market positions.

HUNGARY

1. Summary of Technical Assistance Conducted

Definitional Mission — During the week of March 25-29, 1991 Mr. Banks and Dr. Safer visited Hungary to commence Component 3. The purpose of the visit was to meet with appropriate entities and assess current oil purchasing practices, identify and evaluate training and technical assistance needs, outline training course content, discuss the U.S. internship training program, and develop an overall project implementation schedule. Dr. Safer and Mr. Banks met with host country institutions including the Ministry of Industry and Trade, the Hungarian National Oil and Gas Trust (OKGT, now called MOL), AGEL (supply subsidiary and foreign trade company for OKGT), the Danube Refinery (DKV), the National Bank of Hungary (NBH), the Hungarian Electricity Board (MVMT), Mineralimpex, and U.S. Embassy staff. See Annex C.1 for a list of individuals contacted during the trip.

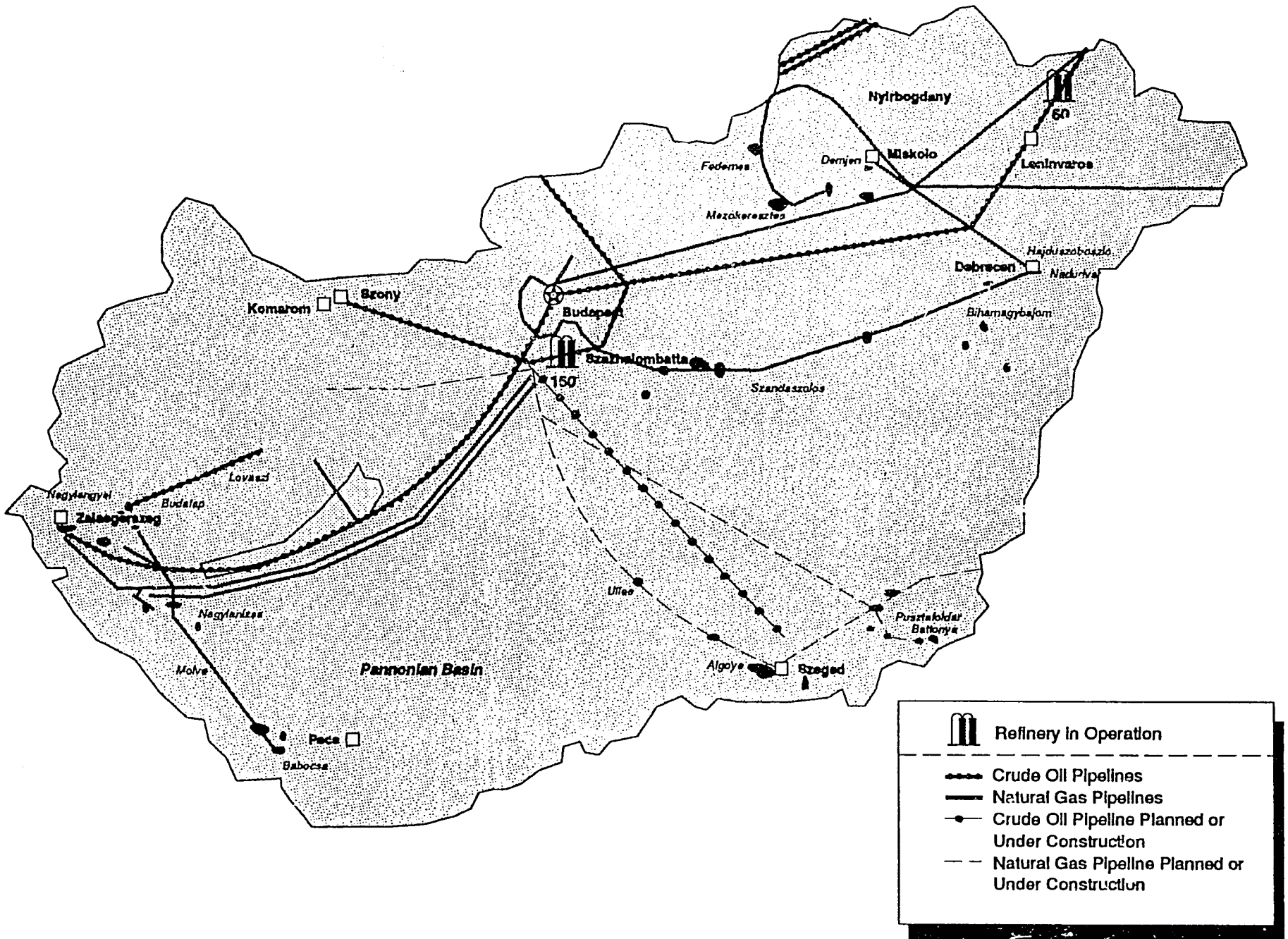
Oil Purchasing Seminar — During the week of June 3, 1991, the *Oil Purchasing Seminar* was held in Hungary, conducted by Dr. Safer, Mr. Poats, Mr. Boudrye, and Mr. Jones. Two separate sessions were conducted at the offices of Mineralimpex in Budapest and at the DKV Refinery in Szazhalombatta, just outside of the capital. Representatives from Mineralimpex, DKV, MVMT, OKGT, AGEL, NBH, Tiszai Refinery, Hungarian Foreign Trade Bank, Central European International Bank, Allcom Trading Company (private), and Citibank Hungary attended the sessions. Seminar topics encompassed cash oil markets, cash/futures contracting applications, implementation issues, options and swaps markets, hedging and trading examples, crack spread trading systems, basis risk management, technical analysis systems, and options pricing models. A List of Training Participants for all technical assistance tasks is presented in Annex C.2.

Follow up Technical Assistance — Based on the initial seminar and in collaboration with host-country counterparts, IRG identified additional technical assistance work which was carried out August 19-22 in Budapest at the offices of Mineralimpex by Dr. Safer and Mr. Jones. This was an *Advanced Trading and Management Workshop* conducted with senior executives at Mineralimpex including the General Director, Dr. Toth. However, there were additional attendees from the NBH, the Hungarian Foreign Trade Bank, the DKV Refinery, and Tisak Chemicals. Discussions included implementation plans for oil futures trading, technical analysis computer systems support, relevant world oil price data bases, including direct on-line communications, and specific hedging problems.

Internship Training — After the initial seminar and the follow-up work, IRG identified two individuals for participation in the internship training program in the United States. They were Mr. Lajos Alacs, Deputy Head of Crude Oil Trading at Mineralimpex and Mr. Istvan Tehenics, a Unit Manager at the DKV Refinery. Mr. Alacs' schedule included training at Enron Trading in Houston, Phibro International in Greenwich, Connecticut, AIG Trading in Fort Lee, New Jersey, and NYMEX and the Chase Manhattan Bank in New York City. Mr. Tehenics was with the Lyondell Petrochemical Company in Houston. Both interns participated in the program from September 4-28, 1991.

Additional Technical Assistance — In response to a request from Mineralimpex, IRG conducted an *Oil Purchasing Workshop* in Budapest May 19-21, 1992 on the subject of oil futures and cash markets, contracting strategies, options, swaps related "derivative" markets, trading of crack spreads, arbitrage and technical analysis tools. The workshop synthesized much of the material covered in IRG's initial seminar (June 1991) for new staff among the Mineralimpex trading company, and extended many of the concepts to a more sophisticated level for long-term staff. Dr. Safer and Mr. Poats presented the workshop materials. The audience for this assistance included Mineralimpex staff, as well as representatives from banks, trading and refining companies with which Mineralimpex maintains regular commercial relations, or with whom it has entered formal joint venture relationships.

HUNGARY



Sources: IRG, International Petroleum Encyclopedia and Salomon Brothers

2. Status of Oil Procurement Activities and Capabilities

A. Background/Overview

Historically, Hungary has imported about 75-80 percent of its total oil and petroleum products consumption, with virtually all imports coming from the USSR via the Friendship III Pipeline. In 1990, the situation began to change as deteriorating conditions in the Soviet oil and gas industry threatened a disruption in Soviet supplies. In addition, as of January 1, 1991, the Soviets began requiring hard currency payments at world market prices. Although in late 1990 Hungary concluded a long-term contract with the USSR for 60,000 b/d of Urals blend crude,[26] the increasing uncertainty surrounding Soviet supplies led the government to seek other suppliers. In September 1990 the purchase of 3.285 million barrels of crude and 270 thousand barrels of gasoline from Algeria and Libya was authorized and overall dependence on Russian and NIS supplies decreased from 96 percent of total imports in 1989 to 79 percent in 1991.

As in the CSFR, purchasing crude from sources other than the USSR has increased the importance of the Adria Pipeline. Hungary and Iran reached an agreement in April 1991 in which Iran would supply 20,000 b/d to Budapest through the Adria Pipeline. However, only one cargo of 2 million barrels was delivered before the pipeline was shut-down. Nevertheless, in the long-term interests of diversifying oil supplies, the two countries have proceeded with another agreement calling for the delivery of 40,000 b/d of Iranian crude to Hungary in 1992. Importing crude through this pipeline can help to offset some of the decreased Russian and NIS supplies, but the Yugoslav civil war has made this source increasingly unreliable. Hungary had been allocated 60,000 b/d out of a total of 200,000 b/d of Adria throughput capacity.

When the project began in early 1991, the oil and gas industry in Hungary was managed by the state-owned OKGT, an organization responsible for both the upstream and downstream sectors of the industry. Each of this organization's commercial activities was operated by a separate subsidiary company: for example, NKFV and KFV, responsible for oil and gas production East and West of the Danube River, respectively; GOV managing the pipeline system; the DKV and Tiszai Refineries (together accounting for 95 percent of Hungary's refining capacity); AGEL, importing equipment for the upstream sector, and; and AFOR, the downstream marketing company. Mineralimpex, outside the control of OKGT, was a state-owned foreign trading company responsible for the import and export of petroleum products. It was the only entity prior to 1991 with the authority to conduct oil trading and purchasing and thus enjoyed a monopoly on crude and product procurement activities. Mineralimpex handled the imports of Soviet crude via the Friendship Pipeline and spot purchase requests from the refineries.

To finance foreign purchases, Mineralimpex worked with both the NBH and the Hungarian Foreign Trade Bank. Mineralimpex engaged in some oil futures trading through a joint venture called CONFIDES which traded on the International Petroleum Exchange (IPE) in London on behalf of the Mineralimpex account. CONFIDES is also a member of the Budapest Stock Exchange. Mineralimpex has also engaged in oil futures trading through a joint venture with the Foreign Trade Bank, NBH, and OKGT. NBH was the main bank involved in financing oil purchasing and has developed considerable expertise in certain aspects of commodity trading and lending; it is active in gold and some of the foreign exchange markets.

Faced with declining Soviet supplies and in concert with efforts to diversify oil import sources and bring the country closer to a free market economy, the government implemented two key changes in early 1991. First, the monopoly on oil imports held by Mineralimpex was abolished and AGEL, one of the OKGT subsidiaries, began to import small amounts of crude directly. In addition, some petroleum products were imported by AFOR and the joint venture marketing companies. Second, prices were liberalized to reflect world market crude price levels and

[26] *The price of this crude is based on the formula outlined in Footnote 11.*

competing product markets. This process was gradual, continuing throughout 1991. In early 1992, customs duties were ceased, effectively opening Hungarian markets to cross-border trade.

Other organizations active in the downstream Hungarian oil market are a Shell Oil marketing and distribution entity called INTERAG, a joint venture between Phibro and Mineralimpex called Allcom, a wholly owned [illegible] marketing franchise, and 51 percent Hungarian owned joint ventures with Exxon and Total.

B. Organizational Capabilities

Throughout most of 1991, the government examined the restructuring of the Hungarian oil industry. The two main options were either to streamline OKGT into a vertically integrated company or split the various operating subsidiaries into independent companies. The second option was strongly favored by Mineralimpex and DKV, since it would give them greater operating independence. For example, the DKV refinery historically had no need to develop a capacity for oil purchasing and products marketing. The refinery was considered only a processing entity, unable to maximize its profits because it could not control its raw material costs and supplies nor the sales of its manufacturing plants. It has no institutional capability to conduct these types of activities, and had to rely on others to perform these functions.

MOL

Thus, the critical development affecting oil procurement within Hungary was the October 1991 creation of an integrated national oil and gas company, Magyar Oiajes Gazibari Resvenydarsasag (MOL). MOL is structured as a joint stock company and includes most of the entities previously under the control of the former OKGT, such as the oil and gas producing companies, five Hungarian refineries (the largest of which is the DKV plant), Afor, and other entities comprising the oil and gas industry, from exploration and production to retail. The gas distribution companies and equipment suppliers and manufacturers were not included in MOL.

MOL Organization, Effective 1st October 1991[27]

MOL General Management

Hydrocarbon Exploration, Development and Transportation Division	Oil Supply (AGEL)	Refining and Marketing Division
Former units within OKGT: - Geophysical Exploration (GKV) - Lowlands Hydrocarbon Production (NKFV) - Trans-Danubian Petroleum (KFV) - Gas and Oil Transportation (GOV)		Former units within OKGT: -Danube Petroleum Refining (DKV) -Komarom Petroleum Refining (KKV) - Zala Petroleum Refining (ZKV) - Tisza Petroleum Refining (TIFO) - Petroleum Products Trading (AFOR)

The government's policy objective is to establish a balance between an integrated national oil company and a competitive fringe of trading and marketing companies, as represented by Mineralimpex and various foreign participants. In this respect, the balance pursued is not unlike the western model of an integrated set of major participants, and an independent sector

[27] *Energy Policies, Hungary, 1991 Survey, OECD/IEA, Paris 1992.*

providing competition from imports, logistic responsiveness and efficient marketing strategies. In addition, the government has made it clear that MOL also was created for the purpose of better coordinating upstream and downstream activities, and to protect the nation's vested interest in its oil and gas resources, specifically its refining, distribution and production assets. In fact, MOL is internally structured with Upstream and Downstream Divisions. There is one group within the Downstream Division that optimizes the operation of all five refineries, and another group responsible for buying and importing crude oil, as well as exporting surplus refined products. Thus, while there is an interest in maintaining effective competition to both challenge and serve MOL, the intention is for MOL to increase its operational efficiency, and simultaneously become more self-sufficient as a major regional company in Central Europe (competing with Austria, the CSFR and Germany).

