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October 2019

EXECUTIVE SUMMARY

Just as the Washington Nationals' World Series win [offers lessons](#) about importance of tenacity, appreciation, and team contributions, the U.S. natural gas and oil industry's contributions to U.S. energy supply, demand and exports exceeded all expectations in October 2019 with:

- ▶ A new record for crude oil production of **12.6 million barrels per day (mb/d)** – No. 1 in the world;
- ▶ Resurgent total U.S. petroleum demand of **21.2 mb/d** – the highest ever for the month of October;
- ▶ U.S. petroleum exports steady above **8.0 mb/d** despite multiple challenges globally; yet,
- ▶ **Lower domestic oil prices**, below \$54.00 per barrel in October.

Remarkable, much like the Nationals' championship, a celebration is in order as the U.S. natural gas and oil industry has continued to defy expectations and help cushion the U.S. consumers, who remained optimistic in October despite simmering weaknesses within the industrial sector of the economy.

API's economic indicator, the API D-E-I (Distillate Economic Indicator) had a reading of zero -0.3 in October and a three-month average of -0.1, which historically has corresponded with slowing U.S. industrial production. Please see the [following chart](#) for comparisons.

OCTOBER HIGHLIGHTS ([Click hyperlinks to advance to any section](#))

Demand

- **U.S. petroleum demand (21.2 mb/d) record highs for the month of October.**
 - Gasoline demand growth up for a 3rd consecutive month in October.
 - Distillate deliveries picked up in October.
 - Record jet fuel demand in October and year-to-date.
 - Residual fuel oil deliveries highest for the month of October since 2011.
 - Other oils' record demand for October (5.4 mb/d).

Prices & Macroeconomy

- **Brent and WTI crude oil prices fell -- and price differences narrowed.**
- **U.S. leading economic indicators reinforced industrial weakness, but solid consumerism.**

Supply

- **Record U.S. crude oil production (12.6 mb/d).**

International trade

- **U.S. petroleum exports steady above 8.0 mb/d.**

Industry operations

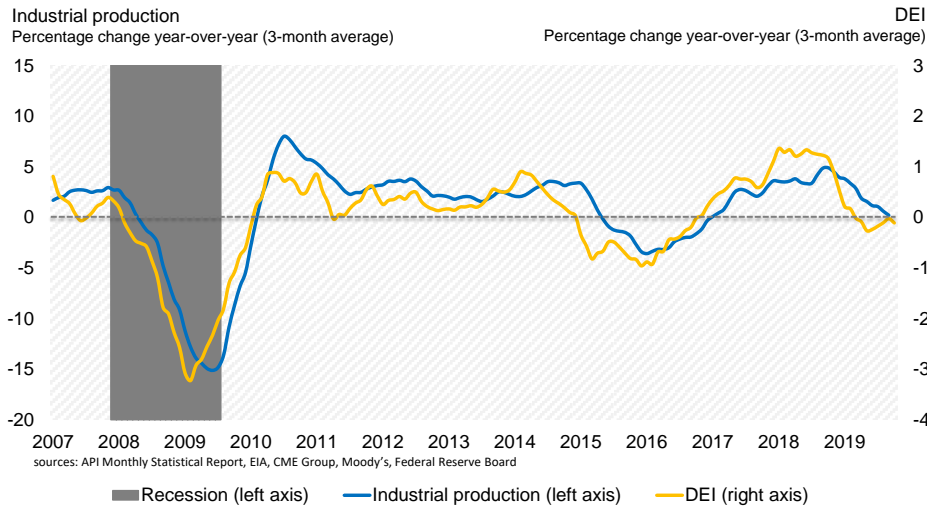
- **Refinery throughput and capacity utilization rates fell in October.**

Inventories

- **Total inventories increased year-on-year for the 12th consecutive month.**

The API D-E-I[®] (Distillate Economic Indicator) – October 2019

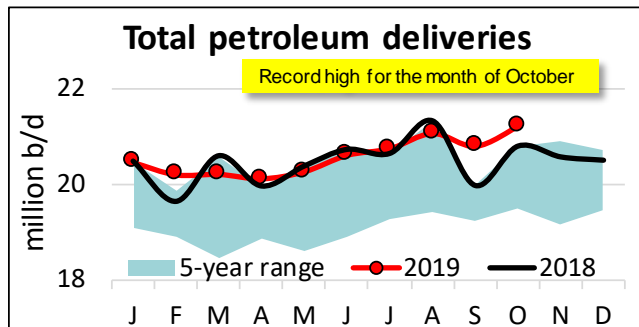
◆ The DEI value of -0.3 for October and three-month average of -0.1 suggests a continued slowing of industrial production



