



You may be interested.

PIRINC has prepared the enclosed report entitled, *Oil and National Security*. The report has been submitted to the U.S. Department of Commerce, which has initiated a new investigation under Section 232 of the Trade Expansion Act of the effects on the national security of imports of crude oil and petroleum products.

Oil and national security have been the subject of government investigations over many years. All have found that oil imports threaten to impair national security. This report places these investigations in the context of oil market developments and then focuses on the issue of appropriate actions.

The most recent investigations, those of 1988 and 1995, led to recommendations in line with then prevailing Administration philosophies. Neither investigation recommended any direct presidential action to adjust imports, concluding that the costs would far exceed benefits. But in 1988 the Commerce Department recommended legislative actions to improve domestic supply and to add to the SPR and was silent on energy conservation. The 1995 investigation highlighted current Administration policies to promote efficiency and alternatives to oil, but virtually dismissed the supply-side of the equation. The new investigation should address both. Price developments over the past year should encourage the current investigation to recognize the vulnerability of domestic production to short term price declines and to consider measures such as more flexible royalties to address it.

If you have any questions or comments, please call John Lichtblau, Larry Goldstein or Ron Gold.

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Oil and National Security

On April 28, the Commerce Department initiated a new investigation, under section 232 of the Trade Expansion Act of 1962 to determine the impact of imports of crude oil and refined petroleum products on the national security. Oil and national security have been the subject of a number of government investigations over many years. This will be the fifth Section 232 investigation of oil imports, following earlier investigations in 1975, 1979, 1988, and 1995. These are in addition to a 1959 investigation conducted under the Trade Agreements Extension Act of 1958. All prior investigations reached the same finding, that oil imports threaten to impair national security. The new investigation is likely to reach the same conclusion.

The rationales for the findings have differed over the years as have the actions taken in response. If a finding is made that imports represent a threat to national security, the President can then determine whether to use his statutory authority to "adjust imports." Under current law, this determination must be made within 90 days. In 1959, President Eisenhower used his authority to establish mandatory oil import quotas. In 1975, President Ford imposed oil import fees. The 1979 finding was used by President Carter to proclaim an embargo on imports of crude oil from Iran and later by President Reagan to proclaim an embargo on imports of crude from Libya.

The investigations of 1988 and 1995 led to recommendations in line with then prevailing Administration philosophies. Since the Executive Branch sits in as part of the study team, they are unlikely to be surprised by the findings. In neither case did the Commerce Department recommend any direct presidential action to adjust imports, (through quotas, tariffs or fees) concluding that the costs would far exceed benefits. But in 1988 the Commerce Department recommended legislative actions to improve domestic supply, including permitting exploration and development of the Arctic National Wildlife Refuge and the Outer Continental Shelf, to ease the licensing procedures for nuclear power, and to add to the SPR. In 1995, recommendations focused on continuing current Administration policies to promote energy efficiency and alternatives to oil. The current investigation would serve the public interest best if it addressed both supply and demand considerations in formulating its recommendations.

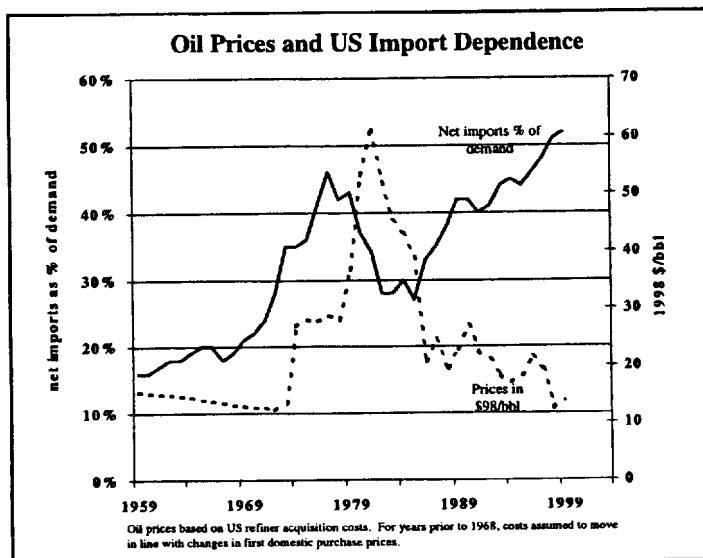
This report places these investigations in the context of oil market developments and reviews the various criteria for determining effects on national security. It then focuses on the issue of appropriate actions. Any such discussion must start with the recognition that a continued, high level of oil imports is inevitable and not necessarily undesirable. As previous investigations have pointed out, attempts to significantly curtail imports through tariffs or quotas would impose very high costs on the US economy. Moreover, there are more efficient ways of improving oil supply security: diversification of sources, and strategic inventories. The past year however has highlighted an additional concern; the vulnerability of the domestic industry to temporary sharp declines in world oil prices.

