

Appendix C

**Historical Distillate Price Spikes: December 1989-January 1990,
January-February 1994, and January-February 2000**

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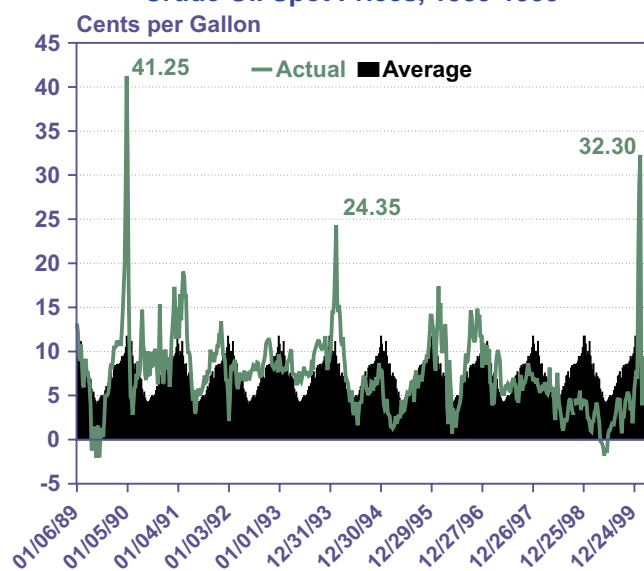
The Northeast has experienced three distillate price spikes in recent years: December 1989-January 1990, January-February 1994, and January/February 2000. In all three cases, distillate prices suddenly soared above crude oil prices, remaining volatile and elevated for several weeks. Figure C1 shows the spread between distillate and crude oil prices since 1989, illustrating the magnitude of the different spikes.

In nominal terms, crude oil prices exacerbated the impact of the spike on consumers in the January 2000 case more than in 1989 or 1994. Crude oil prices were low during the January/February 1994 incident. During the peak distillate price week in 1994, the crude oil price averaged less than \$15 per barrel (35 cents per gallon); during the peak of the winter 1989/90 event, crude oil was \$21.70 per barrel (52 cents per gallon); and the latest event had an underlying crude oil price of \$28.06 per barrel (67 cents per gallon). As a result, the total distillate price peak was higher during the recent January/February 2000 event than during the two other price spikes.

The three incidents had many similarities, but there were differences as well. Each involved a surge in demand during cold weather, accompanied by supply disruptions due to refinery outages and weather-related delivery problems. Stocks were rapidly drawn down to very low levels as demand exceeded the arrival of new supply, and prices spiked. However, stock availability at the start of the event and the severity of the weather were different for the three situations.

Stocks have played an important role in each of the price spikes. During a typical winter, distillate stocks are built up during the summer and fall, peaking in November ahead of the high winter demand months of January, February, and March. Most of the seasonal build occurs in the Northeast. Stocks are then used to help meet demand during the peak winter months. In addition to being a supply source themselves during the peak demand months, stocks are the nearest source of supply to the end-use markets, and they act as a supply buffer against unexpected surges in demand or loss of other supply, such as refinery outages. Thus, if demand is high and stocks are low and falling, then demand exceeds the arrival of new supply, and buyers bid prices up as their concern over supply availability increases. The increased price provides the incentive for added supply from increased refinery production and increased imports of distillate. Because the supply additions may take 2 to 3 weeks to be arranged for and delivered, stocks must cover the imbalance until the added supply arrives.

Figure C1. New York Harbor No. 2 Heating Oil Spot Prices Minus West Texas Intermediate Crude Oil Spot Prices, 1989-1999



Source: DRI Platt's daily prices averaged over a week.

Dynamics of Winter Distillate Markets: Winter 1989-1990

The winter heating season of 1989-1990 began with an extremely low level of distillate stocks. The distillate stock build of late summer and fall was unusually small, and as December began, stock levels for the United States were more than 14 million barrels below average.¹⁰² The East Coast was only in a little better shape at 7 million barrels below average (Figure C2).

Refiners increased distillate production in November and early December, which might have provided some additional stock build had the weather cooperated. It turned unusually cold early in the season, however,

¹⁰²The average winter East Coast and total U.S. distillate stock patterns are based on data for the years 1989-1999.

averaging 36 percent colder than normal during December. In the second and third weeks of December, distillate production was at the highest levels seen at any point during the 3 years before 1989. But on the weekend of December 23rd, cold weather that had been plaguing the U.S. mid-continent and Northeast hit the Gulf Coast. The record-breaking cold front froze water pipes and damaged valves and instruments in refineries. Many refineries were shut down or curtailed production, and some put customers on allocation. Distillate production fell by almost 400,000 barrels per day in the fourth week of December 1989. Furthermore, natural gas production was curtailed by frozen equipment, requiring more natural gas customers to switch to distillate than might otherwise have been the case.

