The Soviet Wild Card:

Recent Developments and Opportunities for Investment in the Oil and Gas Industry

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Preface

The breathtaking pace of change in the Soviet Union, its vast endowment of oil and gas resources, and the critical requirements for modern technology and management have captured the interest of Western oil and oil service companies. For U.S. companies, with their vast experience in exploration and development in remote regions and harsh climates, the Soviet Union represents both enormous risks and opportunities. In an attempt to gain some perspective on the changes underway in the Soviet Union, the Petroleum Industry Research Foundation asked LPI Consulting to prepare an overview of the business and political environment in the Soviet Union for Western firms seeking to invest in the Soviet oil and gas industry.

LPI Consulting is a Washington-based energy consulting firm and has been working with clients in the Soviet Union for over two years. They have put considerable effort in developing a knowledge base of the local enterprises and the Republics as the key to understanding future business opportunities. Lucian Pugliaresi is a former National Security Council official with many years’ experience in energy issues. Elizabeth Malloy is an associate at LPI Consulting, speaks Russian, and works on Soviet trade and energy issues. Both Mr. Pugliaresi and Ms. Malloy have been frequent visitors to the Soviet Union.
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I. Introduction

The Iraqi invasion of Kuwait and the emerging crisis in the world oil market have underscored the energy security benefits to the United States and the West of oil production outside the Persian Gulf. Soviet exports to the world market reduce the West's reliance on Persian Gulf oil supplies and can thereby provide a modest, but important, counter-weight to ever larger reliance on insecure production from that region. For the Soviets, Western involvement in their oil and gas sectors opens an enormous opportunity to supplement their investment requirements and improve their outlook for hard currency earnings.

The recent (early September) visit by U.S. Commerce Secretary Robert Mosbacher to the Soviet Union included 15 CEOs, many from large and successful U.S. corporations. The purpose of the visit was to provide the Soviets, and Mikhail Gorbachev in particular, with advice on implementing economic reforms. There are also considerable commercial interests at stake and several CEOs from large energy companies accompanied Secretary Mosbacher on the visit to highlight the importance of U.S./Soviet energy trade. There are, of course, more than commercial interests at stake. There is also a growing recognition within the United States Government that arresting the decline in Soviet oil production can provide important energy security benefits to the West and assist the economic reform program in the Soviet Union, but that considerably more needs to be done in terms of technical assistance and trade development.

Mikhail Gorbachev's attempt to introduce perestroika and the more aggressive reform movement within the Russian Republic, whether successful or not, will have profound effects on the development, consumption, and export of Soviet energy resources, especially oil and gas. The proposal by Professor Stanislav Shatalin to "deregulate" the Soviet economy within 500 days presumably has been accepted in principle by Gorbachev and, if successfully implemented, would improve the prospects for large scale Western involvement in the Soviet energy sector. Unfortunately, Gorbachev's call for a national referendum on the issue of private property will mean that much more than 500 days will pass before real reforms are implemented.

For the energy sector, the only tangible outcome of the reform program to date has been the large cutbacks in investment in an attempt to free up more resources for badly needed consumer goods. These cutbacks in energy investment have been one of the motivating factors within the Ministry of Oil and Gas Industry, the Ministry of Geology, and more importantly within the Republics, to look for new mechanisms for Western involvement. Although substantial Western involvement in the Soviet energy sector is an inevitable result of the economic reform program, the Soviets have yet to agree on a consistent and long-term set of policy measures to encourage foreign investment and involvement. More importantly, the Soviet Union has yet to establish an oil and gas law or even guidelines on royalties and mineral rights.

There is continuing confusion regarding whether the Soviets or the Republics will control natural resources and what if any compromise will be worked out in the continuing debate over the economic responsibilities of the Republics. How the Soviets work out these conflicting demands regarding authority over the economy will have important implications
on the magnitude of Western involvement in their energy sectors and ultimately the volume of Soviet oil and gas exports to the world market. As a result of the changes now underway, whatever our previous expectations regarding the future of Soviet oil and gas exports to the West and the fledgling democracies in Eastern Europe have been, the variance about that estimate has increased substantially.

II. Recent Trends in the Soviet Oil and Gas Industry

As has been reported in the press for some time now, the economic situation in the Soviet Union is deteriorating rapidly. Nineteen eighty nine was an especially bad year and the outlook for 1990 is probably worse. Although national income reportedly rose by 2.4 percent as a result of gains in agriculture, industrial output began declining towards the end of the year. Even though industrial output rose by 2.7 percent in the first half of 1989, it only grew by 1.0 percent in the third quarter, 0.9 percent in the fourth quarter, and even declined by 1.0 percent in December compared with the same month in 1988. Note that even in those sectors where output rose, a considerable volume of production never made it to customers due to widespread hoarding and transportation bottlenecks which have exacerbated the economic crisis.

The energy situation parallels the general decline in the economic environment. For oil and gas, production did not reach its expected volumes under the plan. For 1989, the Soviet energy industry met only 98 percent of its contracted obligations, a rare occurrence for the energy industries which have historically exceeded their quotas. As shown in Table 1, oil production experienced an absolute decline in 1989 as compared to 1988, with natural gas production providing only a modest increase. Production of crude oil and gas condensate fell by 2.8 percent from 12.4 MMB/D in 1988 to approximately 12.1 MMB/D in 1989 and we expect this decline to continue in 1990 with oil production unlikely to be much above 11.3 MMB/D. Without substantial Western involvement in the Soviet oil sector production declines are likely to continue and output will probably dip below 10 MMB/D by 1995. In fact, if existing trends in equipment shortages and poor field management practices continue output is likely to be closer to 9 MMB/D than 10 MMB/D. The regional distribution of oil and gas production also demonstrates the importance of the "Yeltsin" factor — over 91 percent of oil production and 77 percent of gas production in 1989 came from the Russian Republic.