Here there is a case for limited action to minimize permanent losses in secure domestic supply from temporary price developments.

National Security in the Context of Long-Term Oil Market Developments

Oil Imports and Prices

While everyone can agree there is a linkage between oil and national security, it is not clear exactly what the linkage is. In the narrowest sense, the US military has always been able to meet its needs and would continue to have first claim on resources in time of emergency. The issue would seem to be broader, namely the vulnerability of the US economy to sudden supply shortfalls and unanticipated sharp increases in prices. Here, the disruptions and recessions following the 1973-74, the 1979, and the 1990-91 oil



crises would seem to prove the case. Even so, it doesn't follow that import levels per se are an indicator of vulnerability to such developments. The chart on the right summarizes trends in imports as a share of consumption and oil prices since the 1959 finding. In that year, net oil imports accounted for about 16% of demand and crude prices in 1998 dollars were about \$15.50/barrel. Last year, net imports reached 51% of demand; about three times the 1959 figure while the real price of oil was lower, about \$12.50. Even the recent price increases bring this year's average level (as estimated by the US Department of Energy's May Short Term Outlook) approximately back to 1959 while net imports are projected to rise to 52% of consumption.

The 1975 and 1979 Section 232 findings highlighted growing import dependency and risk of disruption from politically unstable areas, as well as balance of payments pressures associated with high prices and high volumes of imports. In 1977, imports reached 46% of demand, a share not reached again until 1996, while prices in 1998 values rose to peak of \$61 in 1981. The 1988 and 1995 findings came under very different circumstances. Imports were again rising, after reaching a low of 28% in 1982-3, but prices were lower and the studies now considered, in addition to ongoing concerns about supply disruption, adverse effects on domestic supply, a concern raised in the earlier, 1959 investigation. On the other hand, neither study raised balance of payments considerations. The current investigation takes place at a time of even higher imports, and still lower prices---and while the US and allied NATO forces are engaged in military action against Yugoslavia with no apparent problems of fuel supply.