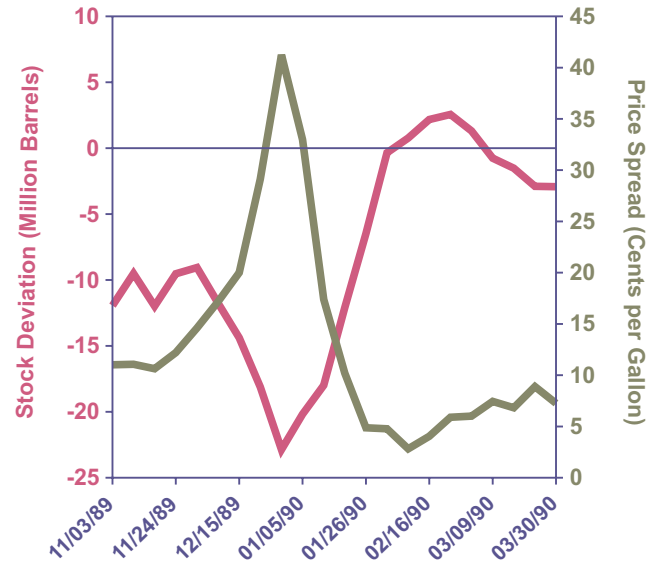
With stocks well below normal, distillate price spreads (No. 2 heating oil minus West Texas Intermediate) at the beginning of December were 15 cents per gallon and growing. The price spiked at the end of month, and the distillate spread grew to over 41 cents by the end of December. In response to the high prices, imports increased, rising from about 200,000 barrels per day for the week ending December 8 to 616,000 barrels per day for the week of February 2, 1990. Imports then fell back to around 300,000 barrels per day in March. East Coast refinery production peaked at 480,000 barrels per day for the week of January 5 before drifting down to about 400,000 barrels per day at the beginning of February.

Dynamics of Winter Distillate Markets: Winter 1993-1994

The winter of 1993-1994 began with East Coast distillate stock levels above average, and they stayed about 7 million barrels above average through the beginning of January. But during the first 5 weeks of the year, East Coast stocks fell by an astounding 31 million barrels (Figure C3). January 1994 was 15 percent colder than normal in the Northeast, and one week was 40 percent colder than normal.¹⁰³ The cold weather did not extend to the Gulf Coast, and deliveries of both natural gas and petroleum from there to the Northeast were maintained, unlike during the December 1989-January 1990 event. Distillate spreads during January rose by 5 cents per gallon, to 15 cents per gallon at the end of the month. Distillate prices in New York Harbor were 9 cents per gallon higher than in Rotterdam—more than sufficient to attract imports.

During the last week of the East Coast stock decline (ending February 4, 1994), stocks stood at a level that was 12 million barrels below average, and distillate spreads peaked shortly thereafter at 28 cents per gallon (daily). The rise to peak prices from mid-January to mid-February resulted in increased supply. East Coast refinery production increased by about 50,000 barrels

Figure C2. Winter 1989-1990 East Coast Stock Variations from Average and Distillate Spreads



Notes: Price spread is the weekly average New York Harbor No. 2 heating oil price minus the West Texas Intermediate crude oil price. Stock deviation is the week-ending stock level minus the average week-ending level for the given week, calculated from 1989 through 1999.

Sources: **Spot Prices:** DRI Platt's daily prices averaged over a week. **Week-Ending Distillate Stocks, January 1990 Forward:** Energy Information Administration, *Weekly Petroleum Status Report*, DOE/EIA-0208 (various issues), Table 10. **Week-Ending Distillate Stocks, November and December 1989:** American Petroleum Institute.

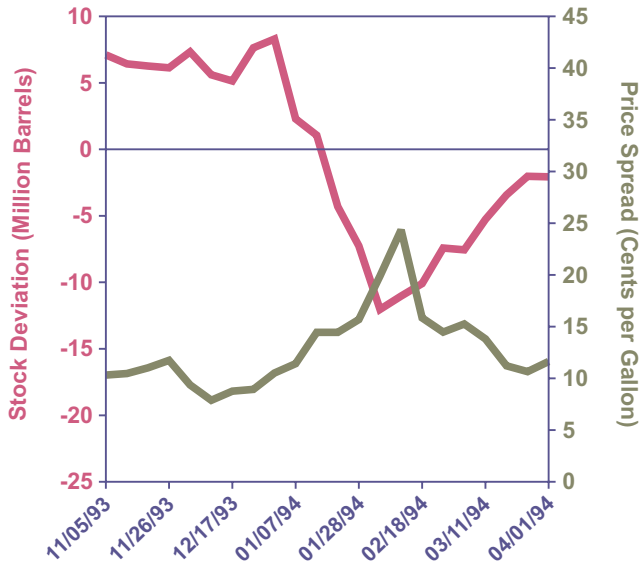
per day over January, and imports to the East Coast increased by about 120,000 barrels per day. East Coast stocks leveled out during February, although they remained at a very low level. Because of the delivery time lag, imports did not peak until the first week in March, when they reached 450,000 barrels per day, compared with January levels of less than 200,000 barrels per day.