A major issue which must be addressed by the Hungarians in attempting to strike this effective balance between competition and integrated control is the issue of pipeline access. Currently, MOL controls pipeline access through its ownership of GOV. Theoretically, MOL/GOV can exercise its monopoly of Hungarian pipelines to the exclusion of competitive firms, including Mineralimpex and other independent oil marketing and trading companies. In the autumn of 1992, a provision of the Mining Act is scheduled for debate which calls for the creation of open access rules, for both pipeline and storage space, effectively making the GOV system a common carriage operation (as is the case for interstate systems in the U.S). The resolution of the pipeline access debate will largely determine how effective the independent sector of competition can be in limiting the potential monopoly position of MOL. On the other hand, from the perspective of the government and MOL, the immediate opening of pipelines to an open access system threatens to undercut MOL's efforts to establish itself as an effectively coordinated production-refining-distribution operation, while at the same time "taking" its historical fixed capital and O&M investment in the pipeline systems to the benefit of independent competitors with no vested interest in the long-term health of Hungary's domestic oil and gas industry, particularly the investments in production and refining.

In order to resolve the open access issue to the satisfaction of both MOL's vested interests and the interests of maintaining a "workably" competitive (and efficient) Hungarian oil industry, some balance may have to be struck between the pure ideal of common carriage and a closed system, both with regard to the speed of evolution to the former, and the allowable rate structures and access terms permitted under an emerging "open" system. In addition, the issue will have regional implications with regard to Hungary's trading relations with Russia and the NIS as well as its neighbors in ECE and Western Europe. In attempting to resolve this debate, the historical record of regulation in pipelines and other natural monopolies in the U.S., Canada and other western nations will be useful in shedding light on alternative procedures, including rate and access regulations. MOL in particular has expressed an interest in developing a greater understanding of such comparable cases and regulatory models which may be useful in both understanding the alternatives and further defining their position in this debate. The resolution of this issue will be critical in integrating Eastern and Western European energy markets

HUNGARY: REFINING OVERVIEW[28]

Refinery	CrudeDistillation Capacity (b/d)
DKV	150,000
Tifo	60,000
Others	10,000
	220,000

[28] *Source: MOL*

Finally, it is important to note that the reorganization of Hungary's oil sector has not been welcomed unanimously in the international donor community. A recently published OECD/IEA report was somewhat critical of MOL in the following sense:

> "The organizational efficiency associated with larger organizations may not, however, be as significant as sometimes believed and an oil and gas infrastructure concentrated in one large integrated company could inhibit the development of an economically efficient industry, comprising both domestic and foreign participants and investors. The smaller companies likely to favor investment in the Hungarian market could perceive lessened chances of success in competing with MOL as presently structured. Integration also may interfere with potential interfuel competition between natural gas and oil products.
>
> The Hungarian government should review its rationale for restructuring OKGT and determine if there is merit in further restructuring. Such a review should clarify the objectives of restructuring and the priority accorded to each. It should also seek to balance the objective of positioning the oil and gas industry in Hungary as an efficient and viable competitor in the regional economic environment, as such an environment is expected to develop in the next five to ten years, with the interests of maximizing economic efficiency.
>
> The initiatives of the Hungarian government with respect to privatization are to be commended. Issues of competition, access and insuring effective independent management of the industry, however, may be of greater importance to the public interest than privatization and the level of foreign ownership, particularly at this time. The Hungarian government should clearly separate the objectives and processes of restructuring and of privatization in the oil and gas industry, and the objectives should[29] be clearly identified and explained to industry participants and to the general public."

Mineralimpex

Significantly, Mineralimpex was not included in the new national oil company, and will now have to compete with MOL as a crude oil and refined products trading company since MOL is establishing its own in-house S&D and trading capabilities. Previously, Mineralimpex performed all of the crude importing functions for Hungary's refineries, and a large portion of the refined product import and export activity. It will now have to compete for that business against a large integrated company that has hired a number of former Mineralimpex staff. Although Mineralimpex is still government-owned, it has plans for privatization. The formation of MOL, particularly as the S&D activities within MOL are established, could prove to be a stimulus to Mineralimpex's privatization.

Mineralimpex has developed a relatively high degree of sophistication in trading skills and organizational expertise. In addition to the creation of CONFIDES, Mineralimpex has entered into joint ventures with banks, the former OKGT, and foreign partners to execute trades and to pursue various market investments. It also has been responsible for government-to-government crude oil supply contracts with Hungary (largely Soviet crude through the Friendship III Pipeline). It also appears to be emerging as a sizeable participant in the physical and paper oil markets. In order to function effectively as a small, competitive international trading company Mineralimpex will have to compete as a much leaner and technically more efficient organization. This is particularly true in the case of refined product imports, owing to the increased presence of major companies in gasoline marketing and direct sales of other products to large end-users. In this regard, Mineralimpex plans to reduce staff size to less than 100 employees by late 1992 from around 430 employees in early 1991.

[29] *Energy Policies, Hungary, 1991 Survey, OECD/IEA, Paris, 1992.*

Mineralimpex also has plans to spearhead an effort to establish an energy futures exchange for Central Europe, tentatively named the "Central Europe Energy Exchange." This effort is being initiated by Mineralimpex in cooperation with the Hungarian Stock Exchange and the Petroleum Association of Hungary (with backing from the NBH and the government). The plan is to establish the exchange in Budapest, initially trading pipeline-delivered Urals crude oil, basis Százhalombatta, Hungary (at the DKV refinery and terminal facilities, and the nexus of the Adria and Friendship Pipelines), along with a gasoil barge or pipeline delivery contract, also basis Százhalombatta, on the Danube.

This proposed energy exchange represents a potential breakthrough in institutionalizing the oil market pricing and contracting procedures between the West and East. Its fruition will largely depend on international cooperation, particularly with regard to pipeline access and trading along the Friendship, and eventually Adria, Pipelines. The need for such a centralized exchange is apparent and the logistical support for the underlying cash oil market on which the futures exchange contracts will be based is clearly evolving towards a commodity orientation. Trading of Russian oil exports on the Friendship Pipeline is reportedly being done in informal forward cash contracts, much like the physical pipeline trade in the U.S. and Canada. The opening of the Adria Pipeline through Yugoslavia will add North African and Middle Eastern volumes to the Central European market, also traded forward to remain competitive with Russian supplies. On the products side, a connection between the Rhine and Danube Rivers is currently underway, so that a direct water linkage between Northwest Europe and the Black Sea market will be a reality, geographically centered in Central Europe, with the triangle composed of the DKV refinery in Hungary, the Slovnaft refinery in Bratislava and the Schwechat refinery near Vienna serving as the central internal market supply point, as well as barge and pipeline exchange point for an institutionalized cash and futures market. The realization of this plan will require substantial cross-border cooperation, particularly with regard to transportation access and customs and tax practices among the ECE nations.

3. Summary Observations

Technical assistance in Hungary was provided principally to Mineralimpex and to a number of organizations, such as banks and joint venture partners, with which it conducts commercial transactions.

As a pure trading company, with the prospect of privatization in the near future, Mineralimpex will have to compete against the trading affiliates of MOL as well as against the western oil companies now engaged in marketing in Hungary. The Mineralimpex business strategy is unique in the ECE nations in that it has chosen to become a private crude oil and petroleum products company not only within Hungary, but also in other parts of Europe and indeed across the world.[30] In addition, is has numerous joint ventures with western oil companies doing business in Hungary, including marketing, supply, and trading. Outside of the oil business, the company deals in chemicals, hard minerals, and related equipment.

In international oil trading, expertise in the management of price risk is of paramount importance. Given Mineralimpex's move into more competitive markets, IRG's training involved all phases of oil trading, with particular emphasis on futures, options, and swaps. Mineralimpex's analytical techniques, equipment and software support systems, and its implementation plans were also reviewed.

The individuals responsible for developing the proposal for the Central European Energy Exchange (discussed above) were participants in the training program. As a result of the internship training with the NYMEX in New York, Mineralimpex staff have been able to secure

[30] *Mineralimpex representatives attended the American Petroleum Institute convention in Houston, Texas, in November of 1991 in order to expand their trading contacts with U.S. and Canadian firms.*

NYMEX's support in establishing the proposed exchange.

IRG also worked with the commercial staff of the DKV refinery, now a central part of MOL. Under the new national organization MOL will have more flexibility in crude purchasing and products marketing and will draw on DKV's production department to establish an internal S&D capacity within MOL. In contrast to the CSFR, there are no plans to privatize the Hungarian refineries, so that the government monopoly will remain intact.

Thus, IRG's training of DKV staff focussed on the utilization of some of the modeling tools and cash and futures market contracting procedures which are necessary to perform these functions. In addition, under the internship program, a key member of DKV's management staff received training at the Lyondell Petrochemical Co. in the U.S. on such critical issues as feedstock evaluations and supply, marine chartering and scheduling, contract administration, long-term planning, pipeline crude supply and scheduling, and LP modeling.

POLAND

1. Summary of Technical Assistance Conducted

Definitional Mission — During the week of April 1-5, 1991, Dr. Ebinger and Ms. Annesley visited Poland to commence Component 3. The purpose of the visit was to meet with appropriate entities and assess current oil purchasing practices, identify and evaluate training and technical assistance needs, outline training course content, discuss the U.S. internship training program, and develop an overall project implementation schedule. Dr. Ebinger and Ms. Annesley met with a number of host country institutions including the Ministry of Industry, Ministry of Finance, Ciech-Petrolimpex, Petrola (private trading company), the Foreign Trade Research Institute, Institute of Economics of the Chemical Industry, the Gdansk Refinery, the Center for Energy Efficiency, and U.S. Embassy staff. A List of Contacts made during the trip is presented in Annex D.1.

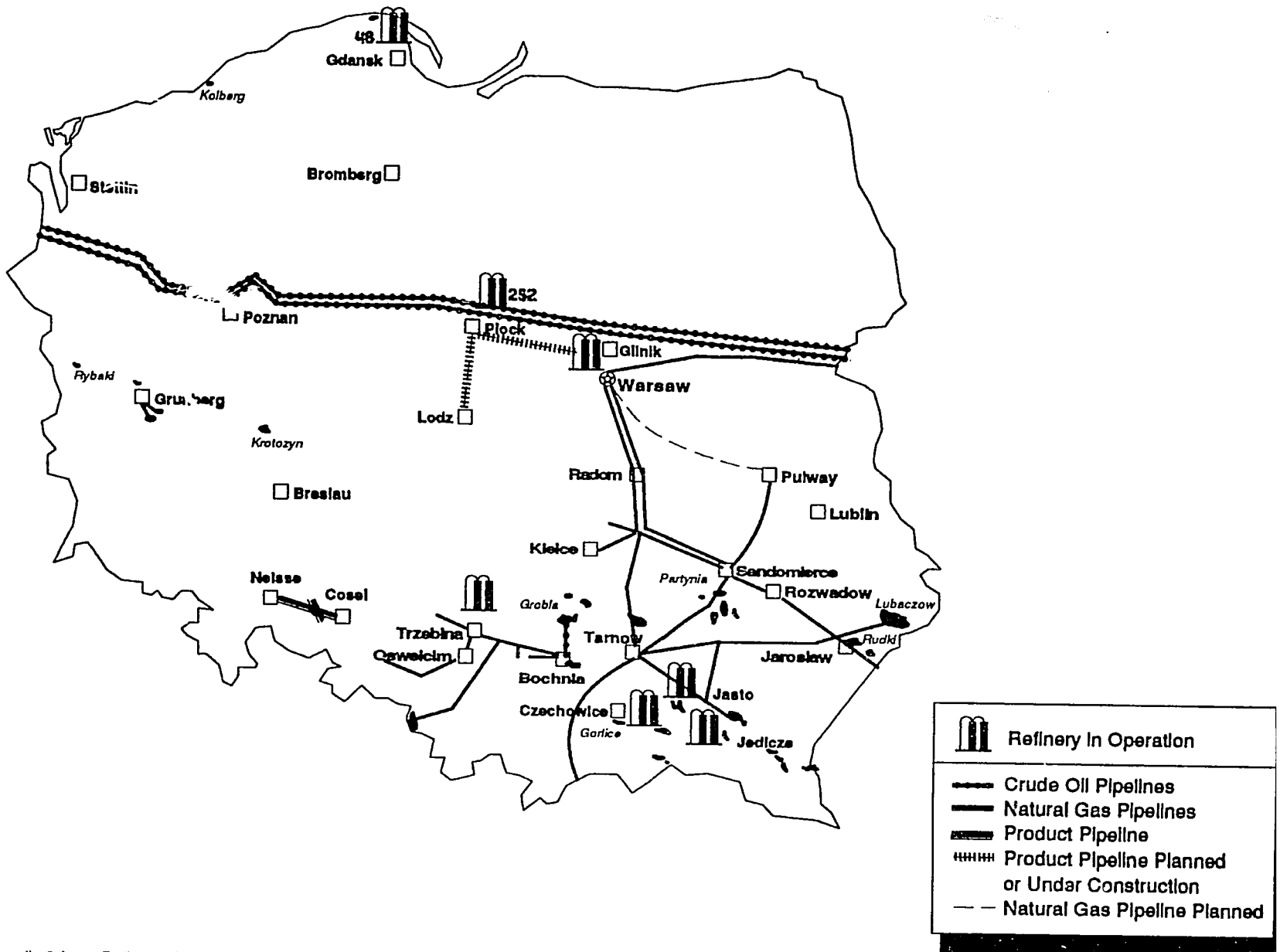
Oil Purchasing Seminar — During the week of May 20-24, 1991, the *Oil Purchasing Seminar* was held in Jachranka (just outside of Warsaw) and was conducted by Dr. Ebinger, Mr. Banks, Ms. Annesley, Mr. Boudrye, as well as several guest speakers from the oil industry. The latter included individuals from Reuters, Vitol, Morgan Stanley, Enserch Corporation, and the IPE. Representatives from Ciech Petrolimpex, the Ministries of Industry and Finance, CPN (state-owned distribution and marketing company), refineries at Jedlicze, Gdansk, Plock, Zaklady, and Trzebina, as well as from the private trading companies Petrola, Perfect Agio, Robinson, APEXIM, Inveco, and Mertrans attended the training sessions. Seminar topics incorporated crude and products trading, mechanics of trading, crude and product pricing, product forward markets, tendering, price risk management, finance, oil brokering, price formation and reporting, legal and contracting issues, and refinery optimization systems. A List of Training Participants for all technical assistance tasks is provided in Annex D.2.