There are several explanations for the recent decline in oil production from all of the oil producing republics. Last year's substantial cuts in investment for fixed capital in the oil extraction sector must be considered as one reason. Reductions have forced equipment producers to produce at lower costs with the incentive of receiving higher profits. This "budget cutting" strategy which does not work well in a command economy, has instead encouraged the producers to reduce output of the less profitable, higher cost machinery so important for exploration and development in the difficult terrain in Western Siberia.
Routine production problems are now commonplace throughout the Soviet oil producing regions. According to Soviet officials, drill crews in the Kogalyn region have been idle for over a month because of equipment shortages. Pipeline accidents are escalating with tens of tons of oil spills in rivers and lakes. The situation is not much better in the gas sector, where over 10% of production is lost through pipeline leakages and poor field practices. Several hundred planned wells for 1990 will probably not be drilled because of a severe shortage of wellhead valves and Christmas trees as production problems continue at the equipment facilities in Baku. Corrosion problems are now widespread for small-diameter pipelines used for oil field collection. Although such small diameter pipelines are produced in the Ukraine and could be used to replace corroded pipe, production has simply failed to supply adequate quantities.

| TABLE 1 | SOVIET OIL AND GAS PRODUCTION | 1975-1990 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| USSR | 9.8 | 12.0 | 11.9 | 12.4 | 12.1 | 11.3 |
| Russian Republic (RSFSR) | 8.2 | 10.9 | 10.8 | 11.3 | 11.0 | — |
| European Russia | 3.6 | 3.1 | 2.2 | 1.8 | 1.7 | — |
| Urals | 1.6 | 1.5 | 1.3 | 1.2 | 1.2 | — |
| Siberia | 3.0 | 6.3 | 7.4 | 8.3 | 8.1 | — |
| Outside RSFSR | 1.6 | 1.1 | 1.1 | 1.1 | 1.1 | — |

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<tbody>
<tr>
<td>USSR</td>
<td>4.9</td>
<td>7.4</td>
<td>10.9</td>
<td>13.1</td>
<td>13.6</td>
<td>13.9</td>
</tr>
<tr>
<td>Russian Republic (RSFSR)</td>
<td>2.0</td>
<td>4.3</td>
<td>7.9</td>
<td>10.0</td>
<td>10.5</td>
<td>—</td>
</tr>
<tr>
<td>European Russia</td>
<td>0.9</td>
<td>0.7</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>—</td>
</tr>
<tr>
<td>Urals</td>
<td>0.4</td>
<td>0.9</td>
<td>0.9</td>
<td>0.8</td>
<td>0.8</td>
<td>—</td>
</tr>
<tr>
<td>Siberia</td>
<td>0.7</td>
<td>2.8</td>
<td>6.5</td>
<td>8.7</td>
<td>9.2</td>
<td>—</td>
</tr>
<tr>
<td>Outside RSFSR</td>
<td>3.0</td>
<td>3.1</td>
<td>3.1</td>
<td>3.1</td>
<td>3.1</td>
<td>—</td>
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* LPI Forecast for 1990 includes reported data from Jan-June 1990 with projection to end of year from existing conditions in oil and gas sectors. Totals may not add due to rounding. Source: Soviet Industry Publications.

The productivity of Soviet onshore oil and gas exploration has been declining for some years now. As shown in Table 2, the Soviets are experiencing rapidly diminishing returns in oil output per meter drilled, especially in the prolific West Siberian oil fields. All
the easy finds "appear" to be over and more sophisticated exploration techniques and improved field management are necessary to prevent a continuation in the decline of oil output. Whether this is, in fact, a trend that will continue remains to be seen since the Soviets have yet to benefit from the vigorous and differentiated set of exploration strategies, which are more common in the West. In addition the offshore provinces, many in harsh operating environments, are virtually unexplored. According to Igor Kazakov of the Market Research Institute of the Foreign Trade Ministry, less than 2 percent of the promising offshore provinces have been explored.

We do not want to suggest that merely fixing equipment supply problems will halt the decline in Soviet oil production. There are a combination of factors all requiring different solutions. Among the more important are: (1) large production losses during extraction and transportation; (2) increased complexity of the geological reserves; (3) rising production costs as a result of lagging sophistication of Soviet extraction technology; (4) production is shifting to the harsh operating environments in the Northern and Eastern regions; and (5) widespread shortage of pipe and equipment.

Whatever Soviet problems are on the supply side, problems are even more severe on the demand side. The Soviets are now paying the price of isolating themselves from the oil price shocks of the 1970's. A comparison of U.S. and Soviet energy intensity is revealing. U.S. total energy consumption per dollar of GNP has declined by nearly 30 percent since the 1973-74 Arab oil embargo. In contrast, Soviet energy consumption per dollar of GNP, as shown in Table 3, has actually increased by over 70 percent in roughly the same period. Admittedly, there are important structural differences between the two economies, but given that many analysts believe Soviet GNP is actually quite lower than estimated by the CIA, the situation is probably much worse. Clearly, any improvement on the demand side could yield considerable benefits in the availability of oil and gas exports. Although pure speculation at this point, some modest conservation efforts, combined with fuel substitution, should permit the Soviets to improve their oil exports by 1 MMB/D by the mid-1990's given that over 3 MMB/D of oil are still used as boiler fuel.

Problems in the Oil (and Gas) Fields

Although the productivity of Soviet exploration efforts clearly has been declining as more effort has moved into marginal and high cost fields, some of the decline in fossil fuels production can be attributed directly to a policy decision by Moscow authorities to reduce capital investment in the oil and gas sector. As shown in Table 4, capital investment in oil and gas production has virtually been flat since 1987. These investment trends are consistent with many critics of Soviet energy policy, especially the politically powerful advisory groups to President Gorbachev, who have argued for some time that much of Soviet investment in Siberian oil fields have had a negative rate of return.
### TABLE 2
WEST SIBERIAN OIL OUTPUT SHARES AND YIELD PER METER DRILLED, 1970-1985

