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THE DEEP FREEZE AND HIGH PRICES:

The Weather's Impact on Distillate Fuel Oil

Statement by

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before the Subcommittee on Energy and Power
of the Committee on Energy and Commerce

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Wholesale and retail prices of distillate oil products (home heating oil and diesel fuel), as well as kerosene jet fuel, residual fuel oil and propane, have increased unexpectedly, explosively and with an unprecedented speed between the end November 1989 and the beginning of January 1990. Thousands of business firms and millions of households have been directly affected by these extraordinary increases in their transportation and heating costs.

I. Why higher prices? The weather

The purpose of this hearing is to determine the causes underlying these price increases. I know some complex and convoluted explanations have been propounded here today. I believe, however, the reason for the recent price explosion is both simple and obvious: ***The weather.*** All price movements since the end of November can be explained by the historic cold between then and year-end. True, no exact correlation can be established between the magnitude of the Big Chill and the rise in prices. But suppose a knowledgeable oil market analyst had been asked last September to hypothesize what would happen to distillate prices if (1) the coming December were to be more than 30% colder than normal in the Northeast, making it the coldest December of the century, (2) the same record cold were to prevail simultaneously in the Gulf Coast region where it would affect refinery operations, and (3) the record December cold in the Northeast were to have been preceded by a much colder than normal second half of November. Undoubtedly, the analyst would have concluded that in the event of such an unlikely weather constellation, distillate prices would rise sharply and rapidly.

Well, the unlikely weather constellation has occurred and prices have reacted predictably. New York barge prices, after fluctuating within a 3¢/gal range (57-60¢) from the beginning of the heating season to the end of November, rose by a historic 40¢ or 65% between the last day of November 1989 and the first day of January 1990. It is intuitively and analytically correct to view these increases as the normal short-term response of a competitive, price-sensitive market to the extreme weather conditions described above. In fact, had there been no price increase or only a very modest one under these conditions, it would, or should, have raised the question of what factors other than market forces contribute to determine heating oil prices.

Of course, if extreme weather conditions drove distillate prices to the peaks they reached at year-end, a normalization of weather conditions should quickly drive them down again. Fortunately, but not surprisingly, this has already been the case throughout the first 5 days of January in the wholesale and futures market. N.Y. Harbor barge prices of No. 2 oil have dropped by 23¢ to about 78¢/g in just one week, while futures prices for February delivery on the NYMEX dropped by about 14¢ since January 3. The price drop is all the more remarkable since U.S. and PAD I distillate inventories are currently so low that they must be replenished right now. Normally, distillate inventories are drawn down at this time of the year.

Retail prices have moved along with wholesale prices but with a lag. Using N.Y. State average prices as a proxy, we can see there was little increase between the beginning of the heating season and the onset of the cold spell. However, from November to the first week in January these prices rose by 43¢ or 44%. Absent another severe cold spell they can be expected to start declining within the next several weeks. By February they should be well below their present highs. The same should be true of the other oil products affected by the Big Chill, weather permitting.

PRICE INCREASES: CRUDE OIL AND NO. 2 OIL

Year-to-Year

	11/21/88	11/20/89	Diff. ¢/gal
Crude Oil ($/bbl)	13.60	20.10	15.5¢
No. 2 Oil (¢/gal)			
Barge (Spot)	43.3	59.5	16.3
Retail	83.6	97.1	13.5

Since the Cold Started

	11/20/89	12/29/89	Diff. ¢/gal
Crude Oil ($/bbl)	20.10	21.80	4.0¢
No. 2 Oil (¢/gal)			
Barge (Spot)	59.5	101.0	41.5
Retail	97.1	126.0(e)	28.9

Since the Peak

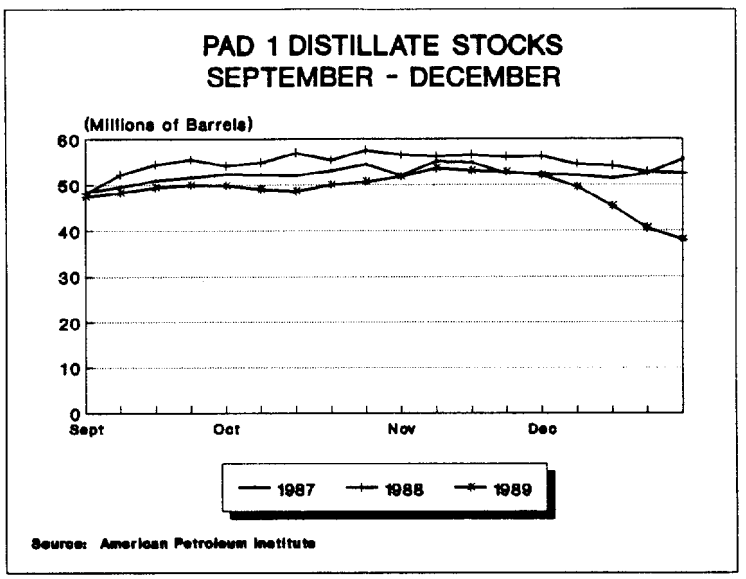
	12/29/89	1/5/90	Diff. ¢/gal
Crude Oil ($/bbl)	21.80	23.03	4.6¢
No. 2 Oil (¢/gal)			
Barge (Spot)	101.0	78.0	-23.0
Retail	126.0	140.7	14.7