Follow-up Technical Assistance — Based on collaboration with host-country counterparts and a formal request, IRG identified and developed additional technical assistance work which was carried out February 24-27, 1992 in Plock at the offices of Petrochemia Plock by Mr. Banks, Mr. Boudrye, and Mr. Jones. This was a *Refinery Procurement and Optimization Seminar* covering refinery optimization, a discussion and demonstration of technical analysis systems and chart analysis in futures and forward markets, as well as detailed elaboration of the use of LP models utilized to analyze various product streams and their profitability in refinery operations.

Internship Training — After the initial seminar IRG identified, in collaboration with host-country counterparts, two individuals for participation in the internship training program in the United States. They were Mr. Bernard Lubinski, Manager of the Marketing Department of Petrochemia Plock, and Ms. Joanna Sozanska, Manager of the Product Export Department at Ciech Petrolimpex. Ms. Sozanska's schedule included training at Enron Trading in Houston, Phibro International in Greenwich, Connecticut, AIG Trading in Fort Lee, New Jersey, and NYMEX and the Chase Manhattan Bank in New York City. Mr. Lubinski was with the Coastal States Trading Corporation in Houston. Both interns participated in the program from September 4-28, 1991.

Additional Technical Assistance — Based on a request from Ciech-Petrolimpex, IRG developed a follow up *Oil Purchasing Seminar* for the company's staff. This training covered the areas of 1) trading on the futures and option exchanges, 2) strategic applications of futures, options and swaps, 3) use of electronic price and market analysis information systems, and 4) financial and accounting topics related to monitoring trading activity and documenting a business/trading plan. These topics are of particular interest to Ciech-Petrolimpex owing to its increasingly independent role in relationship to Poland's refineries, and the need to develop more sophisticated value-added trading services to supplement its traditional direct crude oil acquisition function. This training was carried out by Mr. Poats and Mr. Jones in Warsaw May 21-22, 1992.

POLAND



Sources: IEG, International Petroleum Encyclopedia, Saloman Brothers and Oil & Gas Journal

2. Status of Oil Procurement Issues

A. Background/Overview

Of all the nations of the ECE region, Poland has the lowest per capita consumption of crude oil and petroleum products owing to lack of indigenous liquid fuels and a transportation system overwhelmingly based on coal and electricity. Historically, over 90 percent of Poland's crude and petroleum products have been imported from the USSR, with the rest obtained either by sea from the USSR or by a few spot sales of motor gasoline and diesel fuel. In 1988, imports totaled 353,000 b/d, decreasing to 317,000 b/d and 237,000 b/d in 1990 and 1991, respectively. In January 1991, COMECON supply guarantees were abandoned and the five year average price for Soviet crude oil abolished. This created problems since the low cost of pipeline supplies makes Poland a natural market for the USSR. In addition, the cost of pipeline transportation is based on monthly average costs and the pipeline itself has substantial excess capacity.

Despite initial fears of a Soviet supply cutoff, Poland has been able to maintain Soviet deliveries (albeit at much lower levels than in the past) and also has been able to diversify suppliers. Of total crude and product imports in 1991, about 125,000 b/d were from the USSR (53 percent of total imports), 60,000 b/d from Iran, 20,000 b/d from North Sea (principally Norway) and the remainder from Saudi Arabia and other sources. Poland paid for approximately 20 percent of Soviet supplies through a barter arrangement designed to boost sagging Polish exports to the Soviet market. Poland supplied pharmaceutical products and medicines in exchange for the crude oil.

Clearly, Poland has made a concerted effort to deal with the decrease in Soviet deliveries by actively seeking new sources. In addition to the suppliers mentioned above, the Government has approached Algeria. While Algerian crude is a good feedstock for the Gdansk and Plock refineries, large tankers (above 200,000 tons) from North Africa cannot pass through the Danish straits, resulting in offloading onto smaller tankers. These transfers raise the cost of crude delivered to Baltic ports by $2-3/barrel in comparison to Soviet shipments.

Poland's total refinery capacity is 373,000 b/d, with the refinery at Plock accounting for 70 percent. Of total product output, the Plock Refinery produces about 35 percent gasoil, 20 percent gasoline, 15 percent fuel oil, 10 percent petrochemical naphtha, and 5 percent asphalt and bitumen. In general, there is a need for additional cracking capacity for diesel and gasoline. In fact, it is in the motor gasoline market where there is the greatest market competition: 60 percent of the country's gasoline requirements are produced domestically while 40 percent is imported.[31] Private companies are actively involved as importers.

POLAND: REFINING OVERVIEW[32]

Refinery	Crude Distillation Capacity (b/d)
Plock	252,000
Gdansk	48,000
Others	73,000
	373,000

Historically, the Gdansk and Plock refineries received about 80 percent of their crude oil feedstocks from the USSR. In the case of the Plock Refinery, crude is received by the Friendship Pipeline and also receives some feedstock or export products via rail from Germany. The Gdansk Refinery is served principally by sea but 10-12 percent of its supplies are received via pipeline connection with Plock. The small refineries in the south are accessed mainly by rail or truck.

[31] *The southern refineries are not able to produce gasoline in large volumes and mainly produce low octane gasoline (78).*

[32] *Source: Petrochemia Plock and IRG estimates.*

Since Gdansk cannot be served by ships over 125,000 tons in capacity, historically it has cost as much as $2-$3/barrel more to get crude to Gdansk than to deliver it from the USSR to Plock ($.80/barrel). Likewise, whereas crude from the USSR could be purchased on the day of sale, Gdansk had to arrange forward supplies. Also, the cost of operating the Gdansk refinery is higher owing to problems of moving cargoes from ships to storage tanks, lack of pipelines for offloading, and too few berths at the port leading to demurrage charges.

Current capacity at the Gdansk Refinery is around 50,000 b/d but there are plans being studied to expand this to 110,0000 b/d by 1995 at a cost of $400-$500 million. The refinery produces around 12,000 b/d of gasoline, 12,000 b/d of diesel, 7,000 b/d of heating oil and small volumes of base lubricants, asphalts, liquid gases, and jet fuel. Since the recent implementation of oil sector reforms, the refinery has vigorously pursued setting up an oil trading organization for its own account. Desperately short of market information,[33] refinery staff expressed a need to know more both about how to buy crude as well as to sell products. Key officials understand concepts such as "backwardation" but don't know how to utilize such ideas to trade in the market. They have sent refinery staff to the Oxford Course in the UK, as well as to the U.S. for training.

One of the problems with the centralized planning system was the lack of any infrastructure to deal with emergencies or unforeseen contingencies. Because the pipeline terminal from the USSR has a storage capacity of 30,000 b/d, the refineries are discouraged from holding stocks and are forced to buy from the pipeline even if its own stocks were adequate. Other key issues confronting the refineries are (1) how to use blended crude, (2) need for hydroskimming, (3) how to operate refineries using different crude oils, (4) need expertise on how to run petrochemical-based refineries, (5) need to rationalize refineries prior to EEC membership to insure they are competitive and, (6) the need to build a new refinery but require assistance to design it to meet future needs.

Finally, there is an urgent need for additional desulphurization capacity especially for diesel. This is especially important since diesel capacity is expected to rise from 40,000 b/d to between 70,000 - 85,000 b/d by 1995. There is also a need to reduce the high sulphur content of feedstocks, and there are plans to conduct a feasibility study on hydrocracking these feedstocks.

B. Organizational Capabilities

Since January 1, 1990, the Polish energy system has opened up to the point where any end user now has the legal right to procure its own oil. However, in practice while refineries are now able to trade directly on the world market, they lack the requisite skills and knowledge to participate in price risk management efforts.

Currently, the status of the oil procurement system in Poland is in a great deal of flux, owing primarily to the uncertainty of the path that privatization and/or industry reorganization will take in Poland's oil economy. In November 1991, the Polish Government announced plans to auction off major portions of the downstream oil sector, including refineries, transportation and storage infrastructure, retail marketing and distribution. The impetus for the privatization plan is to establish the Polish downstream oil sector on an equal competitive footing with Western Europe. In order to accomplish this, substantial investment capital, expertise and vertical coordination among industry segments will be required. With this in mind, the privatization plan, or controlled auction, will be structured to avoid dominance by any one company across a given activity. Rather, the goal is to create several integrated companies in the downstream, built around efficient regional combinations of oil refining, transport and marketing assets. Structuring joint venture relationships with foreign companies has largely been resisted owing to the belief that extensive reliance on these arrangements will not guarantee the development of an efficient, integrated system, and may in fact slow the process of controlled privatization.

[33] *They have access to Petroleum Argus.*

With this uncertain backdrop, the Polish downstream oil industry continues to attempt to improve its competitive position, but largely in piecemeal fashion and without the type of coordination and financial investment needed to make substantial efficiency gains. For example, crude oil sources have been diversified somewhat as former Soviet supplies declined, but the cost of importing crude into the Gdansk (Baltic Sea) port is still relatively high, owing to the need to offload large tanker shipments. Similarly, the lack of downstream integration continues to take its toll on efforts to streamline or rationalize the gasoline marketing sector. Refineries are frustrated by their lack of control over sales from the refinery gate, while domestic output often remains at a disadvantage to import competition as a result of high production costs and/or a tax and duty structure which encourages fraud and abuse rather than "equalizing" foreign and domestic prices. Most importantly, Poland's refinery management has clearly expressed an interest in controlling its refinery operations, feedstock selection, and product sales in a manner which will more closely approach an optimal solution, rather than relying on others to perform this function for a fee, or without regard to its operating costs and plant utilization.

Ciech-Petrolimpex

Ciech-Petrolimpex, the established state-owned (now joint stock company) trading company, is the largest trading entity in Poland with over 1000 employees. In 1989, the company had gross revenues of $6-7 billion. It is the intention of the government to have all the companies that comprise Ciech become limited companies with at least 20 percent private capital — and a higher percentage if it makes strategic sense for the nation.

Although there are currently no legal restrictions on who can trade crude oil and petroleum products, Ciech-Petrolimpex remains in a dominant position owing to its extensive contacts in the international arena and its network of offices abroad. It subscribes to Reuters and Platts pricing services, and although the company has not been involved in paper trading, there is strong interest in these markets. Ciech-Petrolimpex is buying on term and spot markets.

The company now must compete with private importers, but maintains a favorable position in its access to finance and historical working relationships with the refineries, international suppliers and the indigenous marketing and distribution community (largely CPN). The company also may be in a better position now to compete with private petroleum product importers and exporters since the higher import tax law took effect last year. Moreover, import quotas are being implemented effective early 1992. Ciech-Petrolimpex also is considering participation in some limited downstream marketing ventures with the refineries, to act as its outlet for product imbalance (export - import function). For example, Ciech-Petrolimpex may be sufficiently connected and sophisticated in international trading circles to work with the refineries in structuring longer-term processing deals, or other arm's-length venture arrangements.

Ciech Petrolimpex has traditionally worked with refineries in identifying and acquiring its desired refinery feedstock, although its degree of sensitivity to refinery desires has been a subject of contention. Before the purchase of crude oil, the refineries (each refiner has a commercial director) and Ciech-Petrolimpex agree on the quantity, quality and price of feedstocks. One of Ciech-Petrolimpex's major problems is the very low level of Polish stocks in comparison to world standards and, subsequently, one question of great interest to the company is how stocks are financed in IEA countries.[34] Ciech-Petrolimpex officials stated that one of its major problems is that the Government does not realize that it is not the refineries' responsibility to finance 120 days of stocks. Financing of stocks is not only an industry but also a national problem.

[34] *Some countries in the IEA do mandate that refineries store reserves and set minimum stock levels in days of supply.*

Petrochemia Plock

Petrochemia Plock is the largest refinery/petrochemical complex in Poland with a crude throughput capacity of 252,000 b/d, making it one of the most important strategic/industrial assets in the whole of the Polish economy. Yet, there remains considerable doubt as to how the entire oil industry will be re-structured and what role the refinery will play. While the government continues to weigh its plans, the refinery finds itself in an increasingly difficult position. For example, negotiations with the Russians have demonstrated that the refinery's traditional suppliers will guarantee neither supplies nor a reliable delivery schedule. Ciech Petrolimpex is still responsible for procuring crude supplies for the refinery (based on government-to-government negotiations) and Plock is currently in debt to Ciech. On the other hand, Plock's customers are not always able to pay promptly, if at all.

Plock's two main avenues for receiving crude are via the Friendship Pipeline through Russia and Belarus, as well as from the port of Gdansk. Supplies are delivered to Plock from Gdansk by pipeline and overland by rail and truck. The capacity of the crude pipeline is 120,000 b/d. It is generally recognized in Poland that there is a need to diversify supply sources and for this reason the Gdansk-Plock pipeline capacity currently is being doubled by the end of 1992 through the addition of two pumping stations. In addition, there are plans under development to expand the tonnage capacity of the Gdansk port to be able to handle larger tankers/cargoes and thus increase deliverability inland.

While Ciech-Petrolimpex negotiates crude supply contracts for Plock, the refinery establishes delivery schedules, volumes and quality. In addition to the refinery's lack of control over procurement and inability to establish security of supply (at least with Russian Urals crude), it is difficult for Plock to guarantee contractually the quality of Arabian and Iranian Light supplies. Indeed, it is very difficult on the world market to negotiate successfully quality guarantees for these crudes, but the refinery may be able to negotiate a price reduction when quality is off-spec.