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</thead>
<tbody>
<tr>
<td>Nizhnevartovsk</td>
<td>8.2</td>
<td>97.8</td>
<td>202.5</td>
<td>160</td>
<td>42.3</td>
<td>32.7</td>
<td>12.9</td>
<td>3.5</td>
</tr>
<tr>
<td>Var'egan</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgut</td>
<td>3.5</td>
<td>13.2</td>
<td>48.6</td>
<td>60</td>
<td>8.4</td>
<td>12.3</td>
<td>5.5</td>
<td>3.6</td>
</tr>
<tr>
<td>Iugansk</td>
<td>11.7</td>
<td>24.8</td>
<td>45.5</td>
<td>68</td>
<td>12.1</td>
<td>5.0</td>
<td>4.5</td>
<td>3.3</td>
</tr>
<tr>
<td>Krasnoleninsk</td>
<td>4.6</td>
<td>5.6</td>
<td>6.2</td>
<td>6</td>
<td>6.1</td>
<td>14.0</td>
<td>5.0</td>
<td>NA</td>
</tr>
<tr>
<td>Noiabr'esk</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomsk</td>
<td>3.4</td>
<td>6.6</td>
<td>9.8</td>
<td>12</td>
<td>15.4</td>
<td>8.6</td>
<td>4.8</td>
<td>2.9</td>
</tr>
<tr>
<td>West Siberia overall</td>
<td>31.4</td>
<td>148.0</td>
<td>312.6*</td>
<td>372</td>
<td>14.0</td>
<td>20.9</td>
<td>8.2</td>
<td>3.5</td>
</tr>
</tbody>
</table>

**Key:** Output in millions of tons per year; yield in tons per meter of hole drilled. Yield figures for 1985 are plan; all others are actual.

### TABLE 3

SOVIET ENERGY INTENSITY, AS MEASURED AGAINST GNP
(tons of coal equivalent to produce $1,000 GNP)

<table>
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</thead>
<tbody>
<tr>
<td>Energy Consumption (billions of tce)</td>
<td>0.67</td>
<td>1.12</td>
<td>1.67</td>
<td>1.88</td>
<td>1.91</td>
<td>1.97</td>
<td>2.01</td>
</tr>
<tr>
<td>GNP (trillions of $)</td>
<td>0.95</td>
<td>1.57</td>
<td>2.11</td>
<td>2.29</td>
<td>2.36</td>
<td>2.3</td>
<td>2.4</td>
</tr>
<tr>
<td>Energy Intensity (tce/$1,000 GNP)</td>
<td>0.71</td>
<td>0.71</td>
<td>0.79</td>
<td>0.82</td>
<td>0.81</td>
<td>0.83</td>
<td>0.84</td>
</tr>
</tbody>
</table>

Although these trends in investment are disturbing in terms of the longer-term capability of the Soviets to meet their energy requirements, they do suggest that Western involvement of investment and technology will be necessary and may occur on a large scale if appropriate rates of return can be worked out. Furthermore, Western technology may offer cost-effective solutions to oil field exploration and management not available from within the Soviet oil industry. For now, however, the Soviets simply can no longer afford to put such a massive commitment of their own resources into large scale energy projects. Given the hard currency limitations the Soviets face, any reliance upon Western involvement means the Soviets will have to rely much more upon export markets as a strategy for generating the hard currency necessary for Western participation in all sectors of their economy.

While over the long-term Western involvement offers some promise of expanding Soviet oil and gas output, the short-term effects of the investment freeze have begun to threaten oil and gas workers' jobs and have added to the political turmoil over independence issues and the question of who owns Soviet oil and gas resources — Moscow or the republics. This has been an especially sore point among Soviet oil and gas workers who continue to pose a serious threat to meeting production targets because of their apparent readiness to strike.

**TABLE 4**
Capital Investment USSR Oil & Gas Production  
(billions of rubles)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>OIL</th>
<th>GAS</th>
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<tbody>
<tr>
<td>1982</td>
<td>9.6</td>
<td>2.7</td>
</tr>
<tr>
<td>1983</td>
<td>10.0</td>
<td>3.1</td>
</tr>
<tr>
<td>1984</td>
<td>10.3</td>
<td>3.6</td>
</tr>
<tr>
<td>1985</td>
<td>11.5</td>
<td>4.2</td>
</tr>
<tr>
<td>1986</td>
<td>12.9</td>
<td>4.7</td>
</tr>
<tr>
<td>1987</td>
<td>14.6</td>
<td>5.1</td>
</tr>
<tr>
<td>1988</td>
<td>15.3</td>
<td>5.5</td>
</tr>
<tr>
<td>1989</td>
<td>15.5</td>
<td>5.4</td>
</tr>
<tr>
<td>1990*</td>
<td>14.8</td>
<td>4.9</td>
</tr>
</tbody>
</table>

* LPI estimate from Soviet Officials.

Source: *Eastern Bloc Energy* - April 1990

A strike by the oil and gas workers of Western Siberia's Tyumen Province remains a possibility because of the investment cutbacks. Largely because of inadequate supplies of
oil and gas production equipment, the workers in Tyumen province have been unable to earn bonuses normally earned by exceeding quotas. The strike threat, however, goes well beyond the loss of bonuses and is rooted in the poor living conditions in the region. Over 100,000 oil workers and their families live in wooden huts, as they wait for housing, and even the most basic food stuffs are in short supply. The mayor of one town of Tyumen province blames these problems on the fact that every facet of life, including housing, is controlled by the oil and gas production association, which is too preoccupied with oil and gas output to worry about the town's inhabitants.

Last summer, when the oil workers threatened to strike, the Government promised to investigate the workers' complaints. In January, the situation had not improved, and the entire Tyumen Province Committee of the Party was forced to resign, including the First Secretary, G. Bogomyakov. Bogomyakov had headed the Communist party in Tyumen for 20 years and had been considered a devoted, accomplished leader. During his tenure Soviet oil output grew eightfold and moved the Soviet Union ahead of Saudi Arabia and the United States as the world's largest oil producer. Bogomyakov's particular fall from power demonstrates Moscow's willingness to address local concerns. As a consequence, in June, 1989 Bogomyakov's nomination to be the new Minister of the consolidated oil and gas ministry was rejected because he was viewed as insensitive to environmental concerns when he managed development in Western Siberia.