Details by section

Demand

U.S. petroleum demand (21.2 mb/d) record highs for the month of October



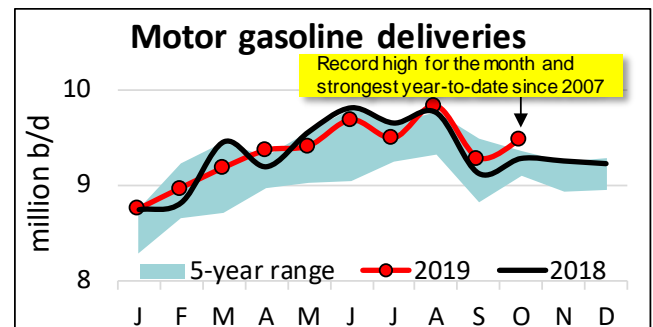
U.S. petroleum demand, as measured by total domestic petroleum deliveries, was 21.2 mb/d in October – the highest on record for the month of October. This was a seasonal increase of 2.0% from September but also up by 2.3% compared with October 2018. Year-to-date through October, total petroleum demand averaged a record 20.6 mb/d and was up by 0.3% y/y.

Gasoline

Gasoline growth up y/y for 3rd consecutive month

Consumer gasoline demand, measured by total motor gasoline deliveries, was 9.5 mb/d in October.

This was an increase of 2.2% from September but also a rise of 1.9% compared with October 2018.



In October, consumption was relatively consistent across U.S. regions. Reformulated-type gasoline deliveries, which is consumed primarily in urban areas, increased by 2.1% y/y to 3.1 mb/d. By contrast, conventional gasoline that is used more in rural areas increased 1.9% y/y to 6.3 mb/d.

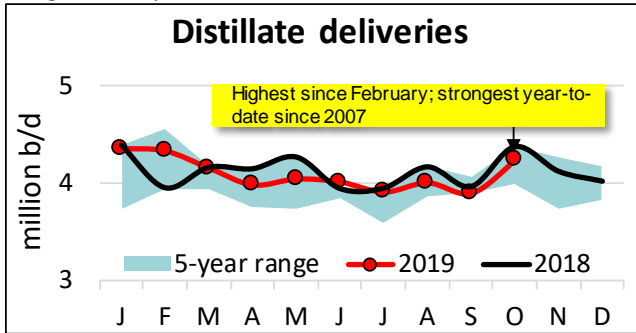
October was the 3rd consecutive months of motor gasoline demand growth year-on-year and brought cumulative demand year-to-date through October to be about on par with the same period last year.

Distillate Fuel Oil

Distillate deliveries picked up in October.

In October, distillate deliveries of 4.2 mb/d rose 8.8% from September but were down by 2.6%

compared with October 2018. Cumulatively through October, distillate deliveries decreased 1.5% y/y and likely affirmed continued [weakness](#) in U.S. freight transportation.

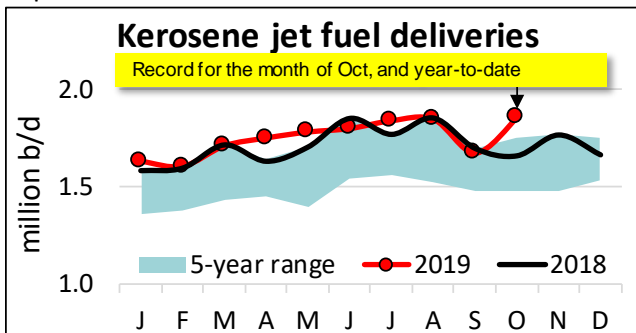


In October, 99.0% of distillate demand was ultra-low sulfur distillate (ULSD), which is mainly used in heavy-duty transportation, including road freight trucking and agriculture but also increasingly as marine fuel in place of residual fuel oil with [sulfur specifications](#) poised to tighten globally effective January 2020.

