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QUARTERLY ANALYSIS OF PETROLEUM
SUPPLY, DEMAND AND PRICES:

Third Quarter 1977

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Energy Office

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QUARTERLY ANALYSIS OF PETROLEUM
SUPPLY, DEMAND AND PRICE
THIRD QUARTER 1977

As part of our continuing series of reports to the New York State Energy Office, this memorandum presents an overview of the petroleum situation in the third quarter of 1977. Pertinent data are tabularized at the end of the report.

Gasoline

Demand for gasoline in the 3rd Q, the traditional peak driving season, was 7,475 Mb/d, 5% higher than the comparable 1976 period and only 7.6% higher than the 3rd Q of 1973. Yields of gasoline fell from 52% in 1976 to 49% in 1977. Crude oil runs to stills increased 8%, however, bringing gasoline output to slightly above year ago volumes. Imports of gasoline, including shipments from the Virgin Islands and Puerto Rico, were more than twice the 1976 level, but still accounted for only 3% of demand. Stocks at the beginning of the period were 14% higher than 1976 levels, and were 10% higher than 1976 volumes at the end of the period.

Prices of gasoline showed no upward movement during the quarter. While prices in New York Harbor rose at the end of the 2nd Q, they remained stable or moved down as the summer progressed.

Residual Fuel Oil

Demand for residual oil in the U.S. as a whole was 2,864 Mb/d during the 3rd Q 1977, a 24% increase from the 1976 level. The average

growth of 24% is a combination of flat demand in PAD I and substantial increases in PADs II-V. While current demand/supply data by PAD are unavailable, we can use published refinery output, import and stock figures and estimate shipments from the Gulf Coast to arrive at an estimated demand level for PAD I. This computation indicates that PAD I residual oil demand in the 3rd Q was slightly below 1976 levels. Oil consumption for steam generating electric plants on the East Coast, however, was 12% higher than 1976 in July and August (September data are unavailable). Thus, industrial demand for residual oil may be assumed to have fallen sharply in PAD I.

Since PAD I accounted for approximately 60% of U.S. residual oil consumption in 1976, no growth in East Coast demand leads to the conclusion that other areas must have grown very rapidly to reach an overall increase of 24%. Nationwide oil use in steam generating plants, for instance, rose 20% in July and August over the comparable 1976 months; the increase outside PAD I was 35%. In contrast to the East Coast where industrial demand appears to have declined, residual oil use by industry in the rest of the nation has risen. Gas unavailability is once again a major factor.

It should be noted that the disparity between PAD I's and the rest of the country's growths is not new; the same relationship held true for the first and second quarters as well. Because a good deal of the nationwide growth in residual oil demand is due to lack of natural gas, the East Coast's lower dependence on gas leads to a less severe impact on the demand for substitute fuels.

Increased U.S. residual oil supply came from expanded refinery output (up 32% from 1976) more than from imports (up 22% from 1976, including shipments from the Virgin Islands and Puerto Rico). The growth in refinery output reflects increases in both yield and crude runs. As would be expected, residual output in PAD I increased less than the nationwide average, but still rose by 16%. Imports into PAD I fell by 5%. Thus, imports into other areas (especially the West Coast) would appear to have risen sharply.

As in the 2nd Q, the price of high sulfur residual oil showed more of an increase from 1976 levels than did low sulfur residual oil. All of the prices we have recorded for 0.3% sulfur residual (New York Harbor contract, foreign and domestic spot prices) fell over the July-September period. In September, reports in the trade press indicated that cargoes of low sulfur fuel oil were selling at distress prices and very few transactions were recorded. The price of high sulfur (2.8% S) residual oil, on the other hand, rose throughout the period, and the spot price of foreign product remained higher than the contract price.

Distillate Fuel Oil

Nationwide demand for distillate fuel oil continued to show sizable increases over year ago levels. At 2,629 Mb/d in the 3rd Q 1977, demand was 17% above the 3rd Q 1976. FPC data for utility oil use in turbines and internal combustion engines show a 75% increase for July and August over the 1976 consumption. In addition, the use of diesel fuel has grown moderately. We have estimated that growth in distillate use for electric generation accounted for about one-third of the overall increase and that on-highway diesel oil accounted

for another 15%. The remainder of the demand growth went to the industrial sector, largely as a replacement for curtailed natural gas supplies, and perhaps to building secondary stocks. (While indicated demand is adjusted for drawdown or build-up of primary stocks, it is not necessarily a consumption level. Rather, it may often reflect stockpiling by end-users.)