President Gorbachev's more liberal view on Western Siberia is, by no means, the consensus of Soviet authorities and the question of how to deal with the workers of Tyumen province in particular, points out the broader question of how to deal with the various energy producing provinces in general. One question now facing Moscow is: should the provinces be allowed to seek Western investments (which would have to be tied to oil and gas exports for hard currency), or should they, as many conservative voices claim, be controlled more strictly by Moscow so that they do not become, as one critic stated, "a raw material appendage of Western monopolies"? (See "Regional Versus Central Control," page 17, for further discussion.)

Although granting the producers and/or local provinces of the USSR's energy resources a limited degree of autonomy may improve the country's overall energy balance and hard currency earnings, the potentially chaotic situation of varying degrees of local authority existing in different provinces could prevent Western companies from closing oil and gas deals. Already there is confusion when Western companies attempt to conduct business with the Ministry of Oil and Gas Industry (Minoil) in Moscow regarding the long-term importance of this particular ministry. For example, the Glavtyumneftegaz Association, which is the agency operating the Tyumen oil fields, has left the Ministry of Oil and Gas and became an independent unit with a new chairman, Yuri Vershinin, and a new name, Tyumenneftegasprom. In addition, there are now strong indications that the gas operations of Minoil may break away into a separate entity.
The continuing turmoil among central Soviet authorities wreak havoc with joint ventures. Even though a venture may have the full support of Moscow, Western firms must consult with local production amalgamations, labor unions etc — a time-consuming process. These problems are compounded by the nationalist demands in many of these provinces such as those expressed earlier this year in Azerbaidjan and Kazakhstan. For example, in the Kazakhstan town of Karaganda the "Karbid" petrochemical plant had made plans to sell or barter goods in excess of the state order. However, the Kazakh parliament decreed a new law prohibiting goods above the state order to be exported out of the Republic. This ruling exemplifies how local bureaucrats can come between Moscow and foreign companies. If these provinces are granted limited political autonomy, a host of questions will arise regarding ownership of already existing joint ventures, and regarding who must consult whom in the case of future projects with Western companies.

Despite these obstacles, the longer-term prospects remain positive for profitable joint ventures and traditional service contracts. In March, the Ministry of Oil and Gas in a joint venture with an American company, began offering data packages on several promising oil-producing regions in Western Siberia and Bashkiria. The fact that the Ministry is marketing this opportunity shows that Soviet officials are finally starting to systematize the process of bringing in Western technology in the oil and gas sector in order to offset investment cuts. Another positive step in this direction is a protocol signed between Parker Drilling, a U.S. drilling company, and the oil and gas ministry in late 1989 to manage drilling in the Tengiz oilfield. A recent venture with the French state-owned oil company, Elf-Aquitaine, was announced in May. Although this venture appears to be a traditional exploration and production sharing arrangement, Soviet authorities point out it is only a protocol at this point. Many other projects are currently being negotiated, including a joint venture with an Italian firm to construct underwater pipelines.

One project which has received much attention is the unique arrangement made between a group of large American companies, the American Trade Consortium (ATC), and the Soviet Foreign Economic Consortium to form a joint venture network. The group of large American companies was formed in April 1988 to invest up to $10 billion in the USSR over a 20-year period. The consortium consists of Chevron Corporation, RJR Nabisco, Eastman Kodak, Johnson & Johnson, Archer Daniels Midland, and the Mercator Corporation. The ATC signed an agreement with the Soviet Economic Consortium in Moscow in March 1989. The unique characteristic of the ATC is that profits, both rubles and hard currency, will be put into a common pool and, unlike most joint ventures, hard currency will be generated by oil and gas produced by Chevron.

According to the plan, Chevron will enter into a joint venture with the Ministry of Oil and Gas and Tengizneftegaz to survey and eventually develop the Korolevskoye field in Kazakhstan's North Caspian Basin. In December 1988, Chevron had negotiated an arrangement with the former Ministry of Oil, which has since merged with the Ministry of Gas, to jointly survey the Korolevskoe field. In March 1989, the two consortiums signed an
agreement which outlined the aggregate business plan, with twenty two joint ventures and the legal and tax provisions. Since then, however, several problems have arisen.

The merging of the Soviet Oil and Gas Ministries in mid-1989 caused confusion in the negotiations, which have been ongoing since the plan was first agreed upon in 1988. Also, nationality problems in Azerbaijan and Kazakhstan have caused concern. Furthermore, the local authorities in Kazakhstan have often presented requirements different than those specified in Moscow — for example, they are expecting Chevron to help them develop infrastructure in the area. Chevron apparently worked many of these problems through, although to what extent is unknown, and signed a protocol. The agreement, which was signed the day after a trade agreement was signed by Presidents Bush and Gorbachev in Washington in June, 1990 is, at this point, only a feasibility study to be performed jointly with the Ministry of Oil and Gas Industry.

Although the ATC may not be running as smoothly as planned, the fact that it was established shows official support for Western involvement in the oil and gas sector. Chevron's technology would be welcome, although not vital, to development of the Korolevskoye field, but it seems the only way to secure the other goods offered by the ATC. It seems then that deals arranged in such a way are more likely to meet with success since they can be worked out to provide goods specifically for the people living in the area of cooperation — these are the people who could ultimately block, or provide vigorous support for, Western involvement, and their support is essential.

III. Outlook for Exports of Soviet Oil and Gas

Natural Gas

Soviet gas sales to the OECD countries are continuing to expand. Since 1982 sales have risen from 2,720 million cubic feet/day (mmcf/d) to roughly 5,000 mmcf/d by the end of 1989. Further growth is possible if the Soviets can make the investment to expand capacity, most likely with Western involvement. Some Soviet officials have been optimistic about expanding gas production. Mr. Chernomyrdin, Chairman of Gazprom, the USSR's gas concern, believes annual production for 1990 will approach 30 trillion cubic feet (TCF), and that by the end of 1995 it will exceed 35 TCF.