Plock expects to process 174,000 b/d of crude in 1992, of which:

Amount	Type	Percent
87,000 b/d	Urals	50
40,000 b/d	Iranian Light	23
35,600 b/d	Arabian Light	20
13,800 b/d	Brent	7

A key question concerning the four crude types listed above is how the refinery should procure them — whether on a spot or fixed contract basis. Since several Middle East producers are actively and vigorously pursuing new customers in the ECE region, as well as in the NIS, Plock should explore the possibility of buying these crudes on a netback basis. The rationale for this approach is that these suppliers may be willing to make special deals in order to break into the ECE market and develop new customers. In addition, Plock's management is very interested in other crudes available on the world market such as Isthmus (Mexico) and Chinese crudes.

To further complicate the situation, Plock has little control not only over the procurement of crude oil, but also over the distribution of products. Although product pipelines have been built for the exclusive use of Plock, the refinery in reality has limited control over their operation — there is a separate company which owns and operates these lines. In other words, the product in the pipeline belongs to Plock while the physical line is owned by a different entity. Terminals and storage sites — there are about 20 of the latter around the country — are owned and run by CPN, as are the tank trucks operating out of these terminals. For these reasons as well as the

need to diversify crude and product transportation options, it is generally acknowledged that additional pipeline construction is necessary. These pipelines can not only provide greater domestic links, but also international access (for example, to the CSFR market).

At the retail level, Plock again has little control over the marketing of the products it produces. There are approximately 2,500 gasoline stations in Poland, one-half owned and operated by CPN, the rest by private entities. Contracts with the terminals are unrelated to the gasoline stations. The private operations are often importing gasoline from Russia, Sweden, and Germany rather than buying from Plock because imports are cheaper: the government formula for imposing duties on the imported products have been based on domestic retail prices rather than, for example, Amsterdam-Rotterdam-Antwerp (ARA) prices. With domestic petroleum products prices lagging somewhat behind international levels, it can be cheaper to import. Meanwhile unused capacity sits idle at Plock.

Plock thus finds itself separated from the procurement of its crude supplies and has little control over the distribution, storage, and marketing of its products. Any restructuring and/or regulatory reform eventually instituted in the oil industry should be designed to bring the decision-making functions of Petrochemia Plock closer to the realities of the market and the customer. Refinery officials estimate that for every $1 of profit in the oil industry chain, Plock receives 10-20 cents, and yet Plock is investing significant sums of money to modernize and meet emerging market demand for higher volumes of lighter, cleaner products.

In fact, the Polish government recently announced that effective March 1, 1992 the content of lead in gasoline will be limited to match western European standards. The contents of lead in all gasolines sold in Poland will not be allowed to exceed 0.15 grams per liter. Currently only the 98 octane gasoline imported from the West matches this norm. The 86 and 94 octane gasolines refined domestically contain .56 and .30 grams of lead per liter, respectively. The refineries at Plock and Gdansk are expected to be able to produce the higher octane gasolines immediately. Plock recently added MTBE capacity which will allow greater flexibility in producing the higher grades of gasoline. Meanwhile, the three small refineries in southern Poland will require upgrades to meet the new specs.

Over the past 2 years, and recently every month, Plock has communicated with the government in order to come to some resolution regarding the company's position — principally its inability to control the purchase of crude as well as marketing efforts. It has asked the government to consider the vital strategic nature of the refinery and to implement regulatory reform which would better guarantee its survival. Specifically, refinery officials commented that a more vertically-integrated oil industry structure, of which Plock would be a part, would streamline and strengthen the domestic industry. The implication is that were Plock to become a separate business entity, it would not be able to survive against large foreign competitors. Plock's management recognizes that eventually foreign companies will have to be brought in to invest in the Polish oil and gas infrastructure, especially downstream. There are benefits of, for example, bringing in a foreign oil company to develop a retail base (building gasoline stations) with the refinery taking an equity stake and providing the product. There also is interest in utilizing the company's spare capacity for processing agreements. Plock has already been approached with several deals and are reviewing proposals.

With regard to outside investors, however, the refinery management finds itself inundated with business proposals and ventures and generally has no basis from which to evaluate these organizations and their overtures. Consequently, Plock's management is actively seeking some way to be able to evaluate foreign companies.

3. Summary Observations

IRG's technical assistance in Poland focussed on Ciech-Petroleimpex and Petrochemia Plock, the two principal players in the oil supply and procurement industry. However, a significant number of additional organizations received training under the project.

The training of Ciech-Petroleimpex staff emphasized the areas of 1) trading on the futures and option exchanges, 2) strategic applications of futures, options and swaps, 3) use of electronic price and market analysis information systems, and 4) financial and accounting topics related to monitoring trading activity and documenting a business/trading plan. These topics are vital to Ciech Petrolimpex owing to its increasingly independent role in relationship to Poland's refineries, and the need to develop more sophisticated value-added trading services to supplement its traditional direct crude oil acquisition function. The development of these skills is imperative for enhancing its competitive position, whether it becomes the trading and crude oil procurement arm of an integrated national oil company, or it develops an independent role similar to that of Mineralimpex in Hungary.

Petrochemia Plock is interested in selecting and purchasing its own crude oil feedstock, thereby exercising greater control over these costs, which represent over 80 percent of the refinery's total variable operating cost. Plock is already employing LP concepts in planning refinery operations, using a spreadsheet model developed in-house. While the model does have its limitations, it is clear that the Commercial Department recognizes the need for planning refinery operations with a view to maximizing profit.

The training provided to Petrochemia Plock was extremely effective in directly addressing these crucial problems confronting the refinery's management. IRG's training covered oil procurement, market analysis, and refinery optimization studies. In addition, there was discussion and demonstration of technical analysis systems and chart analysis in futures and forward markets, as well as further detailed elaboration of the LP utilized to analyze various product streams and their profitability in the refinery.

ROMANIA

1. Summary of Technical Assistance Conducted

Definitional Mission — During the week of April 8-12, 1991 Mr. Banks and Dr. Safer visited Romania to commence Component 3 activities. The purpose of the visit was to meet with appropriate entities and assess current oil purchasing practices, identify and evaluate training and technical assistance needs, outline training course content, discuss the U.S. internship training program, and develop an overall project implementation schedule. Dr. Safer and Mr. Banks met with the Ministry of Resources and Industry, PEI, the Romanian Bank for Foreign Trade (RBFT), PECO (the state-run distribution and marketing company), Manufacturers Hanover Bank/Bucharest, and Shell International Petroleum Company/Bucharest. IRG also met with U.S. Embassy staff. A List of Contacts made during the trip is presented in Annex E.1.

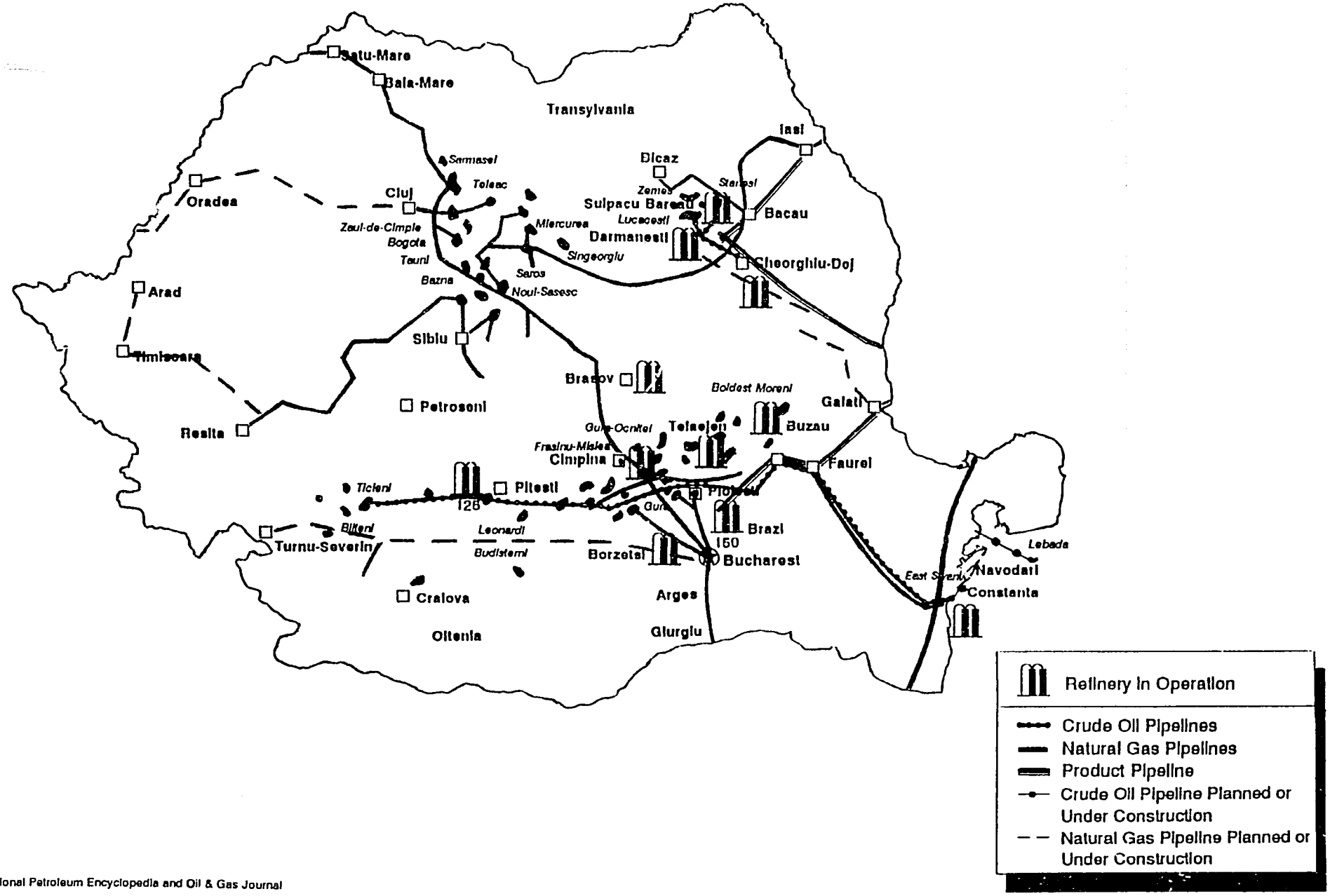
Oil Purchasing Seminar — May 7-9, 1991 the *Oil Purchasing Seminar* was held in Bucharest, conducted by Dr. Safer, Mr. Poats, and Mr. Jones at the offices of PEI. Representatives from PEI, PECO, the Romanian Bank for Foreign Trade, Arpechim Pitesti Refinery, Brazi Petrochemical (refinery), Tomis Oil Maritime (private shipping agent), Petromidia Refinery, and Chemenco (private trading company) attended the sessions. Seminar topics encompassed cash oil markets, cash/futures contracting applications, implementation issues, options and swaps markets, hedging and trading examples, crack spread trading systems, basis risk management, technical analysis systems, and options pricing models. A List of Training Participants for the whole project is presented in Annex E.2.

Follow-up Technical Assistance — Based on the initial seminar and in collaboration with host-country counterparts, IRG identified additional technical assistance work which was carried out December 16-18, 1991 at Arpechim Pitesti Refinery in Pitesti by Dr. Safer, Mr. Jones, and Mr. Boudrye. This was an *Oil Procurement and Refinery Economics Workshop* for the staff of the refinery as well as personnel from PEI. Material presented and discussed included oil futures trading and optimization of the logistics system and refinery operations, including concepts of organization and the planning process. In addition, discussions were held on the implementation process, refinery optimization, investment planning, and evaluation of third party processing agreements. These topics were illustrated with concrete examples from IRG's refinery optimization model of oil purchasing issues and refinery planning. The quantitative examples included the refinery value of using additional Arab Heavy crude, the impact of price changes for Urals crude, and two alternative processing agreements. There was also a demonstration of the refinery model and optimization software.

Internship Training — After the initial seminar and the follow-up work, IRG identified three individuals for participation in the internship training program in the United States. They were Mr. Aurel-Fotin Bacila, General Manager of PEI, Mr. Valeriu Iancu, Deputy General Manager of PEI, and Mr. Patru Viorel, Chief of Production at the Arpechim Pitesti Refinery. Their schedule included training at Chevron International Oil Company in Houston and Pascagoula, Mississippi, Phibro International in Greenwich, Connecticut, AIG Trading in Fort Lee, New Jersey, and NYMEX in New York City. The interns participated in the program from March 12-27, 1992.

Additional Technical Assistance — Over the period May 25-27, 1992 IRG conducted *Refinery Optimization and Advanced Price Risk Management Seminars* in Romania. Topics included the evaluation of oil processing agreements, alternative approaches to hedge refinery crack spreads, and the role of long-term swap or "over-the-counter" contracts in securing oil costs and refining margins. The audiences for this assistance included refinery operations, planning and computer analysis staff from the Arpechim Pitesti Refinery (May 25-26) and engineering and market analysis staff from PEI in Bucharest (May 27). The presentations were made by Mr. Jones and Mr. Poats.

ROMANIA



Sources: IRG, International Petroleum Encyclopedia and Oil & Gas Journal

2. Status of Oil Procurement Activities and Capabilities

A. Background/Overview

Romania has the largest and most developed oil production and refining sectors in the ECE region, stemming from major investments by western oil interests for several decades prior to World War II. Romanian oil and gas reserves are estimated a 1.17 billion barrels of oil and 4.7 billion cubic feet of gas. However, the industry recently has suffered a serious decline in oil production, decreasing from about 200,000 b/d in 1989 to 160,000 b/d in 1990, and to an estimated 134,000 b/d in 1991 owing to lack of investment by the former communist regime. Romania continues to have high potential for major new oil and gas discoveries, and western oil companies are seeking new drilling concessions in the Black Sea and onshore.

Romania imports about two-thirds of its refinery feedstocks, and exports around 25 percent of its petroleum product output. Soviet crude supplies had historically accounted for about 25 percent of total crude imports, and were paid for under COMECON barter arrangements or in rubles. Imported crude oil arrives at the Black Sea port of Constanza and is shipped to Romania's inland refineries by pipelines; some product exports are also carried by product pipeline back to Black Sea ports for shipment by tanker to European and other destinations. Romania also imports crude from Iran, Libya and Iraq (the latter, prior to the United Nations embargo). Some of these import deals are barter arrangements; for example, imports from Libya are paid for through construction services and agricultural products. The present Romanian government expects to continue such transactions with Middle Eastern countries.

