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April 2020

EXECUTIVE SUMMARY

For a second consecutive month due to measures to prevent transmission of the coronavirus (COVID-19), U.S. petroleum market data weakened to historic proportions, breaking records for the month:

- As U.S. oil-directed drilling fell by a record 52% over last two months, total U.S. liquids (crude oil, natural gas and other liquids) production decreased by 1.6 mb/d, the most ever;
- Total petroleum demand of 14.2 mb/d fell by 5.2 mb/d from March, with half of that drop from gasoline;
- Refinery throughput and capacity utilization had their largest declines on record since 1985;
- Crude oil prices fell by the largest percentage on record, and West Texas Intermediate (WTI) crude oil crashed to a negative spot price on April 20, one day prior to the May futures contract expiration, but otherwise traded above international Brent crude oil prices for the month; and,
- U.S. petroleum imports fell by 1.8 mb/d, most ever for a single month.

Leading economic indicators deteriorated across the board, including record decreases in the University of Michigan's consumer sentiment index, the Institute of Supply Management's purchasing managers' index and API's distillate economic indicator, the API D-E-I™. Please see the following [chart](#) for details.

CONTENTS ([Click hyperlinks to advance to any section](#))**Demand**

- **U.S. petroleum demand decreased by 26.7% (5.2 mb/d) between March and April – the largest on record.**
 - Gasoline deliveries' largest monthly decrease (31.1% m/m, 2.6 mb/d) on record.
 - Distillate deliveries decreased 22% (0.9 mb/d) between March and April.
 - Jet fuel deliveries fell 64.8% y/y in April to their lowest since May 1968.
 - Residual fuel oil deliveries increased seasonally.
 - Refining and petrochemical demand for naphtha and gasoil decreased by 17.4% m/m.

Prices & Macroeconomy

- **A tectonic fall in oil prices, and one historically negative day.**
- **Leading economic indicators deteriorated.**

Supply

- **U.S. total liquids supply – crude oil, natural gas liquids and other liquids -- fell by a total of 1.6 mb/d in April.**

International trade

- **U.S. petroleum imports fell by more than exports in April.**

Industry operations

- **Refinery throughput lowest since 1991, capacity utilization at a record low.**

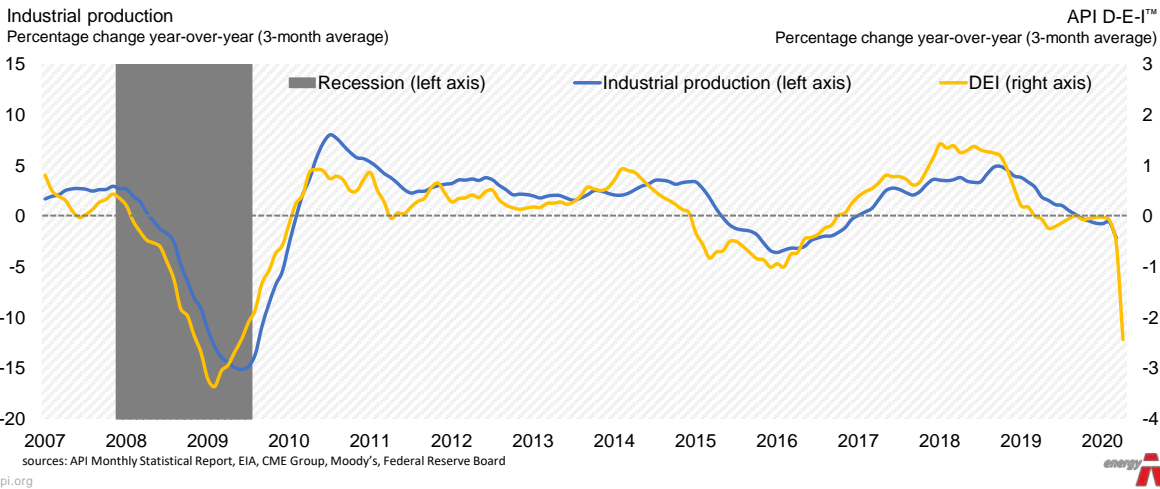
Inventories

- **Total inventories increased year-on-year for the 18th consecutive month.**



API's economic indicator: The API D-E-I™ - April 2020

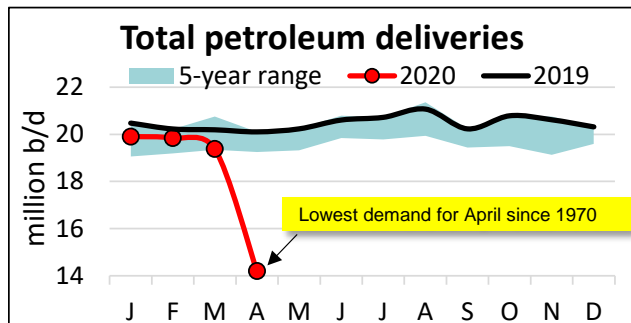
▶ The D-E-I™ value of -5.9 for April 2020 and three-month average of -2.4 suggested further slowing of industrial production



