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PIRINC has prepared the enclosed report, *Heating Oil This Winter: Worry Yes, Panic No (Not Yet Anyway)*.

Low inventories, memories of late January's cold snap, tight supplies of natural gas, and renewed threats to stability in the Middle East, all contribute to worries about winter distillate heating oil supplies. They have also created pressures for government action. Some measures have already been taken, including the creation of a Northeast Heating Oil Reserve and the recent offer of 30 million barrels of crude oil from the SPR. Others include a proposed ban on distillate exports. This report reviews the key influences on the heating oil supply/demand balance for the coming winter and looks at the effects of current and proposed government actions.

Certainly low distillate inventories are cause for concern. However, distillate production is at record levels and there is some evidence that secondary inventories are building. Barring an oil supply disruption, or extreme cold weather, world oil markets are likely to stabilize, improving prospects of meeting winter needs. Nonetheless, consumers of both oil and gas will pay more to heat their homes this winter.

While the release of SPR oil is adding to supply, the filling of the Heating Oil Reserve aggravated the situation. The fill added to already intense competition for supply, Moreover, concerns about just how the reserve will be used may interfere with the country's critical winter supply safety valve, increased distillate imports.

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

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Petroleum Industry Research Foundation, Inc.

**3 Park Avenue • 26th Floor • New York, NY 10016-5989
Tel.: (212) 686-6470 • Fax: (212) 686-6558**

Heating Oil This Winter: Worry Yes, Panic No (Not Yet Anyway)

Low inventories, memories of late January's cold snap, tight supplies of natural gas, and renewed threats to stability in the Middle East, have all contributed to new worries about heating oil supplies for the coming winter. These concerns have created pressures for government action at the Federal, state and local level. Some measures have already been taken, the creation of a Northeast Heating Oil Reserve, the recent offer of 30 million barrels of oil from the SPR, and new requirements imposed by New York and New Jersey that large interruptible gas customers hold 7 to 10 days of alternative supply.¹ Others have been proposed, including ban on distillate exports. This report reviews the key influences on the heating oil supply/demand balance for the coming winter, with a focus on conditions in the Northeast. The report also looks at the effects of current and proposed government actions.

Higher costs for heating homes this winter are all but inevitable regardless of fuel. Crude oil prices are currently about \$10/barrel or 24 cents/gallon above year-earlier levels while natural gas prices at the wellhead are up about \$2.50/MCF or about 36 cents/gallon of heating oil equivalent. Certainly low distillate inventories are cause for concern. However, production of distillate is up strongly, especially production of high sulfur distillate. Indeed, refinery runs for the past 6 weeks have been at record levels. Moreover, there is some evidence that secondary inventories are building. Barring an oil supply disruption, or cold weather, world oil market conditions are likely to stabilize, gradually improving prospects of meeting winter needs. But consumers will pay more to heat their homes this winter, both because of higher prices and because they will almost certainly need more fuel. Last winter, apart from the exceptional late-January cold snap, was unusually warm, holding down seasonal fuel needs.

Government actions to date are having a decidedly mixed influence. The release of SPR oil is clearly adding to world supply of crude, although not necessarily net U.S. supply, and to distillate supply potentially available to domestic consumers---whether refined at home or abroad.² But timing is everything and other government actions couldn't have come at a worse time. The filling of the Heating Oil Reserve, added to already intense competition for supply, and placed further pressure on prices exacerbating backwardation which created a disincentive to build commercial stocks.³ Moreover, concerns about under just what circumstances the reserve will be used have the potential to interfere with the country's critical winter supply safety valve, increased product imports. The New York and New Jersey requirements for holding alternate fuels (issued in mid-August and mid-September respectively) also aggravated price pressures, since the stocks had to be in place by October 1 in New York and November 1 in New Jersey. Proposals to interfere with product trade by imposing a ban on exports would be particularly

¹ These stocks can be held offsite by a heating oil supplier on behalf of the gas user. Thus, ironically interruptible gas users could have preferential access to heating oil inventories during a supply disruption.