Given the anti-nuclear movement throughout Eastern Europe, severe air pollution problems, and the rising concern over nuclear and other environmental issues throughout Europe, it is likely that opportunities for expanded Soviet gas exports will grow. The Soviet Union represents a logical supplier to these countries and although gas output has been one of the only growing sectors of the Soviet energy balance, its rate of growth has been slowing. Output growth has been steadily declining since the early 1980s. The average annual growth
for 1981-85 was 8.1 percent, for 1986 it was 6.7 percent, for 1987, 6.0 percent, for 1988 5.9 percent and for 1989 it fell to 3.3 percent. This undershot the target of 28.9 TCF by about 800 billion cubic feet which would have meant 5.1 percent growth, a figure Soviet planners believed to be feasible last year.

There are several reasons the Soviets have purposely lowered their production targets. Demand for gas has softened as most switching, for example in electric power stations, has taken place. Gas has already displaced oil as the dominant fuel consumed in the USSR. In 1989, gas accounted for 39.7 percent of energy consumption compared to 30.9 percent for oil, although total gas exports have increased from 19.7 percent of total energy exports in 1988 to 26.1 percent in 1989, it is still not enough to justify a large investment to expand output.

The reasons for unmet targets, even though the targets were substantially lower, can also be attributed to the traditional technical problems in producing equipment, and transportation problems. For example, in 1988, 22 planned compressor stations were not completed because of inadequate investment. Many of these compressors were on the Yamburg-Tula pipeline which carries gas from the super-field of Yamburg, a field which was developed far behind schedule, to Moscow. Plans for increasing capacity at Yamburg, as well as at Astrakhan, Orenburg and Karachaganak, were also hampered by delays in equipment deliveries. Investment cuts can be expected to cause further slowdowns and possibly labor problems.

Whether or not the Soviets will be big players in the European or the world gas market depends upon a host of factors which will become much more apparent in the next few years. The first is whether the Soviets can effectively engage Western investment to develop their vast reserves and then transport the gas to market with a reasonable rate of return. Although Western investment and technology can help the Soviets lower the development costs, the growth in gas demand in Eastern Europe, Western Europe, and even the world LNG market is still not yet evident. For Europe, East and West, gas demand will depend considerably on the future of nuclear power as well as any increases in environmental problems. Some analysts are forecasting a major increase in European gas demand. The Soviets can probably meet any projected increase in demand and many analysts are convinced that the Soviets could increase gas production by 300-400 bcm above current levels. While these figures seem high, construction of oil-fired, nuclear and hydroelectric plants will be very difficult for political reasons thereby leaving gas the fuel of choice.

Oil

Much like the situation in gas, oil exports will be driven by forces well beyond the control of the Soviets. Nevertheless, a debate has been taking place in the USSR about the
future of oil exports and published reports have warned the public that the Soviet Union can no longer expect that oil exports will rescue perestroika as "it once rescued us during the period of stagnation" (i.e., the latter years of the Brezhnev era).

Other analysts argue that stopping oil exports means abandoning all hope of becoming a modern industrial power because the USSR has nothing other than petrodollars to pay for advanced Western technology which is essential for industrial growth. I. Lavrovskii of the Institute recommends the Soviets free up trade by making the ruble convertible and by importing processes and capital investment rather than goods. For starters, he is arguing that the ruble become convertible in energy-producing regions (so-called "free economic zones") so that Soviet oil enterprises can both sell oil and purchase equipment for freely convertible, foreign currency.

We believe Lavrovskii's comments are the leading edge of a trend in the Soviet Union which will eventually lead to a much more aggressive program to use Western technology and investment to expand oil production and exports. Although crude and product exports to OECD have grown steadily since the early 1980's, exports declined somewhat in 1989. Trends for 1990 indicate that the Soviets are trying to expand OECD crude and product exports. Exports for March 1990 were 6.8 percent higher than March 1989. The increase, however, was achieved at the expense of a 1.65 million ton (9.9 percent) shortfall in deliveries to Eastern Europe. Even though this is a substantial cutback to Eastern Europe, we do not expect the Soviets to make substantially larger cutbacks right away, but to phase out subsidized sales in favor of hard currency payments over a two to three year period, if not before.

The recent increase in oil prices will bolster Soviet hard currency revenues and could presumably be used to bolster investment in the oil sector to improve the outlook for exports. If oil prices were to remain at roughly $25/bbl for the next twelve months export revenues would increase by over $4 billion. However, this particular windfall, which is likely to be supplemented by additional revenues as the Soviets shift their energy with Eastern Europe to hard currency, is not likely to find its way into increased revenues for the oil sectors. Arrears to Western countries and firms, and the crisis in the consumer sector will likely claim all of these revenues. The political crisis over consumer goods is now so severe that the oil and gas sectors will continue to receive a low priority in any battle over the allocation of investment funds.

IV. Soviet Institutional Framework for Western Involvement in the Oil and Gas Sectors

Although the Soviet Union has introduced substantial reforms to encourage expanded trade and investment from Western firms, especially companies involved in the development
of oil and gas resources, no clear view of the ultimate goals of the reform process have emerged. This is not to say that there hasn't been some progress. There have in fact been several developments over the past few years. Among the more important are:

1. **Joint Ventures:** The law authorizing joint ventures are Decree No. 6362-XI of the Presidium of the Supreme Soviet and Decree No. 49 of the USSR Council of Ministers, January 13, 1987. In the oil and gas sector, joint ventures are negotiated with local authorities, but must be subsequently approved by the Ministry of Oil and Gas Industry, as well as the Bureau of Fuel and Energy Complex of the Council of Ministers.

2. **Cooperatives:** In July, 1988 the Soviet Government issued a decree, *On the Cooperative System in the USSR*, which authorized private production and trade largely for services and goods in the consumer market. Although cooperatives have an unusual degree of freedom in establishing output levels, purchase of inputs, hiring and firing, the Government has *de facto* control over pricing. In addition, recent legislation has restricted the cooperatives from entering the fields of medical specialties, education, media, and currency and goods transactions with foreigners.