By early 1991, this well established pattern of purchasing crude on world spot markets and exporting finished products for hard currency was threatened by declining domestic production, shortages of hard currency, insufficient investment in refinery upgrades and storage facilities, and the U.N. embargo on Iraq[35]. This was compounded by a severe economic downturn. Total imports decreased from 112,000 b/d in 1990 to 27,000 b/d in 1991. Borrowing to finance crude imports has become increasingly expensive owing to Romania's political and economic instability. Refinery capacity is substantially underutilized and product exports are declining, further decreasing hard currency earnings. In addition, storage capacity is estimated at only 5-10 days supply — well below a desired level of 30 days — owing to the previous government's decision not to invest in upgrading storage capacity, opting instead to increase refinery runs and product exports to earn hard currency.

The Romanian industry under the guidance of Rafirom is planning to utilize the Rhine-Main-Danube channel extensively when it opens in the next few years. This channel will open river barge traffic through Europe from the Black Sea to Rotterdam; it is a more economical route than the Mediterranean, and will also expand petroleum products trade with countries along the Danube. In addition, facilities for loading, discharge, and storage of finished and unfinished petroleum products are scheduled for expansion.

B. Organizational Capabilities Petrolexport-Import

Romania has considerable experience in purchasing oil and exporting finished products. PEI is responsible for the import and export of energy products, and has a virtual monopoly on these activities within the country by virtue of their expertise, access to foreign exchange (albeit limited), and mandate of the government. While other entities, such as industrial end-users, the electric utility company or the petroleum products marketing company, PECO, are by law allowed to import petroleum products, they have not been involved in this activity owing to lack of in-house market skills and PEI's dominance. PEI imports crude for the refineries, some

[35] *Approximately 12.4 million barrels of crude from Iraq was held up because of the embargo, and Iraq owed Romania $1.5 billion as a result of*

products for end-users, and arranges all of the petroleum product exports in return for commission fees. It seldom trades for its own account. As in other ECE countries, the refineries have no involvement in arranging their crude oil imports — PEI is their exclusive agent for this activity.

PEI is experienced in physical oil trade, and its top executives have a good knowledge of how paper markets function. It lacks the technical infrastructure, sufficient financial backing and depth of staff skills to make a major entrance into the hedge markets. PEI is very interested in pursuing such activity through the services of an "over-the-counter" market maker. Also, it is interested in methods to protect long-term refinery operating margins, in addition to processing agreements, so that adequate margins can be maintained to finance necessary upgrades. Unlike the West, where rising oil prices are normally associated with rising refinery profit levels, the subsidized domestic Romanian prices and depressed demand prevent Romanian refineries from recapturing higher oil costs. Therefore, PEI is appropriately seeking to establish a long-term cap on its crude oil costs, but the ability to execute such a plan is restricted by its limited financial assets and higher immediate demand for capital. Thus, a low cost-approach to hedging both absolute crude prices and the refining margins as replicated by the "crack" spread, are priority concerns for PEI and indeed may be tied to the structure of future processing agreements.

Although there has been some discussion of privatizing PEI, and possibly the refineries subsequently, Romania has been slower to move on this issue than the rest of the ECE countries, largely owing to the uncertain government transition process since late 1989. At the time of IRG's visits in mid- and late 1991, there was considerable ambiguity regarding the extent to which the industry would be liberalized under the new government. Several schemes were being proposed, including the privatization of the refineries, but the favored alternative seemed to be the establishment of a government-owned holding company similar to the Hungarian model. Nevertheless, PEI's lock on foreign oil acquisition and product export trade reflects the current government's interest in moving slow on reform and maintaining control over key industry sectors. On the other hand, this control may in fact be part of an effort to maintain subsidies to inefficient units and avoid losing control to private or "diverse" interest groups.

Refining Sector

Over the course of the contract the oil sector, as represented collectively by the refineries under Rafirom, PEI, and the Ministry of Resources and Industry, seemed to be coming to a consensus on the nature of actions needed to secure financing and the long-term growth of Romania's oil industry, particularly its refining sector. The basic requirement is to improve the export economics and capability of the major Romanian refineries. The refining sector is substantially under-utilized[36] owing to poor economic conditions, lack of investment in upgrading capacity, high crude costs with the loss of subsidized Soviet crude, currency limitations, and competition from petroleum product imports. As a result, the country suffers from a shortfall of fuel oil, and a loss of its traditional light product export market.

In order to promote the growth of the refining sector, the refineries must have crude oil available to process. Ideally, this access would be direct, in the form of a bank line of credit against which crude could be acquired and the resulting product sold. This access also could be achieved under processing agreements, requiring the refinery to give up a certain "slate" of refined products in exchange for a processing fee or the right to "take" a certain portion of the resulting product yield (e.g., give-up gasoline and diesel while keeping naphtha and fuel oils).

[36] *For example, the Pitesti Refinery has recently been operating at levels only sufficient to provide feedstock to its petrochemical units.*

ROMANIA: REFINING OVERVIEW[37]

Refinery	Crude Distillation Capacity (b/d)
Arpechim Pitesti	125,000
Petrobrazi Ploiesti	150,000
Others	381,500
	656,500

Assuming that the government is able to secure more crude oil through an acquisition fund, barter, or various "participation" arrangements, a major role for PEI as the national trading organization could develop in hedging the economics of refinery processing. This could take the form of forward product sales, the combination of forward purchases of crude oil and sales of product (i.e., the "crack" spread on the paper markets), or some combined "over-the-counter" (i.e., "off-exchange") arrangement whereby a bank guarantees a minimal refining margin in exchange for a return payment from the refinery in the event actual margins exceed the pre-defined target hedged under the "over-the-counter" contract terms. More likely, PEI could offer competing processing terms to Romania's major (coast-accessible) export refineries, and execute favorable product trades in order to optimize the net value to Romania's refineries based on the terms of the processing arrangement negotiated.

In fact, PEI is interested in directly negotiating processing arrangements proposed with Romania's refineries. While these arrangements are ostensibly beneficial as a means of putting otherwise idle refinery capacity to work, they are also motivated by the desire to earn hard currency. In this event, the return on the processing deal may be quite favorable when evaluated at the unofficial exchange rate, compared to the alternative of purchasing crude oil in dollars for sale into the domestic market at lei under official exchange rates. In addition, the proceeds from processing deals should provide capital to finance the desperately needed upgrades in refinery process units.

Processing arrangements are already being discussed in Romania. At the Petromidia Refinery at Constanza trader Marc Rich is providing Iranian crude and paying a processing fee in the form of millions of dollars to upgrade the refinery. At the Arpechim Pitesti Refinery, there have been discussions with several companies concerning potential processing arrangements: a Chevron proposal to process 30,000 b/d and Gotco to process 40,000 b/d. In addition, traders Marimpex and Vitol are discussing short-term deals to refine 30,000 b/d and 40,000 b/d, respectively. Coastal Corporation also recently negotiated an agreement to process crude in the Arpechim Pitesti Refinery, possibly complemented by a marketing venture to sell the resulting product output both domestically and internationally.

Financial Institutions

Oil-related financing is conducted primarily through foreign banks, including an active branch of Manufacturer's Hanover in Bucharest. The RBFT has issued letters of credit for external purchases of crude oil in hard currency, but the bank has not been involved in financing oil trading positions or oil processing arrangements. It has dealt exclusively with PEI in financing internal transactions with the refineries and the marketing company. The Romanian National Bank is not involved in these transactions and has not indicated an interest in doing so in the future. Other banks in Romania have no experience in trading and price risk management transactions, but this may change in the future depending on the outcome of bank privatization and banking law reform which was being studied in the middle of 1991.

[37] *Source: Oil and Gas Journal, International Petroleum Encyclopedia, and IRG.*

PECO

PECO is the marketing and distribution company for petroleum products. It purchases directly from the refineries, but PEI operates as its agent for imports of specialty petroleum products such as No. 4 fuel oil and LPG's, as well as for the export of gasoline and gasoil. PECO pays a small fee to PEI for its import/export service. It has no capabilities in product procurement and price risk management techniques and, although PECO initially expressed interest in learning more about these issues to be able to operate more independently, it has not pursued this in st.

3. Summary Observations

Technical assistance in Romania was focussed on PEI and the Arpechim Pitesti Refinery.

Clearly, PEI and Arpechim are giving serious consideration to entering both processing and long-term price or "margin" protection relationships. IRG's training on the elements and alternative structures of oil processing agreements was very timely and appropriate since Arpechim was actively engaged in negotiating a processing agreement at the time of IRG's May Workshop. Specific topics included the use of refinery LP models to evaluate the incremental refining economics from which processing agreements should be evaluated, and alternative strategies for negotiating more favorable terms. In addition, the seminars and workshops throughout the contract covered alternative methods for hedging refining margins and proved of significant value to the computer support and planning personnel at the refinery.

PEI was most interested in applications of price risk management mechanisms to which it has had only very limited exposure such as futures, options, and swaps. In addition, owing to PEI's great interest and likely future participation in processing arrangements, IRG targeted its refinery economics, LP modeling and processing agreements evaluation training to PEI as well. The impact and relevance of these topics to PEI was substantial since it may eventually seek to offer more favorable processing terms to Romania's refineries as a competitor to offers from outside firms. In addition, because the market analysis expertise lies largely at PEI, refiners with an interest in utilizing hedging techniques are more likely to turn to PEI as a service agent, particularly if it enjoys more favorable access to credit, and requisite market analysis tools and participants. PEI also received training in the proper use and interpretation of their existing oil market price information services, to which PEI already enjoys access. IRG also demonstrated the use of commercially available software to support market analysis, hedging and trading decisions.

4

SUMMARY AND CONCLUSIONS

A. Key Themes

Based on the IRG's team extensive assistance within the five ECE countries supported under this USAID program, with officials and technical specialists representing a range of oil trading, refining, marketing, consumption, finance and government policy perspectives, the following pervasive themes with respect to improving oil procurement capabilities (including supply diversification and price risk management) have been identified.

1) *Finance*

Oil procurement and finance are inexorably linked. Without financial resources, whether taking the form of hard currency, a solid national bank credit line, external loans, equity or joint venture participation terms, oil procurement cannot be conducted except on a barter basis. Yet, barter is subject to many drawbacks in the form of increased transaction costs, loss of transparency in the resource allocation role of prices, and changing terms of trade which inject substantial economic risk into the transaction. Transparent market prices and market-based hedging techniques can circumvent much of the inefficiency and transaction risk associated with barter. However, to the extent that the banking entities are not familiar with and supportive of oil market economics, contracting and hedging techniques, some of the more sophisticated and potentially rewarding transactions will not be supported.

Several of the ECE countries, including Bulgaria, Romania and to some extent Poland, are limited in the oil procurement measures which can be taken (including hedging or direct cargo purchases) by limitations on available bank funds, and by restrictions on foreign and private participation. In these countries oil procurement and asset ownership is more centralized, with financing largely limited to the national bank. Outside banking relationships are either not allowed or discouraged. In part owing to the overall fiscal condition of these countries, and in part as a result of a lack of experience and understanding of the procedures and principles involved, the national banks in these countries do not appear to be actively supportive of the petroleum industry's interest in pursuing a more aggressive oil procurement and price hedging policy.

By contrast, in Hungary and the CSFR institutional knowledge among the national and foreign trade banks is much higher, and the banks are more actively participating (as partners) in oil procurement and price hedging activities. Moreover, in these countries oil finance is not monopolized by state interests, so to some extent competition motivates support. In turn, sources of finance need to know that the oil procurement activity being undertaken, its potential return in direct trade or perhaps a resulting refinery or marketing margin, are sufficiently secure to expect a reasonable return on the loan or investment. Indeed, as banks come to understand the nature of the price and supply risks in the petroleum market, and as their confidence level in various contracting and trading strategies grow, they will increasingly recommend that such strategies be pursued, and demonstrate this by offering more favorable financing terms where price hedging strategies and risk reduction are included as an element of a transaction.

Thus, a fundamental barrier to effective oil trade and procurement strategies is the limitation on financial resources, including the knowledge of the industry served and the appreciation of the benefits of price or margin risk reduction. Related to this issue is that of industry ownership and competition allowed both directly and through the support service activities, including financial

services. National banks should support efforts to finance oil acquisition without necessarily supporting privatization or other forms of industry restructuring, when an acceptable return on the trade can be demonstrated. Lacking internal resource, financial authorities in some of the "closed" countries noted above, should consider opening their oil industry to the financial knowledge and resources of outside interests. The form of such outside participation could simply be co-financing, perhaps a syndication or various forms of trade, and short-term project finance.

2) *Oil Price Policy and Market Regulation*

The use of market mechanisms to improve oil purchasing capability, and ultimately to solidify the financial operation of an oil industry enterprise, pre-supposes that standards of market efficiency will drive behavior. To the extent that government regulation (specifically oil price, supply or demand regulation, subsidies and related tax or customs rules) affects market incentives and the determination of an enterprise's profitability, the assumed motivations to improve oil procurement capabilities may be distorted. These distortions may temporarily work in the favor of an established enterprise, such as a refinery (e.g., import duties providing protection from import competition), or against it (e.g., excise taxes which are unequally applied and enforced, allowing firms willing to mis-certify or not report transactions to undercut market price levels). The net impact is to discourage operational efficiency steps which would otherwise be taken in a competitive marketplace.

The utilization of futures markets and creative oil market contracting procedures are usually motivated by competition and an interest in reducing financial and operational risk. If these inducements are distorted by government regulation, action will not be taken. Furthermore, the imposition of price and supply regulations may impose risk on oil market participants unassociated with open markets, and for which these markets offer no solution. Regulatory risks may actually work against the use of creative contracting and hedging incentives by injecting uncertainty (outside the marketplace) into the strategy, and dissuading the potential user from applying the strategy. For example, a refinery operating within a market of controlled product prices which seeks to protect its refining margins, may wish to buy crude oil forward, and sell forward product, at a fixed differential. While this can be done on the futures exchange, or in external cash markets, the existence of government-imposed prices, which can change by fiat, may create uncertainty about the future level of petroleum product prices relative to those in the western market. The technical term for this is "basis risk" (i.e., the risk that free market prices will not track the particular physical market prices which are in fact determining the product sales price, hence the refiner's margin). Volume controls, similarly, may limit an enterprise's ability to commit to forward positions in order to take advantage of favorable trading or hedging opportunities. In the broadest sense, oil price controls distort incentives to conserve and to take protective action (from rising prices) and to diversify supply sources away from oil (i.e., they misallocate resources). Hedging, by contrast, can be used to protect the economics of investments made precisely for those purposes.