² The DOE estimates that 30 million barrels of the release will increase net domestic crude supply by 10 million barrels with 20 million barrels backing out imports.

³ The government has been more sensitive to timing concerns, and the need to keep supplies in commercial hands, in the case of crude markets. The government has repeatedly postponed the taking of royalty-in-kind crude oil but has not applied the same logic to the Heating Oil Reserve.

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misguided since the U.S. is a net importer of distillate, especially in the winter months when product is most needed.

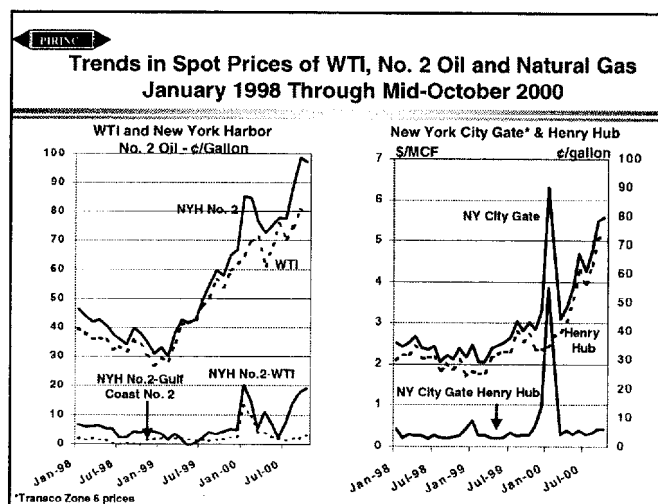
There are actions that could clearly be helpful. Since there are currently no additional Jones Act (U.S. flag) ships available⁴ to move oil from Gulf refineries to the East Coast, and pipelines are full, a temporary waiver of the Jones Act requirement could allow local supplies of distillate to move to the Northeast rather than being exported, although there could be some offsetting displacement of imports. State and local planning, in cooperation with the EPA, for temporary adjustments to product specifications would also be a clear step to improving potential supply. Government could also help by collecting and providing information on what is a "black hole," namely the state of secondary and tertiary inventories.

Before beginning the analysis, it should be kept in mind that developments in the Middle East and their potential for global oil supply disruption add a new dimension of risk. It was precisely to meet such a threat that the U.S. and other major consuming countries established strategic reserves. The U.S. and other governments should make it clear that such reserves would be used in the event of a disruption to world oil supplies. While there has been controversy over the appropriateness of the recent SPR release, there would be none in the case of a clear supply disruption.

Recent Price Trends for Distillate and Natural Gas

Given the trends in oil and gas prices, consumers of both fuels are facing significantly higher costs at the beginning of this winter heating season versus a year earlier. The chart below shows in the left panel trends in crude oil and distillate prices and in the right panel, trends in natural gas prices from early 1998 through Mid-October of this year.

For October to date, the price of WTI is averaging about 78 cents/gallon (nearly \$33/barrel), up about 24 cents from its price a year ago and about 50 cents above its low point in December 1998. The rise in crude oil prices would be expected to flow through, more-or-less into product prices. For most of the period shown, spot distillate prices in the Northeast, the most critical heating oil region, as measured by the New York Harbor price of No. 2 oil has moved about in line with WTI, with an average price differential of about 6 cents/gallon. There have been two sharp breaks with this pattern, in January of this year when the monthly average differential reached 20 cents/gallon (with a daily peak differential of 50 cents reached on February 3rd and 4th) and so far this month when the average differential is again at about the 20 cent level. There is a major difference, however, between conditions in January and conditions now. As shown at the bottom of the chart, January witnessed not only a sharply wider differential between New York Harbor



⁴ With rates so high, all eligible domestic flag vessels should have made themselves available.