Kerosene Jet Fuel

Record jet fuel demand in October and year-to-date

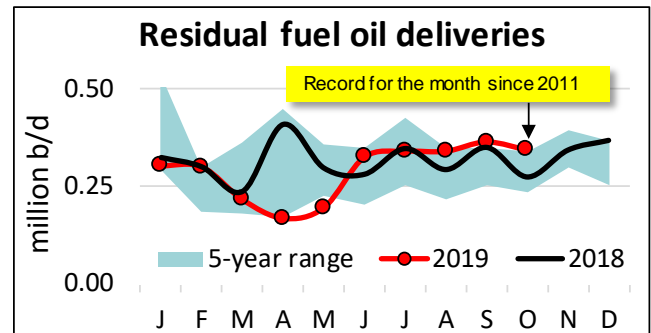
In October, Kerosene jet fuel demand of 1.9 mb/d set new records for the month and cumulatively year-to-date. This was an increase of 11.1% from September and 10.8% over October 2018.



The spike in October ran counter to typical seasonality but coincided with a draw-down of jet fuel inventories to the lowest for the month since 2015. The International Air Transport Association (IATA) has not yet reported data for October but suggested in its November 7 [report](#) that domestic U.S. revenue passenger kilometers grew 6.0% y/y in September.

Residual Fuel Oil

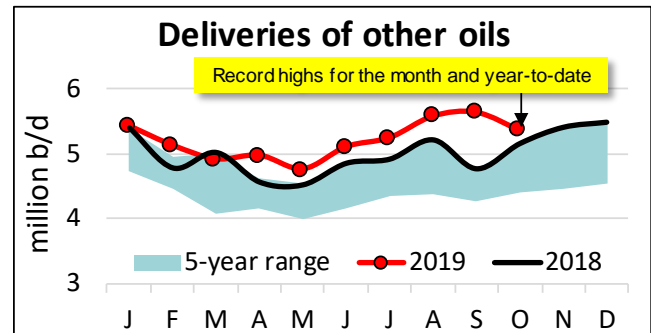
Residual fuel oil deliveries highest for the month of October since 2011.



Residual fuel oil is used in electric power production, space heating and industrial applications. Residual fuel oil deliveries were 344 thousand barrels per day (kb/d), an increase of 26.0% compared with October 2018 and steadily atop the 5-year range.

Other Oils

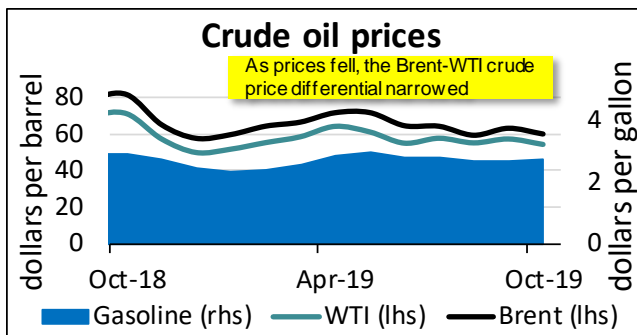
Other oils' record demand for October (5.4 mb/d)



Refining and petrochemical deliveries of liquid feedstocks, naphtha, and gasoil ("other oils") set records for the month of October (5.4 mb/d) and year-to-date (5.1 mb/d). This was an increase of 5.8% y/y, but a slowing of 5.1% from September.

Prices

Brent, WTI crude oil prices fell – and price differences narrowed.



Domestic WTI crude oil prices averaged \$53.96 per barrel in October, a decrease of 5.3% (\$2.99 per barrel) from September and a decrease of 23.7% (\$16.79 per barrel) from October 2018. By contrast, international Brent crude oil prices averaged \$59.71 per barrel, down \$3.12 per barrel from September, as the market looked past concerns about supply from [Saudi Arabia](#). Consequently, the difference between domestic and international crude oil prices narrowed to \$5.75 per barrel in October from \$5.88 per barrel in September.

As crude oil prices had risen in the prior month (September), the average U.S. gasoline price in rose in October to \$2.72 per gallon from \$2.68 in September, according to [AAA](#) reports. By EIA [estimates](#), crude oil was 54% of the input cost to make gasoline in September.

Macroeconomy

U.S. leading economic indicators reinforced industrial weakness, but solid consumerism

API's D-E-I (Distillate Economic Indicator), which includes industry fundamentals, prices and interest rates, had a reading of -0.3 in October and a three-month average reading of -0.1, which historically has corresponded with slowing U.S. industrial production.