3. **State Orders:** In attempt to introduce a wholesale "market" and reduce the Government's direct supervision over output levels, Gosplan has abandoned the state plan and replaced it with a system of state orders. Presumably enterprises should now be able to shop around for inputs and even change the method in which state orders are fulfilled. In practice, however, the state order system has not brought about a wholesale "market" within the Soviet Union because Gosplan has prevented enterprises from breaking off existing supply relationships. State orders, however, may provide an opportunity for politically influential regional authorities to negotiate a reduction in output requirements. Such reductions in requirements can then provide an opportunity to sell excess output into the foreign market for hard currency.

4. **Banking/Financing Reform:** The structure and operation of the Soviet banking system is archaic by Western standards. Some stock financing and securities have been issued to raise capital, but what Westerners would view as equity participation does not exist. Such financing is still at a very early stage in the Soviet Union and was authorized by the Council of Ministers decree, *On the Issuing of Securities by Enterprises and Organizations*, in October, 1988. If further reforms are introduced, i.e., expansion of private property rights, stock financing could represent a fast track for improving the allocation of capital within the Soviet economy.
Recent Developments in Oil and Gas Trade

The Ministry of Oil and Gas Industry (Minoil) is the principal entity regulating Western involvement in this sector of the Soviet economy. No Soviet law exists regulating oil and gas developments so Western firms must negotiate all aspects of their involvement in a given project under the joint venture agreement or through a separate contract, including production sharing, work commitments, bonus payments, rentals, and some taxation requirements.

For exploration and production (E&P) projects, joint venture companies are formed with local authorities who generally have regional jurisdiction over both known and prospective oil and gas bearing deposits. The final joint venture agreement, including any subsequent production arrangement, will require approval of the Ministry of Oil and Gas Industry. Once approved by Minoil, the venture would be submitted for final approval to the Council of Ministers, where it would be evaluated by officials in the Bureau of Fuel and Energy Complex and possibly other relevant authorities.

Once a deal is initiated, Minoil should act as the principal agent for the joint venture ensuring that it is approved by the Council of Ministers by shepherding it through the approval process, including the State Committees on Environment, Science and Technology, Ministry of Finance, Gosplan, Gosbank, and the Ministry of Foreign Trade. In practice, it has generally been prudent for the Western companies involved to do much of this groundwork themselves because bureaucratic interests within Minoil may view the joint venture arrangement as a threat to their future control over the oil and gas industry.

Another ministry that can play a critical role for companies seeking an oil and gas joint venture, is the Ministry of Geology. This Ministry has, for the most part, been the entity involved in "rank wildcatting" throughout the Soviet Union. (Note, however, that Western Siberia still seems to be Minoil territory even for wildcat operations.) It should, presumably, be possible to work an exploration and development project directly through the Ministry of Geology after negotiating the initial arrangement with local authorities. Under these circumstances the project would then come under Minoil jurisdiction.

Gazprom, the Soviet's for-profit gas concern, is the key organization for companies interested in gas development projects. Gazprom was formed as a separate body to focus specifically on gas production when the Ministries of Oil and Gas were merged in 1989. Headed by Mr. Chernomyrdin, the concern is comprised of most of the old gas ministry's enterprises, is responsible for exploratory drilling, production and processing of natural gas and is the principal organization for Western companies seeking joint ventures or investment in Soviet gas prospects. As with Minoil, approval is ultimately necessary from the Bureau of Fuel and Energy Complex of the Council of Ministers, but these circumstances may change.
As discussed above, last Spring a new means of establishing a joint venture was begun by Minoil, which involves the sale of geological-geophysical data packages for regions throughout Western Siberia, as well as some limited areas in Bashkiria so that oil companies can evaluate the resource potential. A Western oil company can purchase one or more of these packages for a price range between $20,000 to $40,000 per region. Minoil has publicly announced a timetable, which will not be met, calling for work to begin in January 1991. These data packages are by no means the only way for a Western oil company to initiate involvement in the Soviet energy sector, but is as yet the only systematized way for companies who don’t have long-standing representation in the Soviet Union to get their foot in the door.

Exploration and production are by no means the only areas where the Soviets are seeking Western involvement in the oil and gas sector. The Ministry of Petroleum (refining, petrochemicals, etc.) has called for developing new, resource-saving and non-polluting technologies, and modernization of chemical and petroleum processing facilities. This ministry joined forces with the State Committee on Science and Technology (GKNT) and the Foreign Affairs Department in early July to back a large international exhibition on equipment for petroleum and gas industries called NEFTEGAZ 90.

New Economic Policy Developments

Economic issues dominate much of the Soviet press, and perhaps no issue gets more attention than prospects and problems associated with a transition to a market economy. The so-called “500-day plan,” endorsed by the Russian Republic in September 1990 and “agreed” to by Gorbachev, is designed to give power over economic affairs to the Russian Republic and create the basis for a fully functioning market economy. This particular program, orginally developed by Gorbachev’s economic advisor, Stanislav Shatalin, provides curbs on state spending, an end to subsidies to state farms and factories, gradual price decontrol, sales of housing and land, and a comprehensive program to privatize state enterprises. However, Gorbachev’s recent decision to seek a national referendum on private property is likely to slow events down and/or create a crisis with the Russian Republic. A key element in the 500 day plan, or any other reform program for Western firms, is whether or not a well-understood and clear structure of property rights will be established. Even if property rights to natural resources remain under the authority of the state, the extension of private property to other areas will facilitate business development, especially in the oil and gas sectors.

The Soviet Union has recently established a Law on Property. Most reform-minded Soviet officials view the law as inadequate and much too limited to provide any genuine opportunities to move ahead on a transition to a market economy. In addition, the new law provides for no major denationalization of Soviet property until 1993-1995, and specifically reserves all large-scale industrial complexes to state ownership. For example, the law does
not permit small businesses to expand by hiring additional workers, but does legitimize the "individual enterprise." The equity market also remains highly restrictive and even collectives are not permitted to sell shares to individuals outside the collective.