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distillate and WTI but also between distillate in New York Harbor and distillate on the Gulf Coast. In effect, the January spike reflected an extraordinarily tight market in the Northeast, not a national problem. In contrast, the New York-Gulf Coast differential so far this month is averaging only 3 cents/gallon, indicating the price pressures at this point are not confined to a single region.

The right panel shows prices for gas at the New York City Gate (as indicated by Transco Zone 6 prices) and at Henry Hub. Prices are shown in dollars/MCF and cents/gallon of heating oil equivalent. So far this month, both sets of gas prices are up by about \$2.50/MCF or about 35 cents/gallon of heating oil equivalent---only slightly less than the 39 cent/gallon increase in New York Harbor distillate for the same period. As with distillate, an extraordinary price differential opened up between gas delivered to New York and Henry Hub earlier this year. In January, the average differential reached nearly \$4/MCF. The January average price itself reached \$6.30/MCF, or nearly 90 cents/gallon of heating oil equivalent.⁵ The October to date differential between the New York and Henry Hub price is about 42 cents/MCF, in line with the average differential prevailing over the 1998-2000 period, indicating that gas as well as distillate price pressures are national in scope.

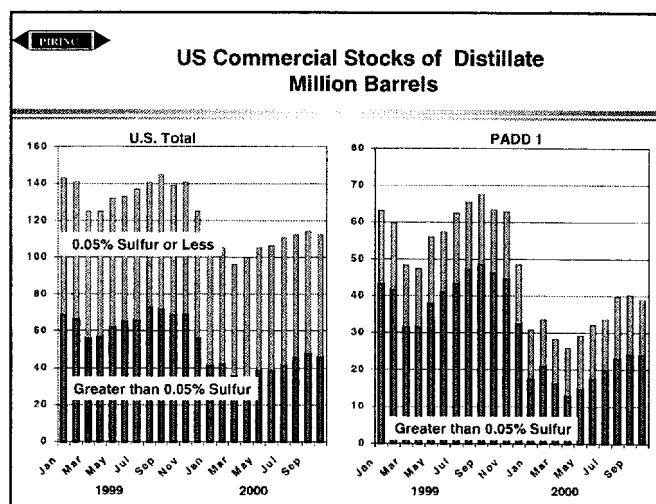
With Northeast spot distillate prices at the very beginning of the winter heating oil season already running well above their January average, there are obvious reasons to worry about possibilities of new price run-ups ahead. The next sections of the report focus on aspects of the physical market that could reinforce, or dampen these concerns.

US Distillate Inventories

Worries about distillate supply tend to focus immediately on the current very low level of inventories, especially inventories of high sulfur (greater than 0.05%) distillate used for heating oil. Industry inventories of low and high-sulfur distillate since end-January 1999 are shown in the next chart. Figures are shown for the US as a whole and for PADD 1, the East Coast where most heating oil is used.

At the national level, industry inventories as of October 20 have risen from their end-March 2000 low point and are now at about 112 million barrels. But this is 28 million barrels less than a year ago with most of the decline, 24 million barrels, accounted for by the higher sulfur distillate used for heating oil. Since inventories are typically drawn down to meet seasonal demands in the fourth and especially first quarters of the year, this exceptionally low starting point

raises questions about adequacy of supply, especially if colder than normal weather puts pressure not simply on normal heating oil customers, but also interruptible gas customers. The inventory situation looks even more worrisome in PADD 1 since this is where nearly all the reduction in



⁵ The daily price peaked on January 26 at \$11.08/MCF or \$1.53/gallon of heating oil equivalent.