Details by section

Demand

U.S. petroleum demand decreased by 26.7% (5.2 mb/d) between March and April – largest on record



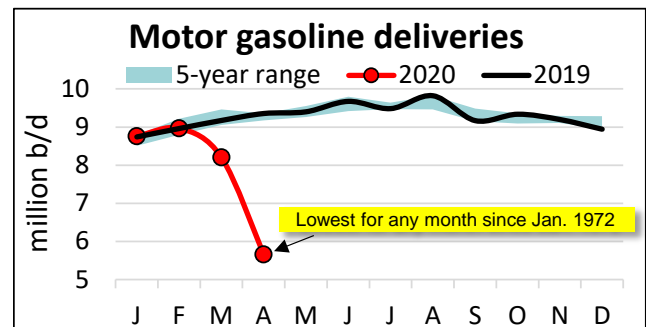
U.S. petroleum demand, as measured by total domestic petroleum deliveries, decreased to 14.2 mb/d in April. This was a decrease of 26.7% from March and 29.4% compared with April 2019 — the lowest for the month of April since 1970.

The decrease in U.S. petroleum demand reflected the escalation of stay-at-home orders to prevent transmission of COVID-19. Seasonal deliveries of residual fuel oil showed the only increase for the month. Transportation fuel deliveries fell across the board, but fuels were affected to varied extents. Jet fuel was the most adversely affected, followed by gasoline and diesel/distillates. Naphtha/gasoil used in refining and petrochemicals decreased by

relatively less. In more than four decades of API publishing this report, however, April 2020 stands out for its singular weaknesses.

Gasoline

Gasoline deliveries' largest monthly decrease on record



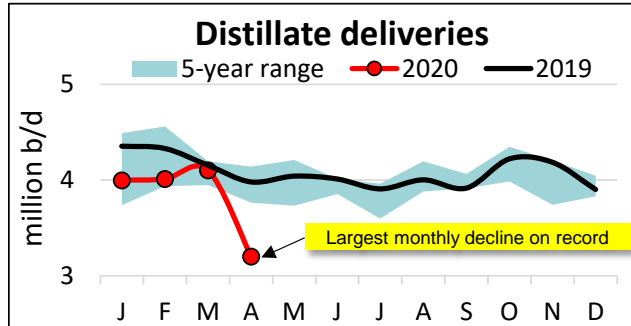
Consumer gasoline demand, measured by total motor gasoline deliveries, was 5.7 mb/d in April. This represented decreases of 31.1% from March and 39.6% compared with April 2019 for the largest monthly decrease on record and lowest demand for any month since January 1972. Meanwhile, U.S. average conventional gasoline prices fell by 31.7% y/y or 94.3 cents per gallon according to [AAA](#).

The decreases across urban and rural areas appeared to be consistent. Between March and April, reformulated-type gasoline, which is consumed primarily in urban areas, decreased by 32.8% m/m, while demand for conventional

gasoline that is mainly consumed in rural areas decreased by 30.3% m/m.

Distillate Fuel Oil

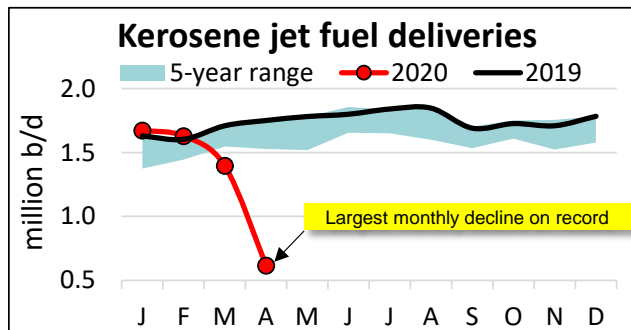
Distillate deliveries decreased 22% (0.9 mb/d) between March and April



Distillate deliveries of 3.2 mb/d in April were down by 22.0% from March and 19.6% compared with April 2019. This too represented the largest monthly decrease on record, but compared with that for gasoline was partially cushioned by increased [business-to-consumer](#) freight shipments.

