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DISTILLATE FUEL OIL IN MID WINTER

An Analysis of the Current and Near-Term
Supply, Demand and Price Situation

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The exceptionally cold winter with its widespread natural gas shortages has also raised concern about the adequacy and cost of distillate heating oil supplies for the remainder of the winter. The concern is understandable, since 11 million single family homes plus several million multi-family dwellings and commercial establishments, most of them located in the colder regions of the country, are heated by distillate fuel oil. Furthermore, the shortfall of natural gas must be compensated for partly by distillate fuel oil, thus increasing the demand for the latter. This report analyzes the current situation and the short term outlook for U.S. distillate fuel oil (primarily No. 2 heating oil) supply, demand and prices.

I. Supply and Demand

Prior to the beginning of the heating season we had estimated that a normal winter would bring about a 10% increase in distillate fuel oil demand during the period October 1, 1976-March 31, 1977, relative to the previous winter. This projection was approximately in line with one made by the Federal Energy Administration (FEA) for the same period. The principal factors in the expected increase were (1) the comparison with about a 10% warmer-than-normal winter of 1975/76; and (2) an estimated diversion of about 150,000 b/d to the natural gas market to help meet the Federal Power Commission's (FPC) forecasted gas curtailments for the current winter. Neither

our forecast nor the FEA's foresaw any difficulties in meeting the projected demand increase.

From October 1-January 14 the weather in the oil heat regions of the country* has been 22.4% colder (510 more degree days) than normal, making this period one of the coldest on record. On the basis of preliminary data it appears that distillate demand during this period amounted to 3,763,000 b/d, an increase of 18.4% above the comparable year-ago period and 6.75% above our normal-weather demand estimate for this period. The latter increase can be explained largely by the colder weather.** This weather adjustment indicates that up to early January the diversion of distillate oil to gas customers may not have been significantly in excess of the 150,000 b/d assumed in our forecast, although additional oil conservation as a result of the weather-related higher heating cost may have permitted a somewhat larger diversion to gas. Whether heating oil supplies will be adequate for the remainder of the winter depends on several uncertain factors. These uncertainties, discussed more fully below, include of course continuing cold weather, the possibility of logistically imposed under-utilization of refinery capacity, and the magnitude of increased use of fuel oil to substitute for curtailed natural gas. A number of heating oil suppliers, concerned about the possiblity of a shortage, have begun to allocate fuel oil to their customers at a percentage of normal delivered volumes.

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*Measured by U.S. degree days, weighted by regional oil heat shares, as reported weekly by Platt's Oilgram: 2783 degree days in the current period vs. 2273 degree days in a comparable normal period.

**Historic data indicate that each U.S. degree day above normal (as reported by Platt's Oilgram) causes consumption to rise by approximately 55,000 barrels. Thus, the 510 additional degree days caused a demand increase of 28 million barrels, or 264,000 b/d, for the 106-day period October 1-January 14.

(1) Stocks. Though current industry stocks of 170.2 million barrels are lower than desired, they can be drawn down by about 70 million barrels between now and the end of March without affecting normal industry operations. This would be equivalent to an average weekly draw-down of about 6.5 million barrels, twice the average weekly draw-down since October 1st, and only 13% less than the exceptionally large average weekly draw-down (7.5 million barrels) of the latest 5 weeks (December 10-January 14) when weekly industry data begun to show the full effect of the near-record low temperatures.

(2) Production. Distillate fuel oil output of U.S. refineries has responded strongly to the higher demand. During the last 5 weeks it averaged nearly 3.3 million b/d, a 19% increase over the comparable period of a year ago and probably an all-time record for any 5-week period.

In the areas east of California* refinery utilization during the latest 5 weeks averaged 93.2% of operable capacity compared to 92.6% in the previous 5 weeks. Distillate fuel oil yields averaged 25.0%. While both these rates are very high they can still be slightly increased for the remainder of the winter; at least one large refinery company has publically announced its intention to increase its output level. This assumes of course that weather conditions do not cause further breakdowns in the transportation-distribution system, causing a back-up of stocks at refineries, and consequent plant under-utilization.

(3) Imports. Imports of distillate fuel oil have risen substantially in recent weeks, despite their high cost relative to domestic contract prices (about 6¢/gallon higher). The latest five week

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*The West Coast, which is approximately self-sufficient in distillate fuel oil, is the only region not suffering from the abnormally cold weather.

average of 346,000 b/d is 34% above comparable year-ago figures. There are indications that imports can remain well above 300,000 b/d if importers are able and willing to pay the higher prices.