The increased supply of distillate came from an 11% increase in refinery output and a more than two-fold increase in imports (including shipments from the Virgin Islands and Puerto Rico). Imports, however, continued to supply only 5% of total demand.

While distillate prices remained stable in New York Harbor throughout the quarter, contract postings averaged 15% above 1976 prices. The spot prices reported by Oil Buyers' Guide were for the most part theoretical, simply a calculation to be used as an indicator; few spot transactions took place.

Crude Oil

As mentioned earlier, crude oil runs to stills increased by 8% in the 3rd Q 1977 over the year ago period. Imports accounted for 6,259 Mb/d or 42% of the 14,747 Mb/d total runs. In 1976 total runs were 13,670 Mb/d of which 5,512 Mb/d or 40% were imports. Imports thus increased by approximately 14%.

At the end of this memorandum, there are self-explanatory tables on crude oil prices, refiner acquisition costs, and production volumes by price classification.

Table I

INDICATED DEMAND FOR GASOLINE, DISTILLATE & RESIDUAL OIL: U.S.
3rd Q 77 (Mb/d)

		Crude Runs	Cap. Util. (%)	Gasoline			Distillate**			Residual		
				Output	Imports	Stocks	Output	Imports	Stocks	Output	Imports	Stocks
July	8	14,980	90.8	7,258	166	253,423(7/1)*	3,189	107	180,816(7/1)*	1,597	1,154	69,063(7/1)*
	15	14,905	90.4	7,291	195		3,137	105		1,703	1,350	
	22	14,746	89.3	7,304	223		3,259	85		1,591	1,214	
	29	14,896	90.2	7,277	237		3,139	177	(202,829)	1,699	1,042	
Aug.	5	14,583	88.3	7,304	217		3,090	121		1,505	1,170	
	12	14,553	88.1	7,154	199		3,079	149		1,462	1,383	
	19	14,478	87.7	7,185	260		3,209	120		1,452	1,304	
	26	14,663	88.8	7,207	201		3,218	146		1,594	1,473	
Sept.	2	14,528	88.0	7,327	214		3,214	175		1,640	1,411	
Sept.	9	14,793	89.6	7,095	221		3,172	182		1,589	1,457	
	16	14,765	89.4	7,028	273		3,303	120		1,733	1,650	
	23	14,979	90.7	7,069	244		3,308	141		1,716	1,339	
	30	14,842	89.9	6,990	286	248,181*	3,278	165	245,795*	1,730	1,505	77,689*
3rd Q												
Average		14,747.2	89.3	7,191.5	225.8	- 57.6	3,199.6	137.9	+ 714.1	1,616.2	1,342.5	+ 94.8
		Demand				7,474.9			2,623.4			2,863.9
		Yield		48.8			21.7			11.0		
3rd Q												
Average 1976		13,669.8	87.4	7,062.7	105.2	+ 51.4	2,892.9	61.8	+ 707.3	1,224.0	1,104.5	+ 23.2
		Demand				7,116.5			2,247.4			2,305.3
		Yield		51.7			21.2			9.0		
		% Change '77/'76				5.0			16.7%			24.2%

* Million barrels

** Includes No. 4 oil.

Source: American Petroleum Institute

Table II

EAST COAST REFINERY OPERATIONS
3rd Q 1977 (Mb/d)