Notes: Crude oil is West Texas Intermediate at Cushing, OK.
Barge prices in New York Harbor. Crude oil and barge prices from *Platt's Oilgram Price Report*. Retail price for "Year-to-Year" is New York State average for November; for "Since the Cold Started," price is New York State average for November, compared to New York State estimate for the week ending 1/4/90. All retail prices are New York State Energy Office survey data.

II. Inventories appeared adequate as the season approached

Before analyzing what the December freeze actually did to distillate demand and supply, I would like to comment briefly on the inventory level of this product at the time the freeze began. It has been pointed out that before the cold spell started, East Coast (PAD I) and national inventories of distillates were lower than a year ago. This is correct

but the difference was not very large and was negligible if the comparison is made with the comparable period of 1987. As shown in the graph below, East Coast stocks at the end of November just before the Big Freeze amounted to 51.5 million bbls or about 5.5% below the comparable 1988 figure but only 1% below the comparable 1987 stocks. Total U.S. distillate stocks at end-November were about 5% below comparable 1988 and 1987 levels. Since U.S. distillate demand in October was about 4% lower than a year ago, the inventory levels were quite reasonable.



Some industry observers recall very much higher pre-season stock levels. President Carter once pushed to assure 240 million barrels in storage at the beginning of the heating season. It is important to remember, however, that heating demand has fallen substantially as a share of total distillate demand. On average, year-round, residential demand for distillate accounts for only 16% of the distillate total. It used to account for 40% in the 1960's and 30% in the mid-1970's. Thus, it follows that the necessary seasonal stock-build is now lower than it used to be. In the peak normal heating season, residential demand routinely accounts of 25-30% of demand for all distillate.

III. Non-traditional uses added to the distillate demand surge

According to preliminary DOE data, nationwide demand for distillates in December 1989 was 550 MB/D higher than a year ago. Most of the demand increase took place in the Northeast, where 45% of the housing units are heated with oil. It probably raised demand for heating alone by 350-400 MB/D, an extra 35% of what would be normal for this time of the year, and hence, an enormous add-on. In addition there has been a surprising surge in non-traditional uses of distillate. In the utility sector for instance, which on a year-round basis uses about 50,000 barrels per day for its turbines, two large utilities in the Northeast added 38,000 barrels per day to their distillate turbine use in the first two weeks of December. One utility, usually burning 10,000 barrels per day at this time of year, burned 30,000, and the other, with a normal burn of 6,000 barrels per day, burned 24,000. These are only two examples. We estimate that the incremental utility demand in Decem-

ber was at least 100,000 barrels per day. As is usually the case, there is more than one reason for the increase. 1) These turbines normally run on "interruptible" gas, which is largely diverted to other uses at this time of year but more so this December than normally because of the nationwide freeze. 2) Electric generating capacity in the Northeast is already strained because of high demand growth in recent years, so these relatively expensive units must be brought on to meet the extra weather-induced electric heat demand. 3) Canada's weather has been colder than ours, and the Ontario hydro production has been curtailed. Thus, utilities in the Northeast are exporting electricity to Canada.

Another source for incremental distillate demand has been cogeneration facilities, built in recent years by industrial facilities to take advantage of incremental gas supplies. Like the utility turbines, however, these facilities run on oil in the winter when their interruptible supplies are curtailed or eliminated.

Still another demand increase boosted by the weather has been the 300 MB/D, or 23%, increase in kerosene jet fuel demand between December 1989 and December 1988, as reported by the DOE. A substantial part of the increase is not due to higher demand for aviation fuel but to the use of kerosene as a blending material for heating oil during the winter. This put additional pressure on middle-of-the-barrel supplies.