(4) Distribution Bottlenecks. Most of the distillate oil shortages reported so far, or likely to occur in the immediate future, were, or will be, due to weather-related transportation and other bottlenecks rather than insufficient supplies. The freezing of the Mississippi, Ohio and other midwestern rivers has nearly halted barge traffic from the Gulf Coast refining centers to the Midwest, affecting some 30,000-40,000 b/d of distillate fuel oil. Another problem in the Midwest is that the exceptionally low temperatures are requiring larger volumes of kerosine or range oil, used as an additive in No. 2 distillate to keep it from solidifying, than is normally the case. The result has been a sudden tightness in these two relatively minor products. On the East Coast, too, the accumulation of ice at some terminals has slowed down barge and tanker traffic.

None of these problems is of major proportions as of now. But continuing sub-normal weather could shortly make them so.

Altogether then, distillate fuel oil supplies appear to be adequate to meet the nation's heating oil requirements if the remainder of the winter is no more than 10% colder than normal, if all of the product can be physically delivered and burned, and if no more than 4-5% of total current distillate supplies are diverted to gas customers.

Any of these conditions, not met, could trigger a shortage. The likelihood of meeting the last condition depends not only on the weather but also on the inventories of gas utilities and pipelines. In many instances, these inventories have reportedly been reduced to well below normal levels in the course of this heating season. According to the FPC, the gas stocks of the 33 largest interstate pipelines were drawn down by 539 billion cuft, equal to 15% of total stocks, during November and December 1976. This was nearly twice the draw-down during the same period of 1975. According to press and industry reports, the rate of abnormally large stock withdrawals has accelerated during the first 2 weeks of January.

For the entire heating period so far (October 1, 1976-January 16, 1977) the colder-than-normal weather has required additional gas volumes equivalent to 700,000 b/d of oil.* As pointed out, the bulk of this increase was met by the gas industry through inventory reduction and auxiliary supply sources (propane, synthetic gas, etc.). But gas suppliers may not be able to keep doing so much longer. Thus, there is a real possibility that continuation of the exceptionally cold weather could cause excessive distillate oil diversions to gas markets.

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*Based on the FPC's calculation of additional gas demand in the residential sector, adjusted by our estimates of additional non-residential demand.

II. Prices

The sharp increase in distillate fuel oil demand has given rise to concern about the price for this product. Distillate prices were decontrolled by the FEA in July 1976. However, simultaneously the FEA instituted a price survey program and established a maximum profit margin formula which, if exceeded, would trigger an investigation and possible reimposition of controls. The formula permits refiners, wholesalers and retailers to pass through certain cost increases, makes allowances for seasonal price fluctuations and permits limited profit margin increases. So far, the FEA's price surveys show that the trigger level has not been reached in any of the regions surveyed. Nationally, the weighted average consumer price in the FEA's survey has risen by 2.5¢ or nearly 7% between June 1976, the last month before decontrol, and December 1976, the latest month for which complete data are available. The increase is due entirely to factors recognized by the FEA as cost increases and other factors not affecting the profit margin. The table below shows the FEA's composition of these increases between June and December 1976 (in ¢/gallon).

Crude oil cost increases	1.17
Histroic seasonal price changes	1.15
Non-product cost increases to refiners	0.18
Non-product cost increases to marketers	0.18
	2.68¢

Residential retail prices in the FEA's survey have risen somewhat more nationwide -- 3.1¢/gallon -- than average prices for all consumers, between June and December. Some question has been raised regarding the

validity of the FEA's residential retail price sample. It might be interesting to point out in this connection that the price changes in the FEA's sample are very close to those shown by the Bureau of Labor Statistics (BLS) in its regular monthly survey, Retail Prices and Indexes of Fuels and Electricity, as is shown below. (The consistently higher level of the BLS prices is in part due to its inclusion of sales taxes.)

Monthly Residential Retail Prices Of Heating Oil
(¢/gallon)

	FEA	BLS
June	39.3	41.2
July	39.3	41.3
August	39.8	41.6
September	40.2	41.8
October	40.7	42.2
November	41.3	43.1
December	42.4	44.2
Change June to December	3.1	3.0

The average barge contract price of eight major company resellers in New York Harbor, published regularly in the trade press, rose by 3.2¢, about the same as residential retail prices in the FEA survey. It is not clear to what extent the increases in excess of the factors computed by the FEA reflect higher margins or higher costs not included in the FEA's trigger formula. If the entire differential were due to higher margins, these would be raised by 0.4-0.5¢/gallon, or well below the

2¢/gallon maximum margin increase permitted in the trigger formula.

However, it is unlikely that this was the case, since such real cost increases as rising spot tanker rates, higher levels of imports, and overtime payments due to additional deliveries are not fully reflected in the FEA's trigger formula. Furthermore, the formula has a 60-day lag in the pass-through of higher crude oil costs.

Taking all these factors into account, it would appear that price increases unrelated to cost increases and normal seasonal fluctuations have been quite modest in the current heating season through December. To what extent the price increases since the beginning of January were due to further cost increases or to higher margins cannot yet be determined.