Dynamics of Winter Distillate Markets: Winter 1999-2000

As the heating season of 1999-2000 began, distillate stocks were about average. But from December 17, 1999, to January 14, 2000, stocks fell by 12 million barrels, ending at a level that was 10 million barrels below average (Figure C4). Distillate spreads were well below seasonal averages in December, and they strengthened only modestly in early January, remaining below average. In the week ending January 21, the weather turned sharply colder for several weeks. Demand rose, and frozen rivers and high winds interfered with product deliveries. Distillate spreads rose sharply. The average weekly

¹⁰³Petroleum Industry Research Foundation, "Oil Markets During the Cold Weather: The Buck Stops Here," Memorandum Submitted to the Subcommittee on Energy and Power of the Energy and Commerce Committee, U.S. House of Representatives (February 18, 1994).

Figure C3. Winter 1993-1994 East Coast Stock Variations from Average and Distillate Spreads



Notes: Price spread is the weekly average New York Harbor No. 2 heating oil price minus the West Texas Intermediate crude oil price. Stock deviation is the week-ending stock level minus the average week-ending level for the given week, calculated from 1989 through 1999.

Sources: **Spot Prices:** DRI Platt's daily prices averaged over a week. **Week-Ending Distillate Stocks, January 1990 Forward:** Energy Information Administration, *Weekly Petroleum Status Report*, DOE/EIA-0208 (various issues), Table 10. **Week-Ending Distillate Stocks, November and December 1989:** American Petroleum Institute.

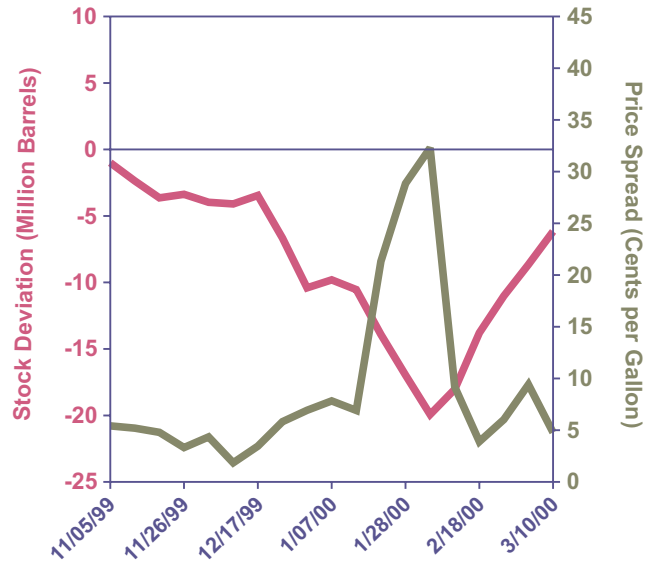
distillate spread increased by 14 cents per gallon over the level of the previous week as the region waited for new supply to relieve the imbalance.

East Coast refinery production increased by 60,000 barrels per day during the week ending February 4 and by another 60,000 barrels per day the following week. The rise in distillate production followed the margin rise by nearly 3 weeks. Imports for the week ending February 11 were 528,000 barrels per day, compared with 105,000 barrels per day during the previous week. Very high levels of imports continued for 3 weeks, averaging 566,000 barrels per day. By February 4, East Coast stocks had fallen to 20 million barrels below average before new supply was able to stop the decline. During the rest of February, distillate stocks on the East Coast stayed flat, improving relative to the normal pattern, which declines during the first quarter of the year.

Summary

Comparing the distillate stock level for the East Coast region (PADD 1) with the average winter pattern provides a good indication of the potential for price spikes.

Figure C4. Winter 1999-2000 East Coast Stock Variations from Average and Distillate Spreads



Notes: Price spread is the weekly average New York Harbor No. 2 heating oil price minus the West Texas Intermediate crude oil price. Stock deviation is the week-ending stock level minus the average week-ending level for the given week, calculated from 1989 through 1999.

Sources: **Spot Prices:** DRI Platt's daily prices averaged over a week. **Week-Ending Distillate Stocks, January 1990 Forward:** Energy Information Administration, *Weekly Petroleum Status Report*, DOE/EIA-0208 (various issues), Table 10. **Week-Ending Distillate Stocks, November and December 1989:** American Petroleum Institute.

In each of the three events discussed here, when PADD 1 stocks fell to 10 million barrels below average, a price spike followed. In the most severe incidents—1989-1990 and 1999-2000—stocks ultimately fell to 20 million barrels below average. There has been only one other winter season since 1989 when stocks fell to 10 million barrels below average, and that was in February 1996. For the week ending February 16, 1996, stocks were 10.7 million barrels below average. Weekly average distillate spreads had increased from 11 cents per gallon to 17 cents per gallon over the preceding 2 weeks. But in the following 2 weeks, demand moderated and was in balance with supply. Stocks stopped falling, and distillate spreads fell back. The imbalance was of a shorter duration.

In summary, when East Coast winter stocks levels are below normal and there is an imbalance between supply and demand that results in a rapid drawdown of stocks, price pressure mounts as inventories approach 10 million barrels below average. If the level approaches 20 million barrels below average, Northeast prices are likely to spike. The examples to date indicate that such spikes can be severe.