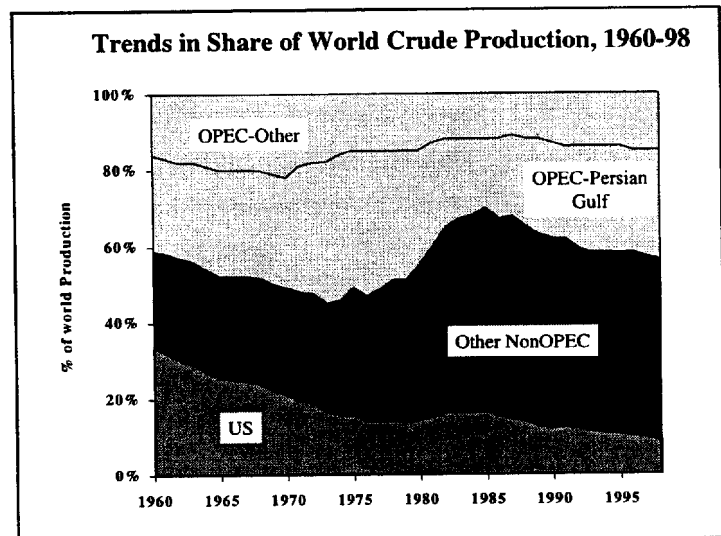
In certain respects, oil's role in the economy is far less prominent than in the turbulent 70's. US oil consumption in 1998 was about the same as in 1978 (18.8 versus 18.7 million barrels a day) while GDP was up by 68%. Payments for imported oil approached 3% of GDP in 1980 but now are less than 1%. Nonetheless, oil is still important. While demand today in total is about the same as 20 years ago, its composition has changed significantly. Consumption of residual fuel oil, which competes with coal and gas for the bulk fuels market fell by 75% (from 3.1 to 0.8 million barrels a day) between 1978 and 1998 but other, less substitutable uses of oil--- particularly transport and chemical feedstocks---have increased by nearly 15%. The 1998 decline in oil prices held down consumer price inflation by 0.6 percentage points, encouraging lower interest rates and raising economic growth by perhaps 0.5%.¹ The recent recovery in oil prices contributed to the recent, strong increase in the consumer price index and raises prospects of slower economic growth.

Trends in World Supply

Clearly, any consideration of oil and national security must look beyond US import levels. The next chart looks at the long-term changes in world sources of supply, specifically, the changing shares of world crude supplies produced by OPEC, the US, and other non-Opec Sources.

At the time of the 1959 report and the beginning of the mandatory oil import program, the US was by far the most important single supply source for crude. In 1960, US production accounted for about one-third of world supply. The OPEC countries collectively accounted for 41%, and within that group, the Persian Gulf accounted for 25%. By the time of the first oil crisis, OPEC's share of world production had grown to 55%, with the Persian Gulf countries alone accounting for just under 40% of the total. The US share had fallen to about 16%. The world supply disruptions and price increases of 1973-4 and 1979-81 both originated in what had become the largest, fastest growing supply source, the Persian Gulf. Reflecting these developments, the Section 232 investigations of 1975 and 1979 highlighted dependence on these sources of supply and risks of future disruptions in their findings.

The 1980s saw major changes from the patterns of the 1970s, with the rise in share of supply from non-OPEC sources. Supply from non-OPEC sources apart from the US rose



¹ Last year the consumer price index rose 1.6%. "Core" inflation as measured by the CPI ex energy and food rose 2.3%. Since food prices were relatively stable, the difference between the two was due to lower oil prices.

from about 30% of world supply in the early 1970's to about one-half of world supply in the mid-1980s. At the time of the 1988 investigation, OPEC's share of world production was 35%, while the Persian Gulf share was down to 23%. The US share was roughly stable. The 1990's have seen renewed growth in OPEC and Persian Gulf shares of world production, although at a far slower pace than in the 1960's and early 1970's. Their shares remain well below levels reached on the eve of the first oil crisis.² The US share has declined further while other non-OPEC sources also show a modest decline in share. The substantial growth in new sources of supply since the 1970s contributed to the more relaxed oil price environment that with one exception, discussed below, has prevailed since the mid-1980s. Greater diversity of world supply means more options for sources of US imports. Last year, net imports reached 10.4 million barrels a day, up from 8 in 1978. But imports from OPEC were lower, 4.8 million barrels a day in 1998 versus 5.8 20 years earlier. Net imports from the Persian Gulf were about the same, 2.1 million barrels a day in 1998 versus 2.2 in 1978.