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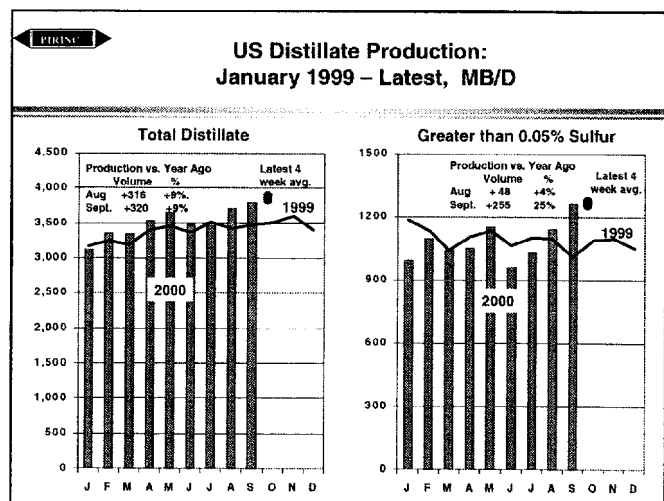
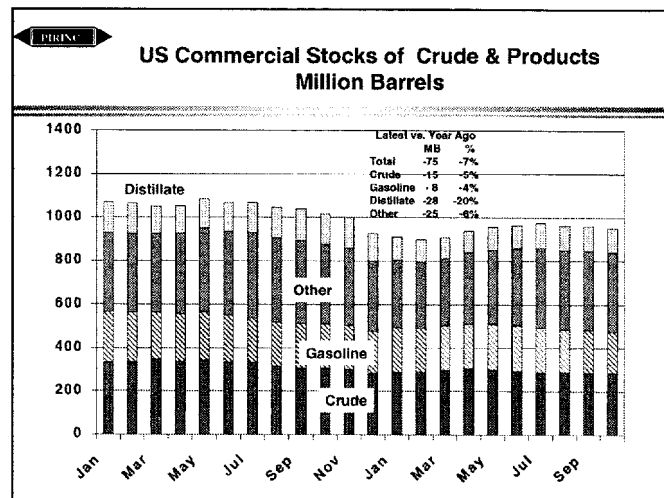
stocks has taken place. Here industry inventories are down by 27.5 million barrels, or about 41% versus a year ago while high sulfur distillate stocks are down 23 million barrels or 49%. High sulfur stocks are more important in PADD 1 than nationally, accounting for 70% of total stocks in 1999 versus 32% for the rest of the country. The Northeast Heating Oil Reserve is adding 2 million barrels to this total, or less than 10% of the shortfall in PADD 1 stocks versus last year.⁶

Trends in Total US Commercial Oil Stocks and Distillate Production

Low distillate inventories are part of a broader problem. Total US industry stocks of crude and products, shown in the chart on the right, are low, currently 75 million barrels below year-earlier levels. The rate of inventory rebuilding from the February low-point has been slow, with no apparent overall recovery over the summer months. Nonetheless, the decline in distillate stands out, down 20% on its year-earlier level versus 4% for gasoline and 5% for crude.

One reason for the difference between distillate stocks and the other categories is that in the spring and early summer, refiners had another, more immediate priority, gasoline. However, this has changed and distillate production has moved up substantially over the past several weeks. As shown in the left panel of the chart on the right, beginning in August, total distillate production has been running significantly above 1999 levels and, overall, at record volumes. Total production was up over 300 MB/D in August and September versus the year before, a gain of 9%. As shown in the right panel, production of high sulfur distillate was up by 255 MB/D in September, an increase of 25% versus September 1999. The production data for the latest four weeks through mid-October indicate that production continues to run well ahead of last year's levels.

The recent production trends are improving the odds of avoiding a winter supply problem. So far, they have not translated into a significant build in overall primary distillate inventories, although there has been a gain in high-sulfur stocks. Total distillate stocks as of October 20 are about the same as end-July. High sulfur stocks, however, have moved up by 4.5 million barrels



⁶ Natural gas stocks are also low. As of mid-October, the volume of working gas in storage in the Eastern part of the country was down 7% from its year-earlier level. This is somewhat better than the national average, where overall working gas in storage is down 14% from its year-earlier level.