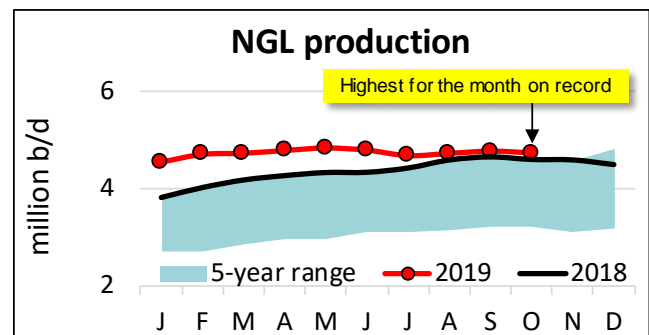
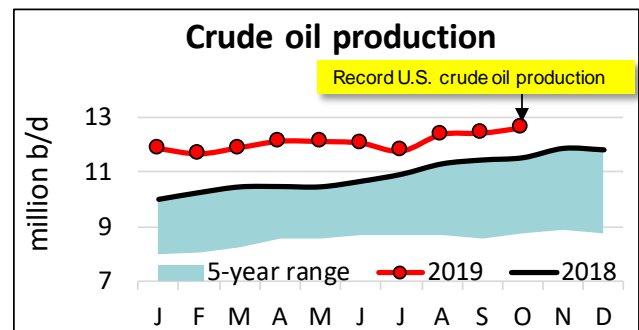
The [Institute for Supply Management's Purchasing Managers Index \(PMI\)](#) again signaled a contraction of industrial activity in October with a reading of 48.3%. Index values below 50.0 suggest a contraction. New orders, production and employment decreased, while supplier deliveries slowed and indicators covering trade, supplier backlogs, inventories and raw materials weakened; and, prices decreased.

By contrast, consumer sentiment remained solid in October as the [University of Michigan's consumer sentiment index](#) held about steady at 95.7 as of early November from 95.5 in October. The survey noted that job and wage gains have remained the strongest aspects of the current economy.

According to the [Bureau of Labor Statistics \(BLS\)](#), the unemployment rate increased to 3.6% as U.S. non-farm payrolls grew by 128,000 in October.

Supply

Record U.S. crude oil (12.6 mb/d)

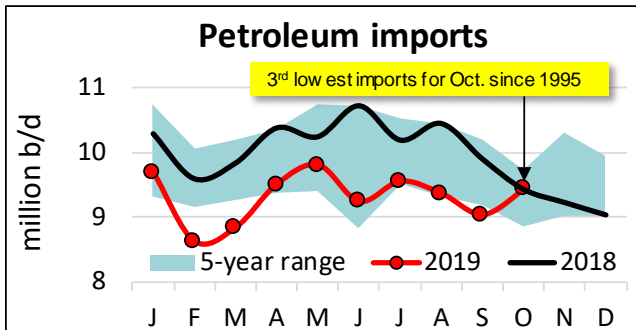
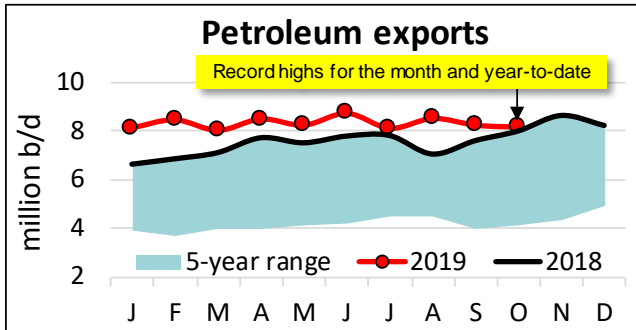


In October, the U.S. recorded a new record 12.6 mb/d for crude oil production plus solid natural gas liquids production of 4.7 mb/d. The production record came despite less drilling activity in October. [Baker Hughes](#) reported that the oil-targeted rig count fell below 700 in October for the first time since April 2017. The [U.S. Energy Information Administration \(EIA\)](#) estimated that the productivity of new wells has continued to rise, and the backlog of drilled but uncompleted well (DUCs) further declined in September as new Permian basin pipeline capacity came on stream.

International trade

U.S. petroleum exports steady above 8.0 mb/d.