The 1990s opened with yet another supply interruption in the Persian Gulf, triggered by the Iraqi invasion of Kuwait. This interruption also produced immediate price increases since, although the region's market importance was less than in the 1970s, a significant loss of supply from any source impacts world markets i.e. a supply shortfall anywhere, is a price increase everywhere. But this time, the immediate price increases were far less severe and there were no disruptive shortages at home. There were certain critical differences between this crisis and the earlier two, reliance on market forces rather than price and allocation controls, the existence of strategic stocks, and availability within a short period of time of additional supply, mainly from Saudi Arabia³

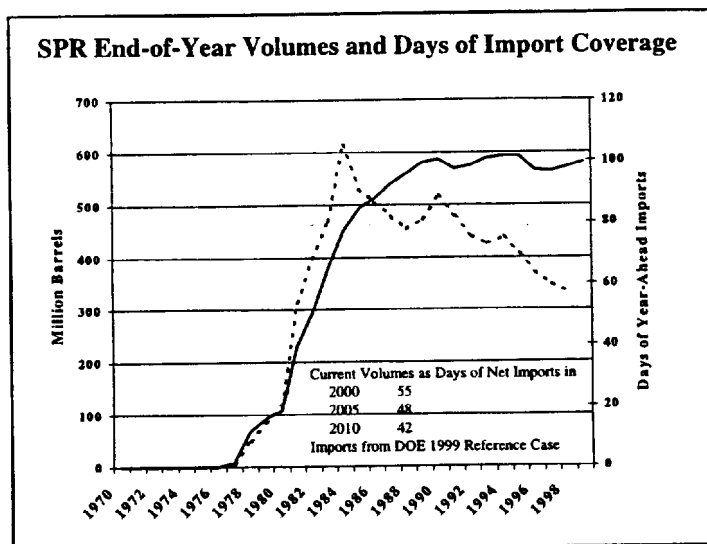
The Strategic Petroleum Reserve

When oil supplies are interrupted, the first instinct of market participants is to secure whatever immediate supplies they can. Private inventories, even if they seemed adequate before, suddenly take on new value as a hedge against future supply uncertainties. The result is a more intense scramble for available supply, and further upward pressure on prices beyond what normal supply-demand relationships would produce. These pressures can be moderated to the extent there is a clear source of potential emergency supply, whether or not in fact actually used. This is of course the role of the Strategic Petroleum Reserve.

² It should be kept in mind that OPEC's share of the world's proven reserves is much higher than its share of crude production, 77% versus 43%. For the Persian Gulf countries, the discrepancy is even greater, about 65% of proven reserves versus about 30% of production. Given the availability of these relatively low-cost resources, OPEC's share of world production, and especially the share of the Persian Gulf countries will almost certainly rise further.

³ While Saudi Arabia was able to raise production by nearly 2 million barrels/day between August and September of 1990, making up about half of the initial loss in Persian Gulf supply, Saudi supplies themselves appeared to be under threat from Iraq, especially in the early months of the crisis.

The chart on the right shows two measures of the SPR over time, the end-of-year volumes of crude oil and the same volumes in terms of days supply of imports, where imports are those of the year ahead.



The first barrels did not enter the SPR until 1977. At the beginning of the second oil crisis, the SPR held only about one-week's worth of net oil imports. But by 1990, the SPR held about 580 million barrels of oil, equivalent to nearly three months

of total net oil imports. The existence of such a large potential source of emergency supply (plus the existence of emergency stocks in other consuming countries and the standby emergency sharing agreements administered by the International Energy Agency) kept oil prices well below the peaks reached in earlier crises.