Therefore, a central issue which must be addressed if the ECE nations are to make full and effective use of the open market's contracting and pricing tools, is the issue of domestic market distortions introduced by regulations, including tax and trade policies. Ideally, the region will evolve towards a uniform set of policies on such issues as tax and customs levels, access to transportation, and other policies which may distort normal cross-border pricing signals. In countries which have taken the lead on some of these issues, most notably Hungary and the CSFR, incentives to trade have been greater to date. In countries where regulations dominate market economics, the primary motivation to trade is to maximize the immediate profit opportunities created by the distortions, not the desired objective of maximizing returns on an

asset such as a refinery or marketing network. Ultimately, oil procurement and hedging strategies should be structured for the purpose of lowering cost and improving the return on investments made in response to efficient price signals. Regulations both distort these signals and limit the incentive to improve efficiency in fuels management and numerous related investment activities.

3. *Industry Restructuring*

The organizational structure of the ECE region's oil industry was largely centralized and monopolized at the outset of USAID's technical assistance program. This structure was designed to support the production-driven, "materials flow" management incentives of the centrally-planned economy, in coordination with the primary COMECON trading partners. Lacking market transfer prices and the ability to evaluate returns on investment or operating margins, the overall operational procedures and organizational assumptions on which the system is based require some restructuring and training. The speed and form with which restructuring occurs also will impact directly the degree to which market participants will take more aggressive action in managing their oil procurement costs and re-evaluating their organizational structures and management procedures. For example, the introduction of foreign participation in retail gasoline marketing will increase competition for market share, and impose greater pressure on controlling costs and securing favorable operating margins, or commodity prices, as such opportunities arise. Alternatively, the de-monopolization of the oil import function increases competition and, correspondingly, the pressure to negotiate both lower-priced and differentiated forms of oil contract structures.

Where industry restructuring has occurred, particularly in a framework of workable competition unencumbered by excessive regulation, the proper incentives to take advantage of market mechanisms in oil procurement appear to be working. For example, in Poland downstream markets are open somewhat to competition, but not crude oil procurement. Moreover, the system remains under price and import regulations. As a result, the sort of incentives to compete have been concentrated in product imports and many of them are counter-productive in the long-term. By contrast, incentives to pursue creative contracting opportunities have increased in the CSFR, in part owing to political regionalism, but also because restructuring has occurred throughout the industry, from crude acquisition to refining and marketing. In Hungary, the effort to restructure the industry has clearly evolved around a concept of vertical integration complemented by an effective independent fringe of competition in the form of Mineralimpex and a number of private enterprises in product marketing, importing and exporting (crude and products). For now the Hungarian restructuring plan appears to be effective, but the longer term issue of market access and control exerted by MOL will be a determining factor.

In Bulgaria, there has been a limited move to restructure in the form of breaking up the trading monopoly and introducing limited foreign ownership in marketing. However, the distortions from oil customs and tax structures, and the lack of a formal restructuring plan, specifically concerning the future role of the Neftochim Burgas Refinery and the state marketing/ distribution company (Petrol), has limited the beneficial impact of this action. The least amount of industry restructuring has occurred in Romania, where plans are just being drawn-up to motivate foreign investment in the upstream. Any "restructuring" has taken the form of limited joint venture processing and investment arrangements with western trading and refining companies.

In summary, one method of introducing effective oil procurement and supply diversification activities is through industry restructuring to encourage competition, both internally and through the inclusion of outside interests. Countries that have elucidated and begun to implement a clear restructuring plan appear to be ahead of those that are relying on the same organizations and

command-control patterns in place under the previous system. In their defense, it should be noted that restructuring decisions are highly politically sensitive, and particularly difficult to plan or implement in an unstable economic or political environment. However, industry restructuring should be a fundamental element of the political process which demonstrates a government's interest in evolving towards an economic structure which rewards efficiency.

4. *Investment Incentives*

In order to stimulate both domestic investment and international participation in a restructured industry, investment incentives are required to overcome certain perceived risks concerning the related investment return thresholds. Such incentives can take numerous forms, including favorable tax, royalty or fee treatment, favorable buy-in terms, insurance and minimum return guarantees. The opportunities for creative inducement of investment are numerous. Such inducements go hand-in-hand with the objectives of overcoming distorted regulations and restructuring industry to build a more effective base around which financial performance and investment will grow.

In developing investment incentives the host government should encourage measures which can be obtained in commercial financial markets. For example, a desired rate of return on a refinery process investment may be obtainable in the marketplace without direct government guarantees. For instance, a long-term swap (buy crude, sell gasoline and gasoil) to protect the economics of a cat cracker expansion can be executed in the marketplace. Similarly, returns on the investment in a dual-fuel capable turbine may relate directly to the price spread between natural gas and oil over the next five or more years. These economics can also be protected in the marketplace with the proper financial incentives and support.

In general, to the extent that investment incentives can distinguish commercial and externally manageable exposures from internal (e.g., political and contractual) risk, investment incentives should focus on the latter. Moreover, the ECE nations, through their finance ministries and banks, need to understand fully the potential role played by creative hedging techniques in the oil and financial markets in order to recognize more thoroughly their appropriate role in stimulating outside investment. The development of investment incentives should occur in concert with industry restructuring and strategy design. Such coordination and emphasis on establishing the underlying financial strength of a key industry such as petroleum is particularly important when its financial performance is so sensitive to underlying commodity price pressures.

5. *S&D Management and the Use of LP Models*

A central focus of this project's activities was S&D management. This function is perhaps the key coordinating activity in integrated western operations, normally located in or closely linked to the refinery operations function. This function did not exist in any of the refineries or any of the state-controlled (joint stock) refinery operating companies (e.g., PEI, Ciech, Neftochim, OKGT, Chemipetrol). Its absence reflects the materials-driven central command and control structure emphasizing Russian crude feedstocks, and lack of concern or capability to measure or optimize economic profit.

To estimate the potential value gained from an effectively functioning S&D operation which seeks to optimize feedstock selection and product sales activities, it is only necessary to observe the wide range in netback values obtainable from different crude oil types and feedstock mixes. Even during stable periods the netback values observable for various crude oils to a specific upgraded refinery configuration can vary by as much as $3/barrel. Adding the adjustments to

process operations, regional market considerations, logistics and normal seasonal and inventory management variables, the resulting variability in operating margins could vary by as much as $5/barrel, depending on the degree to which such decisions as feedstock selection, process unit utilization, stock management, product sales and transportation logistics are managed. This exceeds or at least matches the potential savings which might accrue from optimally timing crude oil purchases by hedging in response to seasonal or cyclical swings in petroleum price levels.

In order for refineries to develop an effective S&D activity they must be supported by an LP model which replicates the process operations of the refinery, and provides an optimal solution (i.e., maximizes profits under alternative operational scenarios). LP models are used to make immediate feedstock selection decisions, but also to support longer term planning and investment decisions, including feedstock selection and product sales and the potential return on refinery or related logistical (e.g., storage, transportation, marketing) investments. Once such a tool and coordinating activity is in place, for a single refinery or for an organization operating multiple refineries (e.g., MOL in Hungary), the management can pursue more aggressively some of the contractual strategies discussed in IRG's training and technical assistance sessions in a more informed manner. The objective is ultimately to coordinate the refineries' physical operations with the financial opportunities presented on the physical and paper oil markets.

B. Program Effectiveness

Program effectiveness is not easily measured in terms of actual or reported fuel cost savings, but rather in the potential savings accruing to companies that make effective use of price risk management tools over time.

With the exception of an apparently increasing level of hedging and trading activity within the CSFR (Chemapol) and Hungary (Mineralimpex) most trading, refining, marketing and related companies are making only limited use of oil price risk management tools, including relatively new procurement practices in the forward cash market. Indeed, much of the motivation to use such tools now comes from Russian supply sources themselves, owing to the fragmentation of control, price and volume uncertainty, and forward trade developing around Russian pipeline crude oil supplies to the ECE region. Firms such as Ciech, Chimimport, Neftoimpex, and PEI have the expertise and understanding now to take advantage of hedging and trading opportunities, but they are not aggressively pursuing such action, in large part as a result of a lack of financial, technical and policy support from their governments and financial institutions. Indeed, greater use of forward markets and innovative contracting procedures is probably occurring within the growing independent fringe of private or "affiliated" trading companies.

In attempting to quantify the benefits of implementing hedging and creative procurement strategies, these enterprises are either unable or unwilling to estimate the amount of money saved or made through the use of such tools. This is proprietary information even assuming it can be measured. Moreover, the basic concept of hedging is that a gain on the paper markets should be offset by cash market losses, and vice-versa. Direct gains can result when an enterprise selectively times oil transactions at a favorable price, or taking advantage of favorable price spread opportunities. These typically will not exceed $1/barrel in calm periods, and probably less than $5/barrel in relatively volatile or trend periods, which may occur 3-to-4 times per year (on average) in the international oil markets. As a practical matter, an effective hedger/trader might lower his average crude oil cost by at least $1/barrel, on average, by taking advantage of selective market timing and contractual strategies, such as:

- market backwardation - buying forward when the forward month price is well above the near month price;

- trigger pricing in response to market trends — selectively buying (or selling) petroleum when a major upward (or downward) price trend has been identified and assuming these can be effectively identified;

- taking advantage of favorable price "basis" relationships by moving between the futures and cash market either through arbitrage or via the exchange of futures procedure (requiring futures market participation);

- selectively writing (i.e., selling) covered call or put options following a favorable price move once the market trend has run its course;

- increasing margins on sales by effectively offering fixed or ceiling prices to buyers, or fixed or floor prices to sellers, and capturing a middleman's margin;

- improving refinery profitability by effectively hedging refining margins in the form of "crack spreads" on the futures, options or forward and "over-the-counter" markets;

- improving supply security and the utilization of storage capacity through the effective use of futures markets to (selectively) hedge physical inventory positions, or to substitute a futures position for a physical one;

- improving negotiating capability and selective timing of cash market contract terms;

- lowering financing costs by demonstrating to banks the risk reduction benefits received from hedging, and;

- generally increasing market access, intelligence, trading, marketing and related "venture" opportunities related to the basic business of acquiring, transporting, refining, storing, distributing and marketing petroleum.

These potential benefits are strategy- or application-specific. The broader economic and institutional benefits which may accrue include:

- price stabilization (without regulation);

- reduced financial risk and more stable returns in key industries, such as refining and production, and;

- a more transparent, competitive and efficient pricing mechanism to replace inefficient regulatory systems, and to provide more reliable signals on which to base resource investments.

These benefits obviously cannot be directly quantified, as they are largely theoretical. However, it is precisely these institutional benefits associated with market efficiency to which the program's objectives are most immediately targeted. In this regard, IRG has assisted the process of the rapid evolution in the ECE oil marketplace over the past 18 months, towards a market which is increasingly driven by transparent price signals and free trade across borders. By the end of this decade IRG fully expects the ECE region to function as an effective physical and financial link between Eastern and Western (Mediterranean, Western Europe and Atlantic) markets, as well as the NIS, South Asia, and the Middle East. Indeed, the progress towards this integrative role appears to be evolving more rapidly in the ECE region than we have observed historically in other key regional oil markets.

ANNEX A

BULGARIA

ANNEX A.1

List of Contacts During Definitional Mission

U.S. Embassy Sofia

1. Michael Gelner, Economic Officer
2. Denchow Khristev, Commercial Assistant

Ministry of Industry, Trade and Services

3. Hristo Stoykov, First Deputy Minister
4. Mr. Spassov, Head of Privatization
   Members of Staff

Petrol

5. Hristo Ivanov Drenkarov, Director General

Chimimport

6. Sasho Stoyanov, Director, Crude Oil and Petrochemical Products Division
7. Nikolai Nedelchev, Crude Oil and Petrochemical Products Division

Ministry of Foreign Economic Relations

8. Emil Tishinov, Chief of Section, Energy

Neftoimpex

9. Tomi Pangarov, Head of Crude Oil Acquisition and Processing Department
10. Rumian Yanev

Shell Oil

11. Peter Libesy, Local Representative

ANNEX A.2

List of Training Participants

Oil Purchasing Seminar, March 17-19, 1992

Ministry of Industry and Trade

1. Dobrin Oreshkov
2. Nikolaj Komarov

Boulvaria

3. Dimitar Simeonov
4. Ianko Ianchev

Neftoimpex

5. Nikolai Nedelchev
6. Tomi Pangarov
7. Maria Stojanova

Chimimport

8. Chaika Godeva
9. Pepi Tipeva

Sotirov & Son

10. Svetoslav Pavlov

Plama Pleven Refinery

11. Dimitar Markov
12. Evodokia Jordanova

Petrol

13. Rumen Venkov
14. Petar Tsanov

University of Mining and Geology

15. Yana Popova

ANNEX A.2

List of Training Participants

Oil Purchasing Seminar, March 17-19, 1992 (continued)

Ecotechproducts

16. Christain Spassov
17. Elka Ilieva
18. Mariana Strougarova

Oil Procurement Workshop for Chimimport, April 29-30

Chimimport

1.	Sasho Stoyanov	Deputy General Director
2.	Konstantin Karadjov	Manager, Crude Oil Division
3.	Tchaika Godeva	Crude Oil and Petroleum Products Division
4.	Alexander Karageorgiev	Crude Oil and Petroleum Products Division
5.	Margarita Petkova	Crude Oil and Petroleum Products Division
6.	Ilia Gramatikov	Product Manager
7.	Elena Dimitrova	Manager of Dept. 3-25
8.	Assen Doichev	Crude Oil and Petroleum Products Division
9.	Elian Bozhianov	Crude Oil and Petroleum Products Division
10.	Maria Ignatova	Product Manager
11.	Michael Neshev	Manager, Tanker Dept.
12.	Lachezar Vladov	Tanker Dept.