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(plus the 2 million barrels placed in the Northeast Heating Oil Reserve) or by about 45% (65% including the Heating Oil Reserve) of the increased production since July. Still, given the absence of heating oil demand in August-September, and negative secular trends in heating oil use, why didn't more go into stock building? This may in fact be happening, but the official statistics would not capture increases in secondary and tertiary stocks.

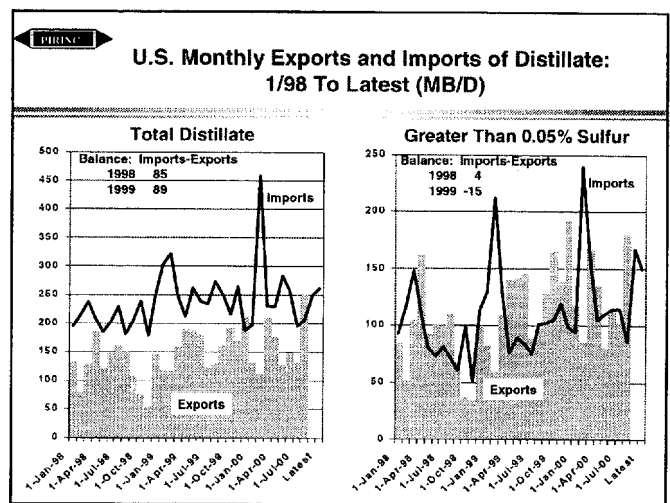
Official government statistics record product stocks held by major industry participants---refineries, pipelines, and terminals---but not by end-users. Earlier than normal fill-ups of end user heating oil tanks show up as higher demands rather than higher stocks. While no data exist, various press reports indicate that this is in fact happening as consumers of oil (and of interruptible natural gas) react to reports of potential supply problems and price spikes this winter. Interruptible and spot gas customers forced into the distillate market last winter are also likely to be building stocks, even apart from those required to do so this year in New York and New Jersey.

As stock-building by end-users subsides, and with the fill of the Northeast Heating Oil Reserve completed, a greater share of available supply will move into officially recorded primary commercial inventories.

Distillate Trade

To this point, the analysis has ignored the role of distillate trade, imports and exports, in the U.S. supply/demand balance.

Although modest on a net basis, trade does play a critical role in meeting winter peak demands. The chart below summarizes recent trends in exports and imports of total distillate and specifically, high-sulfur distillate. Overall, the U.S. is a net importer of distillate. In 1998-99, imports exceeded exports by about 85 MB/D. There is a seasonal aspect to the trade, with imports tending to peak in the winter months. In February of this year, imports reached an extreme peak of 460 MB/D, about 140 MB/D above the February 1999 level as the market responded to the late-January spike in Northeast distillate prices.⁷ Seasonal patterns are more striking in the case of high sulfur distillate. On a year-average basis, exports and imports of high sulfur distillate are about in balance but in peak winter months imports move up sharply while exports fall back. This summer shows a significant increase in imports relative to 1999. For July through September, imports of high-sulfur distillate were averaging about 36 MB/D above 1999 levels, nearly a 40% increase. For the 4 weeks ending October 20, imports of high sulfur



⁷ The response of imports to higher prices this past winter is even sharper when weekly statistics are considered. In the last two weeks of January, distillate imports averaged about 150 MB/D. They reached 528 MB/D for the week ending February 11, and a peak of 718 MB/D for the week ending February 21.