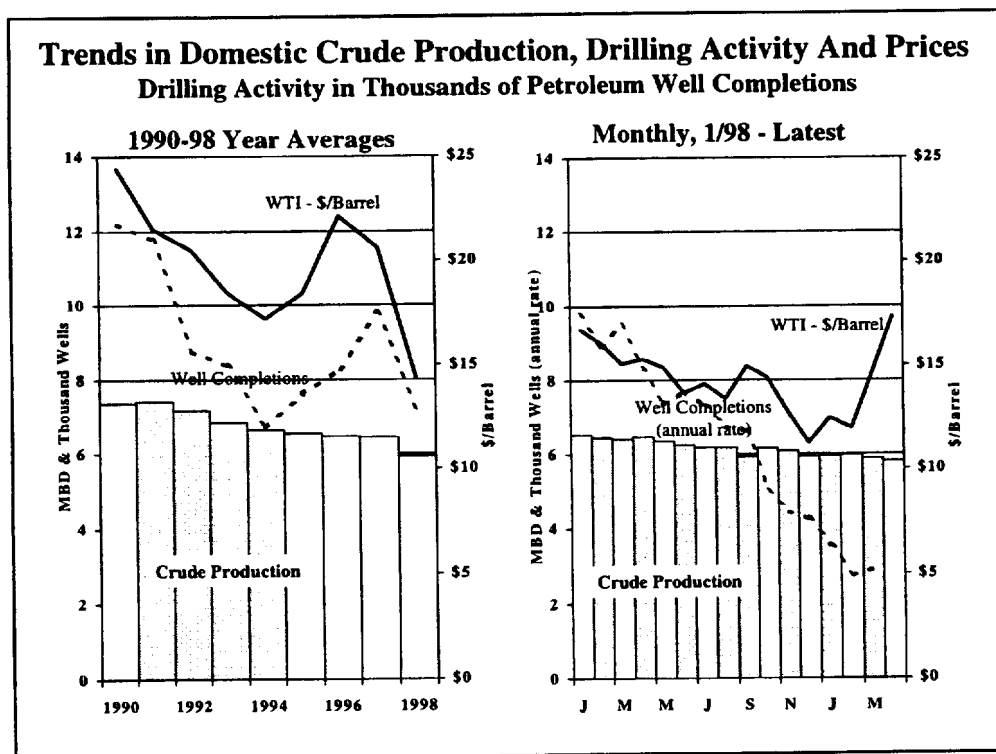
In recent years, the volume of oil in the SPR has fluctuated in a narrow range of between about 560-590 million barrels. While volumes have remained roughly stable, they have declined substantially in terms of their import coverage, from nearly 3 months of net imports at the end of 1990 to less than two at the end of 1998. Without further increases in the SPR, days of import coverage will fall further. Based on the Department of Energy's 1999 Reference Case Forecast for net imports, current SPR volumes will provide 48 days of import coverage in 2005 and only 42 in 2010. The existing capacity of the SPR is 680 million barrels. Filling that capacity would raise import coverage in 2010 to only about 50 days. That about half the import cover we had in the early 1980's. Thus, filling the existing capacity ought to be the minimum policy objective for the SPR.

Recent Trends in Domestic Production

All of the investigations to date have recognized the role of domestic production as a source of secure supply and its vulnerability to low prices. The investigations since the 1970s have also recognized that given the maturity of the US resource base, protectionist measures could be very expensive for the US economy relative to any prospective increase in domestic oil production. The arguments against protectionist measures are most compelling in environment of long-term, stable prices. But oil, as with other commodities, is subject to significant near-term price fluctuations and these fluctuations in themselves can have important consequences. Over the past year, oil prices first moved down to extremely low levels and then, since March, moved back up.

The temporary depression in prices has had significant adverse effects on the domestic petroleum industry that will not be fully reversed with recovery in prices.

The left panel of the chart below shows annual averages for 1990-98 domestic crude production, oil prices as measured by WTI, and, as an indicator of activity, number of oil exploration and development well completions. The right panel shows monthly developments in these same items since January 1998. The annual figures show a gentle decline in production in the first half of the 1990s, averaging about 160 KBD per year, rough stabilization in 1996-97 when prices moved up, and a new decline, this time of about 200 KBD, in 1998. However, over the second half of the year, production declined at a 500 KBD annual rate, consistent with the timing of price declines. Well completions moved broadly in line with prices of WTI, with both measures showing declines in 1998 vs. 1997. The changes in 1997-98 averages understate the impact of the 1998 oil price declines on the industry. As shown in the right panel, the price of WTI at the beginning of 1998 was about \$17 a barrel. By the end of the year, the price fell to about \$11 barrel. Prices moved up after the OPEC agreement to cut production in March, averaging over \$17 in April. Activity levels, as measured by (annualized) well completions fell by nearly 70% from the beginning of 1998 through February-March of 1999. Crude production itself has fallen by about 11% or 700 KBD since the beginning of 1998. As indicated by the trends in activity level, the recent production decline reflects the cutbacks in efforts made by the industry, not any inherent lack of oil prospects.