			<u>Gasoline</u>		<u>Distillate</u>		<u>Residual</u>	
	<u>Runs</u>	<u>% Op. Crude</u>	<u>Output</u>	<u>Yield (%)</u>	<u>Output</u>	<u>Yield (%)</u>	<u>Output</u>	<u>Yield (%)</u>
July 8	1,607	99.3	701	43.6	372	23.1	148	9.2
15	1,614	99.3	735	45.5	374	23.2	176	10.9
22	1,601	98.9	745	46.5	389	24.3	162	10.1
29	1,623	100.3	745	45.9	383	23.6	174	10.7
Aug. 5	1,662	102.7	790	47.5	413	24.8	169	10.2
12	1,616	99.9	722	44.7	451	27.9	185	11.4
19	1,580	97.6	730	46.2	396	25.1	177	11.2
26	1,583	97.8	731	46.2	453	28.6	172	10.9
Sept. 2	1,515	93.6	707	46.7	444	29.3	180	11.9
Sept. 9	1,510	93.3	707	46.8	421	27.9	179	11.9
16	1,558	96.3	696	44.7	422	27.1	157	10.1
23	1,586	98.0	718	45.3	455	28.7	182	11.5
30	1,518	93.8	699	46.0	422	27.8	171	11.3
3rd Q Average 77	1,582.5	97.8	725.1	45.8	415.0	26.2	171.7	10.8
3rd Q Average 76	1,448.8	89.6	723.5	49.9	362.3	25.0	148.8	10.3

Source: American Petroleum Institute

RESIDUAL FUEL OIL PRICES IN NEW YORK HARBOR: 3rd Q '77 AND 3rd Q '76
 (\$/bbl, Low Pour)

*Exxon, adjusted for temporary entitlement allowance Source: Oil Buyers' Guide

Table IV

DISTILLATE PRICES IN NEW YORK HARBOR 3rd Q'77 &'76

(¢/gallon)

		<u>Contract</u>	<u>1977</u>	<u>Spot</u>	<u>Contract</u>	<u>1976</u>	<u>Spot</u>	
			<u>Foreign</u>	<u>Domestic</u>		<u>Foreign</u>		<u>Domestic</u>
July	4	35.50	37.85a	34.75a	30.70	33.00a		31.65a
	11 (not published)							
	18	35.50	37.50a	34.75a	30.70	33.50a		31.00a
	25	35.50	37.50a	34.75a	30.70	33.40a		30.45a
Aug.	1	35.50	37.50a	34.75a	30.70	33.40a		30.45a
	8	35.50	37.75a	34.75a	30.70	33.90a		30.30a
	15	35.50	37.50a	34.75	31.00	34.15a		30.50a
	22	35.50	37.60a	34.50a	30.70	34.00a		30.50
	29	35.50	37.00a	34.75	30.70	34.25a		30.65
Sept.	5	35.50	37.00a	34.75a	30.70	34.50a		30.75
	12	35.50	37.25a	34.75a	30.70	34.50a		30.75
	19	35.50	37.00a	34.75a	31.20	34.60a		31.00
	26	35.50	36.40a	35.00a	31.20	34.95a		31.60
3rd Quarter Average		35.50	37.32	34.75	30.80	34.01		30.80
% Increase from 1976		15.3%	9.7%	12.8%				

Source: Oil Buyers' Guide

Table V

PRICES OF REGULAR GASOLINE
(¢/gal)

	Buffalo			New York City			National Average		
	Dealer Tank Wagon (ex. tax)	Taxes	Service Station* (incl. tax)	Dealer Tank Wagon (ex. tax)	Taxes	Service Station* (incl. tax)	Dealer Tank Wagon (ex. tax)	Taxes	Service Station* (incl. tax)
Mid-July	43.9	15.15	65.90	44.1	17.00	64.90	43.38	12.36	64.06
Mid-August	43.8	15.15	65.90	44.2	17.00	64.90	43.28	12.36	64.07
Mid-September	43.40	15.15	65.40	43.50	17.00	64.90	43.08	12.47	63.95

* Full Serve Station

Source: Platt's Oilgram Price Service, "Gasoline Prices in 55 Key U.S. Cities"