IV. Refiners responded with increased supplies but got caught in the Deep Freeze themselves

The freezing weather not only raised demand for heating oil but also curbed supplies. In the primary refining region, the Gulf Coast, December weather was 40-50% colder than normal. This led to significant downtime for refineries because of burst pipes, frozen pumps, stuck gauges and other weather-induced problems. Among the companies affected were Chevron, Cities, Hill, Koch, Marathon, Mobil, Phillips, Shell, and Sun. In addition the second-largest refinery in the U.S., Exxon's 455,000 B/D facility in Baton Rouge, LA., was shut down by an explosion on December 24, taking about 100,000 B/D of distillate supply. The refinery has now restarted, at least partially. Refinery utilization fell dramatically in the last week of December because of these problems. In the Texas Gulf Coast refining district, the largest, capacity utilization fell to 76.9%, from 90% in the week before. In the Louisiana Gulf Coast refining district, where the Exxon refinery is located, utilization plummeted to 53.7%, from 87%. Crude oil runs nationwide fell 1.6 million barrels/day, with distillate output at 3.1 million barrels/day, a 400,000 B/D drop from the previous week. Operations in East Coast refineries, built to operate in colder climates, were not interrupted by the freeze.

Another consequence of the Big Freeze in the Southwest was a temporary disruption of some natural gas and crude oil production in the region during the last week of December. The gas disruption was apparently quite substantial and put pressure on propane supplies and prices, both because propane is a substitute for natural gas and because the reduction in gas production also affected propane supplies. The reduction in crude production was on a smaller scale but large enough to put additional upward pressure on WTI crude prices in the last week of December.

Until the severely cold weather hit the Gulf Coast, refiners had increased their

output of distillate oil. Gulf Coast refineries increased their distillate yield from 21.7% of crude run at the beginning of November to 26.5% in the week ended December 22, a volume increase of 340,000 barrels per day. The East Coast refineries, which account for about 10% of all crude run in the U.S., have maintained high yields of distillate fuel oil throughout the period. Their yields reached as high as 35% in one recent week. Nationwide output has averaged 3.4 million barrels per day in the four weeks ended December 22, the highest in over 10 years.

Delivering product from the Gulf Coast to the Northeast is subject to logistical limitations. The Colonial Pipeline is the primary conduit, supplying 750-775 MB/D from Houston to its terminus at Linden, New Jersey. It currently takes two weeks for shipment. Thus, while a distillate cycle began on December 20, the oil could not arrive in the Northeast by New Year's. It is important to note that because so many shippers (refiners) tendered product, Colonial had to pro-rate its volumes, another indication that the Gulf Coast industry was doing all it could to alleviate temporarily the Northeast shortage.

V. East Coast importers had to compete with Europe's cold in November, but imports are on the rise

Imports of middle distillates have also been supply-constrained throughout much of the 4th quarter. Imports of distillate routinely provide 8-10% of U.S. distillate supply. They are a significantly more important component of the Northeast's supply/demand balance than of other regions'. In November, however, colder-than-normal weather in Europe reduced the supply available for the U.S. With two-week transit times, the buying difficulty in November leads to low imports in December. Soviet gasoil exports, in addition, have lagged year ago levels, further straining European supplies.

Imports of Distillate, 4th Quarter
(Thousands of barrels daily)

4-weeks ending:	1988	1989
Sept 29	270	247
Oct 27	348	323
Nov 24	324	292
Dec 1	323	319
Dec 29	373	345

Since mid-December, significant volumes of European product have been purchased for Northeast delivery. With prices in the European refining centers some 30¢/gal below New York Harbor spot prices in December, there was substantial economic incentive for bringing product across the Atlantic. These imports will arrive throughout January.

In concluding this part of my testimony I would like to point out that while the distillate price increases brought hardship to many consumers, all consumers received all required volumes when and as needed. Thus, logistically the industry performed quite well

under very difficult conditions for which it had not prepared because there was no historic precedent.

VI. What can the government do?

A. Regional petroleum reserves would help alleviate dislocations

Regarding your question on regional petroleum reserves of refined products to ameliorate the regional impact of disruptions, we testified on this subject before your Committee last April. Our position continues to be in favor of a modest regional SPR of the major petroleum products. This reserve should be used only to offset the impact of disruptions or other exceptional extraneous events, domestic or international, which affect regional supply or demand. We would also favor an "easing of the trigger" to activate the SPR under conditions less severe than an international oil supply disruption. For a limited period (say, 30 days) this authority could be delegated to the Secretary of Energy rather than the President. This would lower the psychological impact on the market of a regional reserve activation from that caused by a Presidential declaration.

B. Consider enhanced low-income assistance for special situations

Regarding your question about raising low-income energy assistance appropriations, I believe a special fund to provide emergency assistance to low-income heating fuel users during a crisis when there is a brief but very costly price spike is socially desirable. This would be in addition to the current programs which now provide a lifeline to the needy. The special fund would not be used in most heating seasons, since price spikes are rare (the last one occurred in 1981). However, when they do occur they are extremely painful to those on fixed incomes and other low-income consumers. This is clearly the case now. Designed to be used only in extraordinary times for limited relief, such a fund would not be very expensive, but would provide a much needed safety net for those most hurt while allowing the market to function effectively and quickly to end the pain as soon as it can.

This concludes my testimony.