Although the Law on Property can be regarded as progress towards a market economy, its current form represents a victory for the conservatives. The best hope for progress is the Law on Property to be viewed as part of a long-term process leading to further extension of property rights, including a Law on Enterprise which would permit individuals to raise capital, own stock, and organize their activities free of state orders and a central plan. Academician and Peoples Deputy of the USSR, Oleg Bogomolov and Academician and Member of the Presidential Council, Stanislav Shatalin are pushing hard for further reforms, but fear of a market economy remains prevalent throughout Soviet society. It is still too early to determine whether privatization will proceed much further in the near-term.

For U.S. oil and oil service companies, the lack of widespread privatization means that all aspects of a joint venture will require some involvement with both regional (republican) and Soviet (union) authorities. This means that all aspects of the joint venture, including supplies of capital equipment, payment of workers, housing, transportation of workers and product to market, tax rates, will have to be negotiated with both republican and union authorities. From the perspective of promoting trade among U.S. firms, this means that ties to key officials take on more importance than would normally be the case in countries with free markets and/or a tradition of Western involvement in their oil industry.

On the positive side is a draft resolution, now under consideration, of the Law on Foreign Investment. This law is expected to regulate large areas of foreign trade and has been given good reviews by many of the pro-market activists. The law should be submitted to the autumn session of the USSR Supreme Soviet and according to some analysts we spoke with, the law will allow 100 percent ownership of an enterprise by foreign concerns. At the same time, however, the Main Foreign Economics Commission of the USSR Council of Ministers (MFEC) may be in the process of acquiring new authorities to severely restrict the formation of joint ventures. Should MFEC obtain these new authorities they would be in the position of stopping joint ventures which do not meet minimum capitalization levels or fail to break even in hard currency balances. Both of these provisions would, of course, contradict normal standards of international trade. Furthermore, it is quite likely that any new laws on investment and property would carry restrictions and specifications on natural resources.
Regional Versus Central Control

Regional authorities continue to grow in importance in putting together any major cooperative oil and gas project involving a Western company. Although the overlap of authorities increases the bureaucratic obstacles to closing a deal, the growing importance of the republics have established conditions under which there are substantially larger incentives to cooperate with Western firms.

The recent announcement by Soviet authorities that over 56,000 square miles would be open in the Republic of Turkmen for exploration and development through a traditional bid round is a good case in point. Press reports indicate that the bid round is supported by the Soviet Government through the Ministry of Geology. But will Western companies be willing to bid substantial sums for E&P rights in the current environment? There is no direct evidence that the bid round has the support of local authorities or what constraints might be applied in the production oil and gas resources. These developments are symptomatic of the economic uncertainty that is pervasive throughout the Soviet Union. They also add a new degree of uncertainty for Western companies hoping to get involved in Soviet oil and gas as the already confusing but established guidelines are being rewritten. However, for Western oil companies who are willing to stay on top of the situation these conditions also create important opportunities.

The recent upheaval with the oil workers in Tyumen, which produces 60 percent of oil and gas extracted in the USSR, is a good case in point. On March 10, 1990, Tyumenskaya Pravda published an open letter to Prime Minister Ryzhkov, and S. Stepan, head of the All-Union Central Council of Trade Unions. Written by Nikolai Trifonov, leader of Tyumen s trade union of oil and gas workers, the letter expressed the sentiments of 700,000 workers and stated that the government needed to address their complaints by April 1, 1989 or all work would cease. Given that Tyumen province produces up to 60 percent of oil and gas extracted in the USSR, a major strike would be a devastating blow to the Soviet economy and a political disaster for Gorbachev. The workers asked for the following:

1. Help for the region to build housing and social-cultural facilities through all-Union efforts, since there is practically no construction industry there.

2. A secured state order to provide the oil- and gas-extracting industry with stocks and materials (including foodstuffs and manufactured goods), and by building various industrial and non-industrial facilities.

3. An annual allotment of 100 million bricks for the Region's social development.
4. A lowering - or a freeze at the 1986 level - of prices for products of the engineering industry, for materials and automotive transport, brought into the Region, until there is a reassessment of the price of oil and gas.

5. If the government is incapable of complying with these demands in full measure - leave 10-15 percent of extracted oil and gas at the disposal of the Region's oil- and gas-extracting enterprises for sale at home and abroad on contractual prices, without deductions to the state budget for the solution of the Region's urgent problems by local efforts.

Although these demands were not presented in the form of an ultimatum, they did lead to some relinquishment on the part of Soviet central authorities. Here's what Moscow agreed to do:

1. Ryzhkov recently signed a decision under which Tyumen oilmen will be able to sell into hard currency markets 400,000 tons of oil and 300 million cubic meters of gas, and then buy food with the proceeds.

2. This year, for the first time ever, they will receive regular foreign currency percentages from exports. If the USSR sells 98 million tons, five percent of currency will go to producers, on the next 19 million tons sold, producers will receive ten percent, if another eight million tons go for export, producers will receive 20 percent of all foreign currency receipts.

3. State wholesale prices will be raised in 1991. Instead of costing 30 rubles per ton wholesale, oil could cost 70 rubles, and the price of 1,000 cu. m. of gas could go from 26 to 52 rubles.

The situation in Tyumen may eventually come to resemble, at least in part, that of Kuzbas (the Kuznetsk Basin), where coal workers went on strike last summer. The strike ended with the concession by the government that Kuzbas production amalgamations can sell as much coal above state-order as they want. Apparently, in Kuzbas any foreign company can totally bypass Moscow and go straight to a local enterprise to arrange a coal purchase or joint venture. This arrangement should work well for foreign companies - a Supreme Soviet deputy from Kuzbas claims that Kuzbas coal costs the state $12/ton (using the realistic conversion factor of .48, this cost is less than $1), and costs even less to produce. Ultimately, power lies in the hands of the workers in resource-rich areas such as Kuzbas and Tyumen and a similar situation to that which happened in his region will follow in Tyumen "in the wake of Kuzbas."

Another example of worker control is the nationwide coal miners strike held July 11. Despite appeals from the CPSU Party Congress and Gorbachev himself, miners across the country (in Kuzbas, Donbas, Vorkuta and Karaganda) struck to demonstrate their lack of
trust in the government and party. Last summer, although promising concessions were granted to the Kuzbas workers, they were not enough to address the basic demands of the workers to improve living standards and working conditions. Although the Kuzbas producers may have the right to sell coal from hard currency, clearly the desired effects — increased imports of consumer goods — will not be felt for some time.