Oil Procurement and Refinery Economics Seminar for Burgas Refinery, May 4-6

Neftochim Burgas

1.	Venelin Velikov	Director, Neftosoft
2.	Bozidar Baltov	Project Director
3.	Svetoslava Klincheva	Petroleum Process Research Institute (PPRI)*
4.	Dimova Zara	PPRI
5.	Dobrinka Stavreva	Head of Dept., Neftosoft
6.	Nedialka Satchanova	Systems Designer, Neftosoft
7	.Gradi Periphanov	Neftochim
8.	Jordan Stoianov	Neftochim, Head of Department
9.	Stoian Dikov	Specialist, Dept. of Pricing and Planning
10.	Dimitar Vellev	Dept. of Planning
11.	Panaiot Gaidov	Neftochim, Head of Dept.
12.	Plamen Koluchev	Specialist, Accounting Dept.

There were eight other individuals attending periodically over the three-day period.
*PPRI is a Burgas Refinery entity.

ANNEX B

CZECH and SLOVAK FEDERAL REPUBLIC

ANNEX B.1

List of Contacts During Definitional Mission

U.S. Embassy

Mr. Theodore Russell, DCM
Mr. Harvey Lampert, First Secretary-Economic
Dr. Panel Hacker, Consular Officer, Bratislava (phone)

CSFR Ministry of Economy, Prague

Ing. Eliska Rohlova, Director, Department of Oil and Chemistry
Mr. Victor Jakoubet, Oil Refining
Mr. Vaclav Vessely, Deputy Director, Department of Energy Policy

Chemapol Ltd., Prague

Ing. Vaclav Volf, Managing Director and President
Mrs. Margita Dudova, Manager Commercial Policy
Ing. Jaromir Burian, Manager Oil and Petroleum Products

Ceskoslovenska Obshodni Banka, Prague

Mr. Daniel Heler, Head of International Department
Mr. Vladislav Vesely, Dealer

Statni Banka Ceskoslovenska, Prague

Eng. Tomas Parijek

Czech Ministry of Industry, Prague

Mr. Josef Havlik, Director, Technical Policy Section
Mr. Radomir Matyas, Deputy Director, Technical Policy Section

Slovnaft Refining and Petrochemical Company, Bratislava

Dr. Maria Szekelyova, Head of Department of International Cooperation
Mr. Vratko Kassovic, Director of Production
Dr. Jaroslav Duroska, Director of Personnel
Ing. Milan Jurczacko, Crude Oil Procurement
Mr. Yuraj Obolozinsky, Crude Oil Procurement

Resources Management Associates

Dr. Wesley Foell, President
Dr. Jack Huddleston
Dr. Harvey Salgo, Tellus Institute (Subcontractor)

ANNEX B.2

List of Training Participants

Oil Purchasing Seminar (Prague), June 10-12, 1991

Chemapol

1. Jana Hejskova
2. Jaromir Burian
3. Jindrich Svoboda

Kralupy Refinery

4. Miroslav Kadlec
5. Zamburek Ludek

Litvinov Refinery

6. Hugo Kittel

Ceskoslovenska Airlines

7. Vladislav Vesely

Federal Ministry of the Economy

8. Representative from Ms. Rohlova's office

Oil Purchasing Seminar (Bratislava), June 13-14, 1991

Petrimex

1. Zak Jozef

Slovnaft Refinery

2. Vratko Kassovic, Production
3. Ernest Gretsch, Production
4. Boris Nikolov, Production
5. Mr. Hlinijiak, Production
6. Jolaun Petrasava, Economic Division
7. Dusiou Durmis, Economic Division
8. Norbert Vanco, Economic Division
9. Hiroslav Susedea, Technical & Investment
10. Ankars Valady, Technical & Investment
11. Stefan Pikna, Technical & Investment
12. Vaclav, Sanidr, Technical & Investment
13. Pavol Parak, Technical & Investment
14. Anna Simzkovicova, Technical & Investment
15. Peter Chmurciak, Technical & Investment

ANNEX B.2

List of Training Participants

Oil Purchasing Seminar (Bratislava), June 13-14, 1991 (continued)

16. Jozef Mlynar, Technical & Investment
17. Ladislor Smolka, Maintenance
18. Jozef Kopernicki, Maintenance
19. Mr. Thigler, Maintenance
20. Vasil Ilkiv, Commercial
21. Mr. Hoivat, Commercial
22. Milan Jurcncko, Commercial
23. Magda Irova, Lab
24. Ivan Ciz, Lab
25. Ivan Kopermers, Research
26. Mr. Barsa, Research
27. Marian Koeisek, Personnel
28. Jan Kriz, Personnel
29. Olaru Mriayuka, Personnel

Refinery Optimization, Procurement, and S&D Workshop, August 12-16, 1991

Litvinov Refinery

1. Valdimir Skacha, Chemopetrol Development Department
2. Hugo Kittel, Chemopetrol
3. Mr. Kyselo, Chemopetrol
4. Mr. Ohanka, Chemopetrol
5. Vaclav Vysin, Manager
6. Jiri Svoboda, Production Director

Kralupy Refinery

7. Mr. Ottis
8. Miroslav Nevosad, General Manager

In addition, about 20 mid-level representatives from both refineries attended.

ANNEX B.2

List of Training Participants

Refinery Optimization, Procurement, and S&D Workshop, August 12-16,1991 (continued)

Federal Ministry of Economy

9. Mr. Hynek

Slovnaft

10. Jan Krajniak, Commercial Director
11. Jozef Mlynar, Technical and Investment Director
12. Karol Hlinstak, General Dir. Advisor

Aproximately 12 other attendees participated.

Refinery Organizational/Management Workshop, May 11-13, 1992

Approximately 20 Litvinov personnel from the Production, Marketing, Accounting, Development and Research Departments participated. All attendees, except Mr. Vladimir Skacha from the Development Department, did not attend previous training sessions.

ANNEX C

HUNGARY

ANNEX C.1

List of Contacts During Definitional Mission

U.S. Embassy

Ms. Janice Sebring, Economic Officer

Ministry of Industry and Trade

Mr. Andras Morenth, Head of Department, Department of Energy Cooperation
Mr. Bela Nemeth, Head of Department, Department of Energy Pricing

Hungarian National Oil and Gas Trust (OKGT)

Mrs. Julianna Koteles, Commercial Department

Agel (Subsidiary of OKGT)

Andras Horvath, General Manager

Danube Petroleum Refinery (DKV)

Erno Ratosi, General Manager
Janos Katona, Production Chief Engineer

National Bank of Hungary

Csaba Pasztor, Senior Deputy General Manager
Istvan Gondi, Chief Bullion Dealer

Mineralimpex

Mrs. Eva Koltai, Director
Mr. Lajos Alacs, Trader

Hungarian Electricity Board (MVMT)

Dr. Bela Potecz, Head of Energy Department
Mr. Imre Kovats, Senior Engineering Advisor and Energy Manager

ANNEX C.2

List of Training Participants

Oil Purchasing Seminar (Budapest), June 3-5, 1991

Mineralimpex

1. Otto Grad
2. Edit Toth

Hungarian Electricity Board (MVMT)

3. Imre Kovats

National Bank of Hungary

4. Agnes Muranyi

Central European International Bank, Ltd.

5. Geza Jakab

OKGT

6. Erno Boros

Allcom Trading Company

7. Ferenc Horvath

Interag Co., Ltd.

8. Tivadar Runtag

Citibank Budapest

9. Tibor Zarnoczi

DKV Refinery

10. Janos Katona

Ministry of Industry

11. H. Farkus
12. C. Beres

Hungarian Foreign Trade Bank

13. Tibor Gyorgydeak
14. Viktor Petz

ANNEX C.2

List of Training Participants

Purchasing Seminar (Budapest), June 3-4, 1991 (continued)

Budapest Bank, Ltd.

15. Judit Orel

Malev Hungarian Airlines

16. Zsigmond Czegledi

OMV-AFOR

17. Katalin Hajagos

AFOR

18. Galue Bayz

Advanced Trading and Management Workshop, August 19-22, 1991

Mineralimpex

1. Dr. Toth, Managing Director

Approximately 6 other individuals from Mineralimpex staff attended.
In addition, representatives from the National Bank of Hungary, DKV Refinery, Tisak Chemicals, and the Hungarian Foreign Trade Bank attended.

Oil Purchasing Workshop, May 19-21, 1992

Mineralimpex

1. Lajos Alacs
2. Otto Grad

Allcom Trading

3. Bela Keleman

Confides

4. Zsolt Horvath

BP-Hungary

5. Lorant Gilly

Budapest Bank

6. Richard Matumi

In addition, 3-5 other individuals participated over the course of the Workshop.

ANNEX D

POLAND

ANNEX D.1

List of Contacts During Definitional Mission

Ministry of Industry, Department of Energy and Fuel Management

Mr. Pierzak, Deputy Director
Mr. Stanislaw Okrasa, Deputy Director
Mr. Stefan Olczyk, Deputy Director
Mr. Andrzej Jaskiewicz, Chief Specialist

Ciech Petrolimpex

Mr. Stanislaw Lancucki, Deputy Director

Foreign Trade Research Institute

Mr. Jacek Dembowski, Head of Energy & Raw Materials Department
Mr. Danielewski

Institute of Economics of the Chemical Industry

Dr. Zuzanna Szuilik-Kojemska, Deputy Director for Scientific and Research Affairs

Gdansk Refinery

Piotr Lewandowski, Maritime Lawyer

Center for Energy Efficiency

Dr. Kassenburg
Mr. Adam Guea

Petrola

Mr. Andrzej Karwanski, President

ANNEX D.2

List of Training Participants

Oil Purchasing Seminar (Jachranka), May 20-24, 1991

CIECH Petrolimpex

1. Stanislaw Lancucki
2. Joanna Sozanska
3. Piotr Chadzynski
4. Dariusz Gwozdz

Ministry of Industry

5. Andrzej Jaskiewicz
6. Stanislaw Okrasa
7. Andrzej Pierzak
8. Lidia Nagrodkiewicz

Ministry of Finance

9. Roman Stawikowski

Centrala Produktow Naftowych (CPN)

10. Elzbieta Reszka
11. Barbara Hodbod
12. Elzbieta Minor
13. Iwona Rzeznicka

Jedlicze Refinery

14. Waldemar Brela

Gdansk Refinery

15. Piotr Lewandowski

Plock Refinery

16. Pawel Gajewicz
17. Miroslaw Bukowski

Petrola

17. Miroslaw Laskowski

Perfect Agio

18. Jaroslaw Sidorczuk

ANNEX D.2

List of Training Participants

Oil Purchasing Seminar (Jachranka), May 20-24, 1991 (continued)

Trzebina Refinery

19. Mieczyslaw Rogalski

Czechowice Refinery

20. Marek Lesisz

Robinson Trading Company

21. Pawel Rojek
22. Piotr Litak

APExim Trading Company

23. Piotr Kosowicz

INVECO Trading

24. Janusz Piczak

Mertrans Trading Company

25. Piotr Walecki
26. Jakub Sumowski

Refinery Procurement and Optimization Seminar (Plock), February 24-27, 1992

Plock Refinery

1.	Wladyslaw Wawak	Commercial Director
2.	Tadeusz Wojdala	Planning Specialist
3.	Henryk Kolbich	Chief Planning Specialist
4.	Bernard Lubinski	Manager, Marketing Department
5.	Pawel Gajewick	Specialist, Marketing Department
6.	Janusz Szum	Specialist, Marketing Department
7.	Kozimierz Pacewierz	Specialist, Marketing Department
8.	Marek Jeznach	Marketing Department
9.	Jerzy Ziembicki	Chief, Extraction and Aromatics
10.	Wieslaw Kolodriejski	Organization Department
11.	Wincenty Kawka	Senior Process Engineer
12.	Kozimierz Korick	Advisor
13.	Tremeusz Beolyk	Chief Engineer

ANNEX D.2

List of Training Participants

Refinery Procurement and Optimization Seminar (Plock), February 24-27, 1992 (continued)

Plock Refinery

14.	Wojciech Garobrinski	Chief Engineer
15.	Wieslawe Kolodriejski	Deputy Chief, Crude Oil Processing
16.	Waldemar Tuszewicki	General Dispatcher
17.	Laola Grorzynor	Specialist, Accounting Department
18.	Maria Krzysrtofik	Economic Specialist
19.	Jan Szypryt	Economic and Finance Director
20.	Piotr Wiankowski	Chief Economic Specialist
21.	Andrzej Stegenta	Processing Engineer
22.	Feliks Bielecki	Chief Engineer

Oil Purchasing Seminar, May 21-22, 1992

Ciech Petrolimpex

Approximately 20 individuals attended from the Crude and Products Divisions.

ANNEX E

ROMANIA

ANNEX E.1

List of Contacts During Definitional Mission

U.S. Embassy

David R. Salazar, Second Secretary
Dan Lungu, Economics Section

Ministry of Resources and Industry

Mr. Florea, International Relations
Mr. E. Fercala, Head of Refining and Petrochemicals

PetrolExport - Import

Eng. Gheorghe Albu, Chairman
Valeriu Iancu, Deputy General Manager

Romanian Bank for Foreign Trade

Dumitru Udrescu, Deputy General Manager
Irina Rajulescu, Regional Manager

PECO Trading Company

Georgescu Silvestru, Director General
Valerian Chiorascu, Director
Petru Axioti, Counsellor
Adrian Stoica

Manufacturers Hanover Bank

Thomas Butler, Vice President and Branch General Manager

Shell International Petroleum Compat. Ltd.

G.W.P. Burrow, Director, Representative Office Bucharest

ANNEX E.2

List of Training Participants

Oil Purchasing Seminar, May 7-9, 1991

Petrolexport-Import

1. Foti··-Aurel Bacila, General Manager
2. Va' :riu Iancu, Deputy General Manager
3. Victor Duman, Managing Director, Crude Oil Department
4. Corneliu Mavric, Chief of Processing Department
5. Virgil Ardeleanu, Import Department
6. Daniel Pena, Export Department

4 additional junior staff members of PEI also attended.