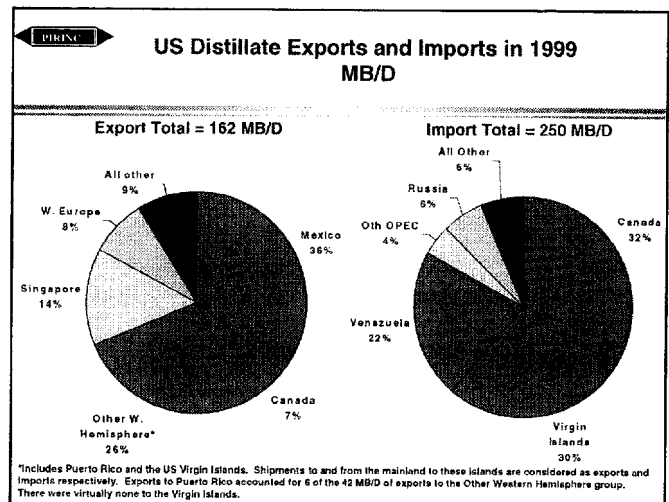
distillate were up 66 MB/D, or nearly double the year ago level.⁸ Export figures for August, the latest month available, show an unusual surge, with total distillate exports up about 120 MB/D versus July with high sulfur distillate accounting for nearly 80 MB/D. As a result, the U.S. was a net exporter in that month, encouraging proposals to impose curbs on exports. However, over half of the August increase in distillate exports went to one country, Mexico, with whom we have a free-trade agreement, NAFTA. Mexico is also a major supplier of crude to the U.S. and, as shown in the next section, was the largest single market for U.S. distillate exports last year.⁹ Although the export data to confirm it is not yet available, the sharp rise in distillate imports since August almost certainly means the U.S. has returned to a net import position.

The distillate trade (and all oil trade for that matter) is influenced by industry logistics and regulation. The bulk of US refining capability is in the Gulf Coast while the greatest need for heating oil is in the Northeast. Much, but not all of Gulf distillate production moves by pipeline to other parts of the country. The remainder must move by ship. The Caribbean, Central and South America would seem natural outlets. The Northeast is of course another although here there is a complication. Under the Jones Act, shipments between US ports must be made on US flag ships, which are generally more expensive than foreign flag carriers, increasing both the attractiveness of exports relative to domestic trade from the viewpoint of the supplier, and the attractiveness of imports relative to domestic sources from the viewpoint of the domestic customer. The extent of any distorting influence in favor of foreign as opposed to domestic trade is modest under most circumstances. The distortion is greater right now when refinery output is increasing while Jones Act shipping capacity is limited. In this context, proposals to limit distillate exports are unlikely to have the intended effect of increasing supplies to East Coast customers. Without a waiver of the Jones Act, domestic production under an export ban would be reduced. The current surge in production would have difficulty finding a domestic outlet. With the export option not available to absorb it, refiners would be forced to cut back. At the same time, foreign customers deprived of their US supplies would enter the market to bid away imports currently moving to US customers. We would in any case be disrupting long term trade relationships primarily with our geographic neighbors possibly inviting retaliation.

Distribution of US Exports and Imports

The next chart shows the distribution of US distillate exports and imports in 1999.

In that year, exports totaled 162 MB/D, of which nearly 70% went to Mexico, Canada, and other Western Hemisphere locations. A small volume, about 6 MB/D went to Puerto Rico. Puerto Rico and the U.S. Virgin Islands are treated as foreign



⁸ Figures shown for latest imports refer to 4 week averages for the week ending October 20. The figures for the latest week are more spectacular. Total distillate imports surged to 445 MB/D while imports of high sulfur distillate reached 149 MB/D.

⁹ The Mexican national oil company, PEMEX, has made investments in the U.S. refinery sector, notably its half-interest in the Dear Park refinery, as part of its effort to meet that country's product demands.