TABLE VI

VOLUME AND PERCENTAGE OF DOMESTIC CRUDE AND
CONDENSATE PRODUCTION BY FEA CLASSIFICATION 1974-77

	1977							1976						
	LOWER TIER		UPPER TIER		STRIPPER		TOTAL	LOWER TIER		UPPER TIER		STRIPPER		TOTAL
	#	%	#	%	#	%	#	#	%	#	%	#	%	#
JAN.	4.0	50.6	2.9	36.7	1.0	12.7	8.0	4.7	54.8	2.8	32.9	1.0	12.1	8.5
FEB.	3.7	49.5	2.8	37.2	1.0	13.2	7.4	4.4	56.1	2.6	32.5	0.9	11.4	7.9
MARCH	4.0	49.2	3.1	37.2	1.1	13.6	8.2	4.8	56.9	2.6	31.1	1.0	12.0	8.4
APRIL	3.9	49.2	2.9	37.2	1.1	13.6	7.9	4.6	56.7	2.5	31.1	1.0	12.1	8.1
MAY	4.0	48.5	3.1	37.5	1.1	14.0	8.2	4.7	57.0	2.6	31.0	1.0	12.0	8.3
JUNE								4.5	55.9	2.6	31.7	1.0	12.3	8.1
JULY								4.6	55.6	2.7	32.5	1.0	11.9	8.3
AUG.								4.6	55.7	2.7	32.5	1.0	11.8	8.3
SEPT.								4.3	53.4	2.7	33.7	1.0	12.9	8.1
OCT.								4.3	52.4	2.8	36.6	1.0	13.4	8.1
NOV.								4.0	49.9	3.0	36.4	1.1	13.5	8.0
DEC.								4.1	49.9	3.0	36.4	1.1	13.5	8.3

	1975								1974									
	OLD		NEW		RELEASED		STRIPPER		TOTAL	OLD		NEW		RELEASED		STRIPPER		TOTAL
	#	%	#	%	#	%	#	%	#	#	%	#	%	#	%	#	%	#
JAN.	5.2	59.3	1.8	20.9	0.8	9.2	0.9	10.6	8.7	5.5	60.0	1.6	17.0	0.9	10.0	1.2	13.0	9.2
FEB.	4.7	60.8	1.5	19.9	0.7	8.7	0.8	10.5	7.7	5.7	62.0	1.4	15.0	0.9	10.0	1.2	13.0	9.2
MARCH	5.3	61.3	1.7	20.4	0.7	8.4	0.8	9.9	8.5	5.4	60.0	1.5	16.0	1.0	11.0	1.2	13.0	9.1
APRIL	5.1	61.2	1.7	19.9	0.7	8.1	0.9	10.9	8.4	5.4	60.0	1.4	16.0	1.1	11.0	1.1	13.0	9.0
MAY	5.3	62.1	1.6	19.2	0.7	8.1	0.9	10.6	8.5	5.6	62.0	1.3	15.0	1.0	10.0	1.1	13.0	9.0
JUNE	5.0	61.6	1.6	19.5	0.6	7.6	0.9	11.2	8.1	5.6	63.0	1.3	15.0	1.0	9.0	1.1	13.0	9.0
JULY	5.2	61.8	1.6	19.6	0.6	7.1	1.0	11.5	8.4	5.6	64.0	1.3	15.0	0.9	9.0	1.0	12.0	8.8
AUG.	5.2	62.3	1.6	19.3	0.6	6.9	0.9	11.4	8.3	5.7	66.0	1.3	14.0	0.9	8.0	1.0	12.0	8.9
SEPT.	5.1	62.6	1.6	19.2	0.5	6.8	0.9	11.4	8.2	5.7	67.0	1.2	13.0	0.9	8.0	1.0	12.0	8.8
OCT.	5.3	62.6	1.7	19.5	0.5	6.4	1.0	11.4	8.5	5.7	66.0	1.2	14.0	0.8	8.0	1.0	12.0	8.7
NOV.	5.1	63.0	1.6	19.8	0.5	6.3	0.9	10.8	8.1	5.8	67.0	1.2	13.0	0.6	8.0	1.0	12.0	8.6
DEC.	5.2	62.5	1.7	19.9	0.5	6.1	1.0	11.6	8.4	5.7	66.0	1.2	14.0	0.7	8.0	1.0	12.0	8.6

UNITS IN MMB/D
SOURCE: FEA Form F-124

TABLE VII

U.S. CRUDE OIL PRICES 1974-77
(\$ Per Barrel)