Romanian Bank for Foreign Trade

11. Irina Rajulescu, Regional Manager
12. Mariana Achimescu, Assistant

Petromidia (Refinery)

13. David Cornelia, Trade Manager

Arpechim Pitesti (Refinery)

14. Patru Viorel, Chief of Production Department

Brazi Petrochemical Company (Refinery)

15. Joan Varga, Technical Director

PECO Trading Company

16. Petru Axioti, Counsellor, Export-Import Department

Tomis Oil Maritime

17. Ovidiu Popescu, Director

Chemenco

18. Alexandru Dumitrescu, President

ANNEX F

DATA TABLES

HISTORICAL DATA

Crude and Petroleum Products
(b/d)

Table 1 BULGARIA

	1980	1985	1986	1987	1988	1989	1990	1991
Crude Production	5,600	6,100	6,100	5,900	1,628	1,400	1,200	1,000 **
Net Total Imports	303,166	289,170	285,736	295,916	256,800 *	259,000 *	174,200 **+	131,600 **+
Imports as % of Total Consumption	98%	98%	98%	98%	99%	99%	99%	99%

All data from IEA/OECD, except where noted.
* World Bank estimates.
** IRG estimate.
**+ Estimates of IRG and Chimimport.

Table 2 THE CZECH and SLOVAK FEDERAL REPUBLIC

	1980	1985	1986	1987	1988	1989	1990	1991
Crude Production	1,920	2,520	2,920	2,940	2,840	2,880	2,980 *	2,900 **
Total Imports	370,560	340,060	326,140	328,240	305,680	301,700	280,580 **+	228,600 **+
Imports as % of Total Consumption	99%	99%	99%	99%	99%	99%	99%	99%

All data from IEA/OECD, except where noted.
* United Nations estimate.
** IRG estimate.
**+ Estimates of IRG and Chemapol.

Table 3 HUNGARY

	1980	1985	1986	1987	1988	1989	1990	1991
Crude Production	55,440	57,414	57,296	55,314	53,306	54,298	40,000 *	35,000 **
Net Total Imports	169,978	147,230	132,100	125,092	125,206	131,038	149,700 **+	122,240 **+
Imports as % of Total Consumption	75%	72%	70%	69%	70%	71%	79%	78%

All data from IEA/OECD, except where noted.
* MOL data.
** IRG estimate.
**+ Estimates of IRG and Hungarian Energy Inspectorate.

Table 4 POLAND

	1980	1985	1986	1987	1988	1989	1990	1991
Crude Production	6,700	3,980	3,400	3,040	3,140	3,100	3,000	2,900 *
Net Total Imports	378,380	341,020	354,020	349,140	353,140	342,920	316,960	237,000 *
Imports as % of Total Consumption	98%	99%	99%	99%	99%	99%	99%	99%

All data from IEA/OECD, except where noted.
* IRG estimates.

Table 5 ROMANIA

	1980	1985	1986	1987	1988	1989	1990	1991
Crude Production	246,540	230,500	226,040	219,900	203,260	198,740	160,000 *	134,000 *
Total Imports	150,860	102,820	115,700	140,080	161,580	140,420	112,000 *	26,910 * +
Imports as % of Total Consumption	38%	31%	34%	39%	44%	41%	41%	17%

All data from IEA/OECD, except where noted.
* IRG estimates.
*+ IRG estimate annualized based on reported data through first 10 months.

Table 6 EASTERN AND CENTRAL EUROPE

	1980	1985	1986	1987	1988	1989	1990	1991
Crude Production	316,200	300,514	295,756	287,094	264,174	260,418	207,180	175,800
Net Total Imports	1,372,944	1,220,300	1,213,696	1,238,468	1,202,406	1,175,078	1,033,440	746,350
Imports as % of Total Consumption	81%	80%	80%	81%	82%	82%	83%	81%

Table 7

Bulgaria: Recent Petroleum Supply Profile

	1988	1989	1990	1991
Net Total Imports	256,800	259,000	174,200 **	131,600 **
USSR Imports *	244,000	249,000	171,400 **	66,200 **
USSR Supplies as % of Total Imports	95%	96%	98%	50%

All data from World Bank, except where noted.
* IRG estimates, 1988-1989.
** IRG and Chimimport estimates.

Table 8

CSFR: Recent Petroleum Supply Profile

	1988	1989	1990	1991
Net Total Imports	305,680	301,700	280,580 *	228,600 *
USSR Imports *	290,000	282,000	265,370 **	187,392 **
USSR Supplies as % of Total Imports	95%	93%	95%	82%

All data from IEA/OECD, except where noted.
* IRG estimates.
** IRG and Chemapol estimates.

Table 9

Hungary: Recent Petroleum Supply Profile

	1988	1989	1990	1991
Net Total Imports	125,206	131,038	149,700 *	122,240 *
USSR Imports **	122,700	126,420	125,220 *	97,000 *
USSR Supplies as % of Total Imports	98%	96%	84%	79%

All data from IEA/OECD, except where noted.
* Estimates of IRG and Hungarian Energy Inspectorate.
** IRG estimates for 1988 and 1989.

Table 10

Poland: Recent Petroleum Supply Profile

	1988	1989	1990	1991
Net Total Imports	353,140	342,920	316,960	237,000 *
USSR Imports *	310,420	301,439	228,850	125,000
USSR Supplies as % of Total Imports	88%	88%	72%	53%

All data from IEA/OECD, except where noted.
* IRG estimates.

Table 11

Romania: Recent Petroleum Supply Profile

	1988	1989	1990	1991
Total Imports	161,580	140,420	112,000 *	26,910 * +
USSR Imports *	40,359	35,105	25,000	5,000
USSR Supplies as % of Total Imports	25%	25%	22%	19%

All data from IEA/OECD, except where noted.
* IRG estimates.
+ Annualized estimate based on data through first ten months.

Table 12

ECE: Recent Petroleum Supply Profile

	1988	1989	1990	1991
Total Imports	1,202,406	1,175,078	1,033,440	746,350
USSR Imports	1,007,479	993,964	815,840	480,592
USSR Supplies as % of Total Imports	84%	85%	79%	64%

1988 and 1989 Total Import data from IEA/OECD.
All other figures based on IRG estimates and sources indicated in Tables 1-11.

ANNEX G

INTERNS AND PROGRAM SCHEDULES

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ANNEX G

Interns and Program Schedules

Interns

Bulgaria

1. Mr. Konstantin Karadjov, Chimimport
2. Mr. Nikolai Nedelchev, Neftoimpex

The Czech and Slovak Federal Republic

3. Mr. Jaromir Burian, Chemapol
4. Ms. Jana Hejskova, Chemapol

Hungary

5. Mr. Istvan Tehenics, DKV Refinery
6. Mr. Lajos Alacs, Mineralimpex

Poland

7. Mr. Bernard Lubinski, Petrochemia Plock Refinery
8. Ms. Joanna Sozanska, Ciech Petrolimpex

Romania

9. Mr. Aurel-Fotin Bacila, Petrolexport-Import
10. Mr. Valeriu Iancu, Petrolexport-Import
11. Mr. Patru Viorel, Arpechim Pitesti Refinery

Internship Schedules

September 4-28, 1991	**U.S. Companies**
Mr. Tehenics	Lyondell Petrochemical Co., Houston
Mr. Lubinski	Coastal States Trading, Houston

(continued)

September 4-28, 1991

Mr. Alacs
Ms. Sozanska
Mr. Burian
Ms. Hejskova

U.S. Companies

Enron Trading, Houston*
NYMEX, New York City
Phibro, Greenwich, CT.
Chase Manhattan Bank, New York City
AIG Trading, Fort Lee, New Jersey
*Mr. Burian and Ms. Hejskova did not attend the training with Enron.

March 12-28, 1992 (Romanians)

U.S. Companies

Chevron International Oil Company, Houston, Tx., and Pascagoula, Miss.
NYMEX, New York City
Phibro, Greenwich, CT.
AIG Trading, Fort Lee, New Jersey

May 13-30, 1992 (Bulgarians)

U.S. Companies

Enron Trading, Houston
NYMEX, New York City
Phibro, Greenwich, CT.
AIG Trading, Fort Lee, New Jersey

ANNEX H

GLOSSARY OF TERMS USED IN TRADING

ANNEX H

Glossary of Terms Used in Trading[1]

[1]Key:
B - term used in physical forward markets, such as Brent, Dubai
F - term mainly used in Futures trading
O - term mainly used in Options trading
P - term mainly used in Physical Oil Markets
T - term mainly used in Freight, Tanker Markets

Arbitrage (F,O) The simultaneous purchase and sale of similar or identical commodities in two different markets.

Backwardation (F,B) Market situation in which prices are progressively lower in the distant delivery months. An "inverted market."

Basis (F,B) - The differential that exists at any time between the futures, or toward price for a given commodity and the comparable cash or spot price for the commodity.

Broker Futures (F) The person who executes the buy and sell orders of a customer in return for a commission or fee.

Call Option (O) An option which gives the buyer/holder the right to enter into a long futures position as a predetermined strike price, and obligates the seller/writer to enter into a short futures position at that designated prices, should the option be exercised.

Cash or Physical Market (P,F) The market for a cash commodity where the actual physical product is traded.

CIF (P,T) Cost, Insurance, Freight. Term refers to a sale in which the buyer agrees to pay a unit price that includes the free on board (FOB) value at the port of origin plus all costs of insurance and transportation.

Contango Market (F,B) A market situation in which prices are progressively higher in the succeeding delivery months than in the nearest delivery month.

Delivery Month (F,P,B) The month specified in a given contract for delivery of the physical commodity.

Demurrage (T) The penalty paid by Charterers or cargo suppliers/receivers for delaying a ship at a port of loading or discharge. Demurrage, payable at a predetermined rate, is charged for that period of time that the used laytime exceeds the permitted laytime.

Downstream Processing (P) The refining of crude oil into petroleum products, usually under a contract with a third party.

EFP (F) Exchange of Futures for Physicals. A futures contract provision involving the delivery of physical product (which dies not necessarily conform to contract specifications in all terms) from one market participant to another and a concomitant assumption of equal and opposite futures positions by the same participants.

Feedstock (P) Hydrocarbons which can be used as the basic material fed into a refinery or manufacturing process (primary or secondary unit). For example, although the normal feedstock for a distilling unit is crude oil some residues (generally mixed with crude) can constitute a feedstock for distilling. - Vacuum gas oil and heavy distillate from a vacuum distillation constitute a feedstock for a catalytic (or hydro) cracking unit. Heavy naphtha is the normal feedstock of a catalytic reforming unit.

F.O.B. (P,B) Free on Board. The seller is responsible for placing on board the buyer's ship the goods as per the contract. Risk of loss or damage to the goods is transferred from the seller to the buyer as the goods pass the ship's sail, at port of loading, unless otherwise agreed in the contractual terms. These terms are synonymous, since the word 'truck' relates to the railway wagons. They should only be used when the goods are to be carried by rail. Free on rail and free on truck.

Futures (F) Standardized contract for the purchase or sale of a commodity which is traded for future delivery under the provisions of exchange regulations.

Forward (B) Standardized contract for the purchase or sale of a commodity which is traded for future delivery, not under the provisions of an exchange.

Hedging (F,P) Generally, two positions that are considered opposite risk. In futures, a simultaneous initiation of equal and opposite positions in the cash and futures markets. Hedging is employed as a form of financial protection against adverse price movement in the cash market.

Liquidity (F,O,B) A market is said to be "liquid" when it has a high level of trading activity.

Long Position (F,O,B) In the futures market, the position of a contract buyer whose purchase obligates him to accept delivery unless he liquidates his contract with an offsetting sale. In the options market, position of the buyer of a call or put option contract. In the forward market a long position obligates a buyer to accept delivery unless a book-out agreement is subsequently agreed upon.

Margin (F,O) Funds or good faith deposits posted during the trading life of a futures contract to guarantee fulfillment of contract obligations. Margins are also required on short options positions. Not usually required in forward markets.

Netback (P) Industry term referring to the net FOB cost of product offered on a delivered or CIF basis. It is derived by subtracting all costs of shipment from the landed price.

Net position (F,P,B) The difference between the open long contracts and the open short contracts in any one commodity.

Offer (P,F,O,B) A motion to sell a futures forward physical or option contract at a specified price.

Offset (F,O,B) A transaction which liquidates or closes out an open contract position.

Platt's (P) Long established petroleum journal which provides news, marker information and prices. It also publishes 'MARKETSCAN' a daily information telex quoting product prices in major markets. These are accepted as an effective 'marker' by the industry.

Put Option (O) An option that gives the buyer/holder the right to enter into a short futures position at a predetermined strike price and obligates the seller/writer to a long futures position should the option be exercised.

Short Position (F,O,B) In the futures market, the position of seller whose sale obigates him to deliver the commodity unless he liquidates his contract by an offsetting purchase. In the options market, the position of the seller of a call or a put option. The short in the options market is obliged to take a futures position if he is assigned for exercise.

Spot (P) Term which describes a one-time open market case transaction, where a commodity is purchased "on the spot" at current market rates. Spot transactions are in contrast to term sales, which specify a steady supply of product over a period of time.

Spot Price (F,P) A transaction price conclude "on the spot", that usually involves only one quantity of a product. In contrast, a term contract sale price usually obligates the seller to deliver a product quantity and price over a period of time. A price in physical trade for one delivery, usually a fixed price.

Spread (Futures) (F,B) The simultaneous purchase of one futures or forward contract and sale of a different futures or forward contract. Also refers to a futures/toward contract purchase in one market and a simultaneous sale of the same commodity in some other market. May also refer to a futures or toward contract purchase in one month and the sale of the identical contract in another month.

Spread (Option) (O) The purchase and sale of two options of the same type (calls or puts) which vary in terms of strike prices, expiration dates, or both.

Technical Analysis (F,B) Examination of patterns of futures price change, rates of change, and change in trading volume and open interest, often by charting in order to predict and profit from such trends.