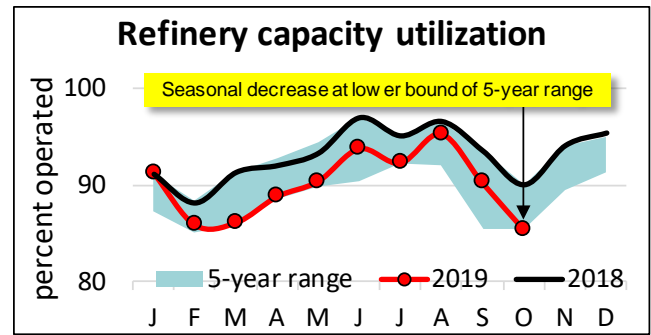
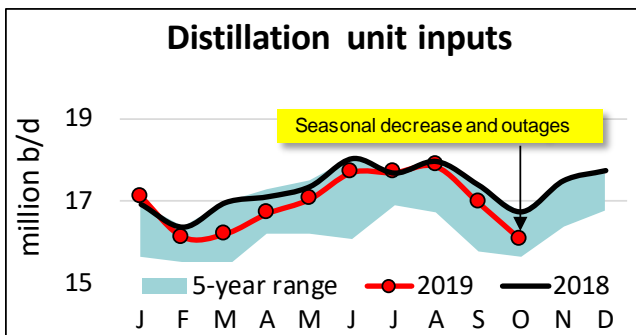
Total U.S. petroleum exports were 8.1 mb/d in October, roughly steady versus 8.2 mb/d in September. Meanwhile, U.S. petroleum imports increased by 0.4 mb/d between September and October, led by crude oil imports, but remained down compared with October 2018.



Industry operations

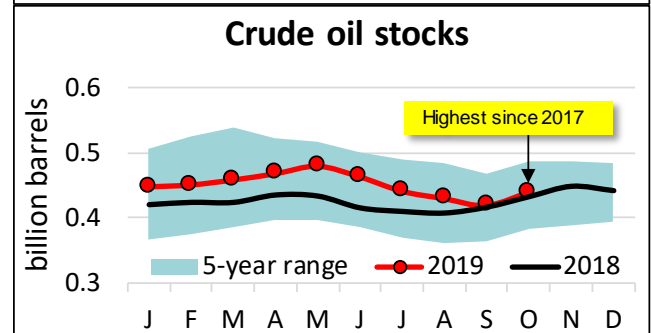
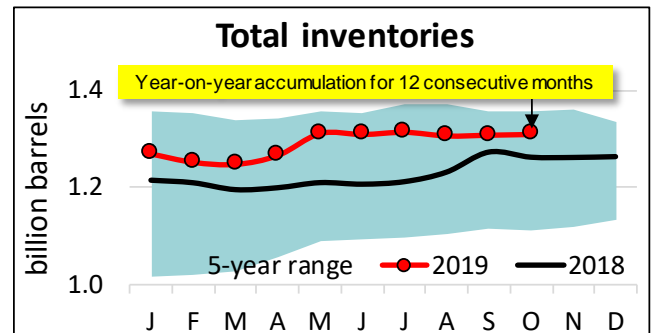
Refinery throughput and capacity utilization rates fell in October.

In October, gross inputs to U.S. refineries of 16.0 mb/d implied a capacity utilization rate of 85.4%. This marked a slowing of throughput for the second consecutive month and neared the bottom of the 5-year range as more than 1.5 mb/d of crude distillation capacity was offline due to planned and unplanned outages.



Inventories

Total inventories increased year-on-year for the 12th consecutive month



In October, U.S. total petroleum inventories were 1.31 billion barrels, including crude oil and refined products but excluding the Strategic Petroleum Reserve. Over the past year, total inventories continued to exceed their year-ago levels, even as crude oil stocks have converged toward their 2018 levels.

ESTIMATED UNITED STATES PETROLEUM BALANCE¹
(Daily average in thousands of 42 gallon barrels)