These cutbacks were made in response to the severe financial pressures facing domestic producers, especially the independents, as a result of low prices. The table below summarizes selected 1998 financial data for the majors and independents as reported in the latest Department of Energy survey. For 1998 as a whole, the Majors reported a 63% decline in net income from domestic oil and gas production versus 1997 and a somewhat

smaller, 44% decline in net income from foreign production. The situation for independents was far worse, with net income from production down by 96% from 1997.⁴

Although the price of oil as measured by WTI has recovered to early 1998 levels, the damage done to domestic production will not be so easily reversed. The current higher price levels will have to be sustained for some time in order for the industry to recover its financial health, and confidence, to support higher investment. Some losses are permanent, in particular production from stripper wells shut in by low prices.

	1998	1997	% Change
Majors			
<i>Domestic</i>	3.1	8.3	-63%
<i>Foreign</i>	4.2	7.5	-44%
Independent Producers	0.05	1.3	-96%

A Limited Role for Government

The investigations of 1988 and 1995 both recognized that the U.S. is a mature area in terms of oil production but it is important not to confuse maturity with exhaustion. At the beginning of 1990, the US proven reserves of oil, as published by the Oil & Gas Journal stood at 25.9 billion barrels. From 1990 through 1998, the US produced a cumulative total of 28 billion barrels of crude and natural gas liquids, yet proven reserves at the beginning of 1999 stood at 22.5 billion barrels. In effect, the industry through its exploration and development activity was able to add nearly as much to its inventory of economically recoverable reserves as were produced. Maintaining this performance depends on industry effort and opportunity. Access to acreage must remain a key policy tool. As shown above, industry effort, and production were severely impacted by the price decline of 1998.

While there are strong arguments against protecting the domestic industry from long-term low oil prices, there is a case for recognizing the vulnerability of the industry, and potential, permanent losses of secure supply, from temporary price declines. Federal royalty policies could be modified to incorporate a sliding scale, with lower rates when prices are depressed and normal rates otherwise.⁵ Costs of adopting such an approach are likely to be minimal, first because rates would fall only if and when prices are exceptionally low, and second, at least some long-term production losses would be avoided. At the state level, some adjustments in this direction have already taken place. Earlier this year, Oklahoma amended its gross production tax to establish a variable rate

⁴ Low prices aggravated budgetary and international payments problems of major exporting countries, many of whom have few other sources of revenue. The severity of their problems prompted the agreement in March among OPEC and other major producers to cut production in a so far successful effort to raise prices from their previously depressed levels.

⁵ The Federal onshore royalty rate on leases issued after December 22, 1987 is 12.5%. Flat rates of 12.5% or 16.7% apply to Federal offshore leases. In 1997 the Federal government collected \$4.3 billion in royalties from oil and gas production on Federal offshore and onshore leases.

tied to the average monthly price of oil. At a price of \$17/barrel or above, the tax rate is 7%, between \$14 and \$17, the rate is 4%, and below \$14, the rate is 1%.

While there are still opportunities in the onshore lower 48 states, the least mature, and most promising, areas of the country are to be found in the Outer Continental Shelf and in Alaska. Parts of both, including ANWR, are currently off-limits to the oil industry. Permitting environmentally sound exploration and development in these areas was a prominent recommendation of the 1988 investigation. The current prohibitions should not stand in the way of new efforts to reconcile environmental concerns with access to potential new sources of domestic supply.

The latest investigation is being undertaken at a time of calm world oil markets and therefore should face no pressures to rush to conclusions. The study should take the time needed to formulate policy recommendations that avoid the limitations of the prior two. The 1988 investigation was silent on energy conservation. The 1995 investigation properly highlighted actions to promote efficiency and alternatives to oil, but virtually dismissed the supply-side of the equation. The new investigation would serve the public interest best by focusing on both.