	1977				1976			
	LOWER TIER	UPPER TIER	STRIPPER	\bar{x}	LOWER TIER	UPPER* TIER	STRIPPER	\bar{x}
JAN.	\$5.17	\$11.44	\$13.27	\$8.50	\$5.06	\$12.99	\$12.89	\$8.63
FEB.	5.18	11.39	13.32	8.57	5.05	11.52	11.34	7.87
MARCH	5.15	11.03	13.31	8.45	5.07	11.42	11.32	7.79
APRIL	5.15	10.97	13.28	8.40	5.07	11.56	11.43	7.86
MAY	5.18	11.00	13.26	8.49	5.13	11.57	11.50	7.89
JUNE					5.15	11.64	11.51	7.99
JULY					5.19	11.62	11.52	8.04
AUG.					5.18	11.65	11.52	8.03
SEPT.					5.17	11.65	13.21	8.39
OCT.					5.15	11.62	13.35	8.46
NOV.					5.17	11.62	13.31	8.62
DEC.					5.17	11.64	13.30	8.62

	1975					1974		
	OLD	NEW	RELEASED	STRIPPER	\bar{x}	OLD	NEW, RELEASED, STRIPPER	\bar{x}
JAN.	\$5.05	\$11.23	\$11.19	\$11.18	\$7.56	\$5.03	\$9.82	\$6.95
FEB.	5.05	11.47	11.46	11.32	7.55	5.03	9.87	6.87
MARCH	5.06	11.59	11.51	11.52	7.57	5.03	9.88	6.77
APRIL	5.08	11.70	11.60	11.49	7.61	5.03	9.88	6.77
MAY	5.03	11.78	11.76	11.62	7.57	5.03	9.88	6.87
JUNE	5.07	11.82	11.73	11.71	7.64	5.03	9.95	6.85
JULY	5.06	12.36	12.26	12.25	7.83	5.03	9.95	6.80
AUG.	5.04	12.53	12.39	12.36	7.83	5.03	9.98	6.71
SEPT.	5.07	12.60	12.42	12.46	7.86	5.03	10.10	6.70
OCT.	5.07	12.91	12.67	12.68	7.95	5.03	10.74	6.97
NOV.	5.06	13.03	12.78	12.63	7.97	5.03	10.90	6.97
DEC.	5.07	12.93	12.89	12.89	8.01	5.03	11.08	7.09

* January New: \$13.06; Released: \$12.92

SOURCE: FEA Form 124

TABLE VIII

U.S. REFINER ACQUISITION COST OF
CRUDE OIL 1974-77 (\$ Per Barrel)

	<u>1977</u>			<u>1976</u>		
	<u>Domestic</u>	<u>Imported</u>	<u>Composite</u>	<u>Domestic</u>	<u>Imported</u>	<u>Composite</u>
JAN.	\$ 9.02	\$14.17	\$11.52	\$ 9.14	\$13.27	\$10.76
FEB.	9.01	14.31	11.66	8.67	13.26	10.54
MARCH	8.97	14.47	11.73	8.48	13.51	10.44
APRIL	8.96	14.48	11.76	8.66	13.39	10.63
MAY	8.94	14.69	11.81	8.62	13.41	10.66
JUNE				8.60	13.48	10.88
JULY				8.72	13.51	10.97
AUG.				8.65	13.58	10.78
SEPT.				8.95	13.47	11.08
OCT.				9.13	13.49	11.20
NOV.				9.16	13.58	11.26
DEC.				9.29	13.72	11.34

	<u>1975</u>			<u>1974</u>		
	<u>Domestic</u>	<u>Imported</u>	<u>Composite</u>	<u>Domestic</u>	<u>Imported</u>	<u>Composite</u>
JAN.	\$ 7.78	\$12.77	\$ 9.48	\$ 6.72	\$ 9.59	\$ 7.46
FEB.	8.29	13.05	10.09	7.08	12.45	8.57
MARCH	8.38	13.28	9.91	7.05	12.73	8.68
APRIL	8.23	13.26	9.83	7.21	12.72	9.13
MAY	8.33	13.27	9.79	7.26	13.02	9.44
JUNE	8.33	14.15	10.33	7.20	13.06	9.45
JULY	8.37	14.03	10.57	7.19	12.75	9.30
AUG.	8.48	14.25	10.81	7.20	12.68	9.17
SEPT.	8.49	14.04	10.79	7.18	12.53	9.13
OCT.	8.68	14.66	10.85	7.26	12.44	9.22
NOV.	8.67	15.04	11.05	7.46	12.53	9.41
DEC.	8.66	14.81	10.98	7.39	12.82	9.28

SOURCE: FEA