Before the strike, leaders of the movement said the government could avert the strike by fulfilling these demands: nationalization of Communist Party property, depolitization of the KGB and army, resignation of the Soviet government and formation of an elected cabinet, disbanding of the Supreme Soviet, and the removal of ideology from education. Gorbachev promised the miners a greater role in the party in the future, but the strike was held nonetheless.

V. Concluding Observations

It is in the area of exploration and production (and to some extent refining) of conventional oil and gas resources that the Soviet Union needs the most assistance. This is the sector that will generate much of the hard currency that will provide the critical imports to provide "running room" for the leadership to restructure the Soviet economy. Clearly, in the production of oil and gas most of the Soviet problems to date can be tied directly to the resource allocation and management problems that are inevitable in a command economy. The use of market prices have been given only a limited role in directing Soviet decisions on investment levels, management decisions, and technology development in the oil and gas sectors. As a result, Soviet oil and gas production amalgamations have not made many of the essential restructuring adjustments that have taken place among the oil and gas companies in the market economies.

The Soviets still have vast unexplored regions and complex resource deposits where U.S. technology and know-how can make a contribution to expanding output. Admittedly, many countries can produce competitive offshore platforms and exotic oil field equipment, but most of the leading-edge critical "know-how" still resides among U.S. firms. It is this "know-how," which includes long-term operating experience in harsh climates and terrain (under strict environmental controls), which should give U.S. companies an advantage in obtaining cooperative ventures with Soviet oil and gas enterprises.

There are important mutual benefits to be gained from enhanced cooperation in the oil and gas sector. For the Soviets, such cooperation would bring to them improved management of a critical and valuable resource, enhanced environmental protection, access to the latest knowledge and technology in exploration and development, and a higher level of hard currency earnings than would otherwise be the case. For the United States, the benefits would go beyond the initial expansion in trade opportunities. The U.S. would also
gain from the perspective of energy security, a point which is now finally being considered by the US Administration as a result of the crisis in the Persian Gulf. Access to the Soviet market would contribute to greater Soviet output thereby reducing the net demand for OPEC oil, as well as sustaining within the U.S., the capability to exploit U.S. arctic and other high cost resources at some future time when development is justified economically.

Although some U.S. oil and oil service companies have gained a strong presence in the Soviet market, this position may not be sustainable for several reasons. Among the most important reasons for this, from both a symbolic and financial perspective, is the lack of concessionary financing and underwriting of investments often available from European and Japanese lending authorities. The U.S. Export-Import Bank and the Overseas Private Investment Corporation (OPIC) provide U.S. companies operating abroad with financing and insurance, but not for companies doing business with the Soviet Union. Assuming the U.S./Soviet relationship continues to improve, there remains a chance that such programs will be extended the Soviet Union as has been the case in Eastern Europe.

Even if traditional Ex-Im and OPIC programs were available to U.S. firms doing business in the Soviet Union, formidable problems would remain in promoting cooperative ventures between U.S. oil and oil service companies and Soviet enterprises. The Soviet Union has no oil and gas law, and many officials still do not have a clear understanding of the difference between DOE and the U.S. private oil companies or how the U.S. industry is regulated.

From the perspective of U.S. companies, the impediments to cooperative ventures with the Soviets are enormous. Both political and economic developments in the USSR are fluid and it is still too early to predict how these events will play out. However, movement appears to heading in a productive direction. The so-called "500 day plan" submitted to the Supreme Soviet and endorsed by President Gorbachev calls for radical reforms in restructuring the Soviet economy. Implementing this legislation will take time. Even if such radical changes in the Soviet economy are agreed to, Western involvement through direct investment will hinge upon a clear understanding or resource ownership and an appropriate legal structure. Is Western involvement also tied to the survival of Gorbachev? Not necessarily, since he could be replaced by a leader willing to accelerate the reform program. In addition, for oil and gas exploration and development, Russia will be the most important republic. If the central authorities and the Russian Republic work out an agreement which provides for some combination of local control and revenue sharing, investment decisions will be tied much more to the political conditions in the republics than the future of the leadership in Moscow.

Although the unstable political environment is likely holding back considerable Western investment, operating in an unstable political environment is not uncommon for U.S. oil companies. Instability in the political environment is compounded by a lack of understanding on the part of the Soviets regarding what represents an acceptable business
arrangement. Different needs must be met, i.e., environmental, local and financial concerns, new technology — often all among different agencies — before a deal can be concluded. Furthermore, it remains unclear where the starting and ending points are for a successful cooperative venture.

Although overcoming the institutional impediments described above should be viewed largely as a problem of Soviet policy, the West also has a stake in assisting the Soviets with reforming their oil and gas sectors. If the Soviets can open up their oil and gas provinces to Western companies and also make progress in rationalizing energy use within the economy, there is a good chance the Soviets can sustain oil and gas exports at a level which will provide an important component of the hard currency exports essential for funding the economic reform program. In addition, if these reforms can be successfully implemented, the Soviets will continue to represent a modest, but important source of oil and gas supplies outside the Persian Gulf.

The Houston Economic Summit in June called for providing the Soviets with technical assistance in various sectors of their economy, including food processing, rail rehabilitation, and telecommunications networks. Energy, specifically oil and gas, were not mentioned. It took Saddam Hussein's invasion of Kuwait in August to elicit from President Bush, before the Summit, the potential of sharing US oil technology with the Soviet Union. Although during the Summit this offer was not elaborated on, we can hope that the Administration will now push forward with the repeal of the Jackson-Vanik and Stevenson-Byrd amendments to encourage US oil companies to invest in the Soviet Union. As we begin to move closer to the Soviet Union politically, we must also do so economically, keeping in mind that it will not only provide benefits for the Soviet Union, but will provide important opportunities for the U.S. oil and gas industry at a time when domestic prospects are at an all-time low.