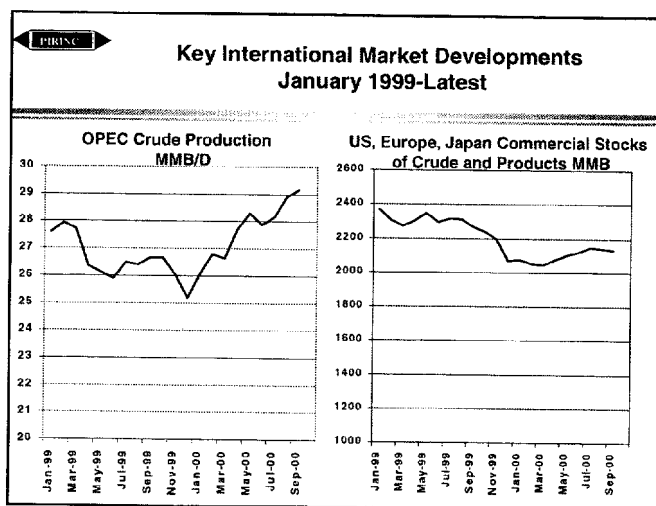
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locations in the official trade statistics. Exports to Singapore accounted for 14% of the total and exports to Western Europe, 8%. Imports amounted to 250 MB/D with 83% coming from Canada, the U.S. Virgin Islands, and Venezuela.

The prominent role of Canada in the distillate trade is consistent with the long-standing integration of the US and Canadian economies, particularly regarding energy. Both Canada and Mexico, along with the US, are members of NAFTA, an agreement with the explicit aim of expanding free movement of goods, services and capital flows between its members. Export restrictions against these two countries could prove particularly sensitive.

A Global Perspective

The low state of US inventories is part of a wider global condition. In March 1998 the OPEC countries (along with certain other major producers) agreed to a significant cut in production¹⁰ in order to promote a recovery in oil prices from their exceptionally depressed levels. The cutbacks lowered world oil supply at a time of growing demand, forced drawdowns of worldwide inventories and, of course, pushed up prices although by far more than originally anticipated. As shown in the chart on the right, OPEC crude production fell from about 28 MMB/D in early 1999 to a low of 25 at the end of the year. With NonOPEC production about flat, this cut translated virtually barrel for barrel into lower world supplies. The impact on world inventories is indicated by the trend in commercial stocks of crude and product in the three major consuming regions. Total stocks fell by nearly 300 million barrels between the beginning of 1999 and the beginning of this year.



In March, June and again in September, OPEC agreed to a series of production increases that favor a significant easing of oil market conditions, although not right away. As of September, OPEC production was running 4 MMB/D above its low-point at the end of 1999 and is still moving up. There are already signs of a modest rebuilding of global stocks.

Barring an oil supply disruption, the US should find increasing scope in the world market for distillate supplies to meet any reasonable shortfall in winter requirements. There is, however, a question about the impact of the newly created Heating Oil Reserve on incentives to do so.

The Heating Oil Reserve and Incentives to Shop the Market

Establishment of the 2 million barrel Northeast Heating Oil Reserve is meant to reassure consumers in that region that they are protected against a new winter supply problem and price

¹⁰ The first of three major cuts over the next year totaling more than 4 MMB/D. See PIRINC's report, *Market Factors Not Price "Dumping"*, August 1999.

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spike. But it should be kept in mind that this volume is not all that large. It amounts to less than one-third of the 7 million barrels of high-sulfur distillate imported into the US in February of this year (and less than three days of total distillate imports during the peak week ending February 21). Moreover, while well intended, concerns about under just what conditions the Reserve will be used create new uncertainties that distort the risk/reward calculations of market participants and inhibit a import response to future supply problems. Now in addition to market risk, suppliers must factor in a new risk -- government.

Anyone contemplating bringing in more imports in response to a tight market would have to consider whether a potential release of the oil would drive down the price to the point that when the imports arrived, they would be sold at a loss. In effect, speculation regarding the conditions of any release could potentially put at risk as much or even more distillate than is in the Reserve. The Reserve could be forced into the role of supplier of first rather than last resort and it is simply too small to fulfill it. The more aggressive the potential use of the government reserve, the greater the skewing of price risk towards the downside and the greater the disincentive of the private sector to hold inventories.¹¹

¹¹ The recent change of 30 million barrels from the SPR, coupled with a "price" trigger for the product reserve increases the odds that politics and price will play heavily in when and whether the product reserve is triggered.