Disposition and Supply	October			Year-to-Date		
	2019 ²	2018	% Change	2019 ³	2018	% Change
Disposition:						
Total motor gasoline.....	9,475	9,294	1.9	9,339	9,348	(0.1)
Finished reformulated.....	3,130	3,066	2.1	3,066	3,132	(2.1)
Finished conventional.....	6,345	6,227	1.9	6,273	6,216	0.9
Kerosene-jet.....	1,856	1,675	10.8	1,750	1,705	2.6
Distillate fuel oil.....	4,236	4,348	(2.6)	4,090	4,153	(1.5)
≤ 500 ppm sulfur.....	4,178	4,338	(3.7)	4,017	4,031	(0.3)
≤ 15 ppm sulfur.....	4,175	4,334	(3.7)	4,008	4,014	(0.2)
> 500 ppm sulfur.....	58	10	480.0	73	115	(36.5)
Residual fuel oil.....	344	273	26.0	290	310	(6.5)
All other oils (including crude losses)	5,364	5,070	5.8	5,092	4,969	2.5
Reclassified ⁴	(58)	74	na	6	16	na
Total domestic product supplied.....	21,217	20,734	2.3	20,568	20,501	0.3
Exports.....	8,138	8,011	1.6	8,291	7,463	11.1
Total disposition.....	29,355	28,746	2.1	28,859	27,964	3.2
Supply:						
Domestic liquids production						
Crude oil (including condensate).....	12,606	11,631	8.4	12,089	10,784	12.1
Natural gas liquids.....	4,736	4,588	3.2	4,731	4,339	9.0
Other supply ⁵	1,115	1,234	(9.6)	1,211	1,250	(3.1)
Total domestic supply.....	18,457	17,453	5.8	18,031	16,373	10.1
Imports:						
Crude oil (excluding SPR imports).....	6,852	7,354	(6.8)	6,960	7,859	(11.4)
From Canada.....	4,048	3,673	10.2	3,874	3,694	4.9
All other.....	2,804	3,681	(23.8)	3,086	4,165	(25.9)
Products.....	2,581	2,114	22.1	2,356	2,243	5.0
Total motor gasoline (incl. blend.comp)....	794	538	47.6	752	690	9.0
All other.....	1,787	1,576	13.4	1,604	1,553	3.3
Total imports.....	9,433	9,468	(0.4)	9,315	10,103	(7.8)
Total supply.....	27,890	26,921	3.6	27,347	26,476	3.3
Stock change, all oils.....	(1,465)	(1,825)	na	(1,512)	(1,488)	na
Refinery Operations:						
Input to crude distillation units.....	16,054	16,735	(4.1)	16,945	17,254	(1.8)
Gasoline production.....	10,072	10,301	(2.2)	10,074	10,047	0.3
Kerosene-jet production.....	1,720	1,691	1.7	1,793	1,805	(0.7)
Distillate fuel production.....	4,867	5,035	(3.3)	5,118	5,108	0.2
Residual fuel production.....	368	397	(7.3)	378	420	(10.0)
Operable capacity.....	18,804	18,603	1.1	18,796	18,599	1.1
Refinery utilization ⁶	85.4%	90.0%	na	90.2%	92.8%	na
Crude oil runs.....	15,763	16,412	(4.0)	16,576	16,906	(1.9)

1. Total supply, i.e., production plus imports adjusted for net stock change is equal to total disposition from primary storage. Total disposition from primary storage less exports equals total domestic products supplied. Information contained in this report is derived from information published in the API *Weekly Statistical Bulletin* and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2. Based on API estimated data converted to a monthly basis.

3. Data for most current two months are API estimates. Other data come from U.S. Energy Information Administration (including any adjustments).

4. An adjustment to avoid double counting resulting from differences in product classifications among different refineries and blenders.

5. Includes unaccounted-for crude oil, withdrawals from the SPR when they occur, processing gain, field production of other hydrocarbons and alcohol, and downstream blending of ethanol.

6. Represents "Input to crude oil distillation units" as a percent of "Operable capacity".

R: Revised. na: Not available.

ESTIMATED UNITED STATES PETROLEUM BALANCE¹
(Daily average in thousands of 42 gallon barrels)

	October 2019	September 2019	October 2018	% Change From	
				Month Ago	Year Ago
Stocks (at month-end, in millions of barrels):					
Crude oil (excluding lease & SPR stocks).....	440.5	420.3	433.8	4.8	1.5
Unfinished oils.....	98.7	92.4	92.1	6.8	7.2
Total motor gasoline.....	217.4	230.4	232.7	(5.6)	(6.6)
Finished reformulated.....	0.1	0.0	0.0	0.2	62.5
Finished conventional.....	22.0	23.8	24.8	(7.6)	(11.4)
Blending components.....	195.3	206.6	207.8	(5.5)	(6.0)
Kerosene-jet.....	39.7	44.8	42.3	(11.4)	(6.1)
Distillate fuel oil.....	119.0	130.3	124.8	(8.7)	(4.6)
≤ 500 ppm sulfur.....	107.9	119.1	114.2	(9.4)	(5.5)
≤ 15 ppm sulfur.....	105.3	116.6	109.3	(9.7)	(3.7)
> 500 ppm sulfur.....	11.1	11.2	10.6	(0.9)	4.6
Residual fuel oil.....	28.9	29.3	29.2	(1.4)	(1.1)
All other oils.....	366.0	361.3 R	309.0	1.3	18.5
Total all oils.....	1,310.2	1308.8 R	1,263.8	0.1	3.7