Kerosene Jet Fuel

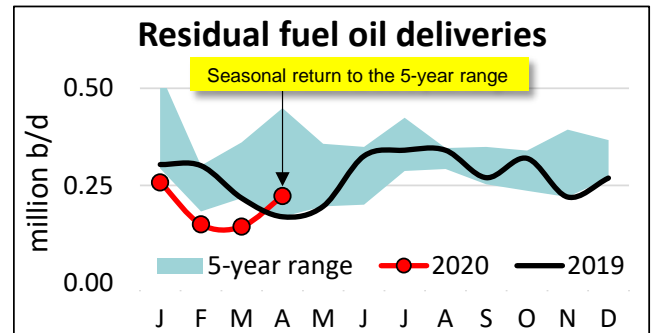
Jet fuel deliveries fell 64.8% y/y in April to their lowest since May 1968



Kerosene jet fuel deliveries were 0.6 mb/d in April, which was a decrease of 55.9% from March and 64.8% versus April 2019. The International Air Transport Association ([IATA](#)) reported that 95% of passenger flights were canceled but partially offset by a 25-30% increase in demand for e-commerce as customers and businesses resorted to online purchasing in response to social distancing restrictions. However, IATA also warned of potential air capacity shortages, especially for mail with the extensive flight cancellations.

Residual Fuel Oil

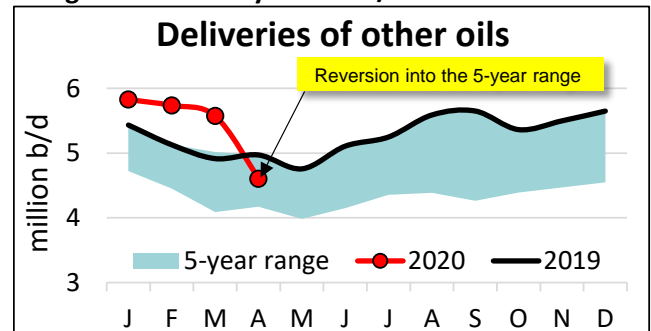
Residual fuel oil deliveries increased seasonally



Deliveries of residual fuel oil, which is used in electric power production, space heating, industrial applications and as a marine bunker fuel, were 223 thousand barrels per day (kb/d) in April. This was a seasonal increase of 54.9% from March and 32.0% compared with April 2019 – and the only U.S. refined product demand to increase during the month.

Naphtha & Gasoil "Other Oils"

Refining and petrochemical demand for naphtha and gasoil slowed by 17.4% m/m



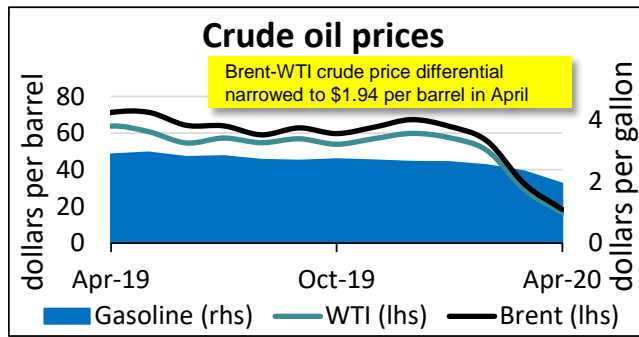
Liquid feedstocks, such as naphtha and gasoil, are used in refining and petrochemicals that have continued to expand due to the U.S. energy revolution. In April, deliveries of other oils were 4.6 mb/d, which was a decrease of 17.4% from March and 2.5% compared with April 2019. This highlights the extent to which refining and petrochemical demand had risen and returns other oils' demand back into its 5-year range.

Prices

A tectonic fall in oil prices, and one historically negative day

In April, crude oil prices decreased by more than 40% for the second consecutive month and by

about two-thirds over two months, which was the largest percentage decrease on record.



International Brent crude oil spot prices averaged \$18.38 per barrel, down from \$23.49 per barrel from March. By comparison, domestic WTI crude oil prices averaged \$16.55 per barrel in April, down from \$29.21 per barrel in March.

Notably, for the first time on record, a negative WTI spot price prevailed on April 20, the day before futures contracts for May delivery expired, which also brought down the monthly average price. Excluding April 20, WTI crude oil averaged \$19.22 per barrel in April and generally traded above Brent crude oil for the first time since November 2016 as OPEC and Russia [flooded](#) oil markets in April.

Macroeconomy

Leading economic indicators deteriorated

API’s economic indicator, The D-E-I™, based primarily on diesel / distillate supply, demand and inventories, had a reading of -5.9 in April and a three-month average reading of -2.4, which was the largest decrease on record and historically corresponds with slower U.S. industrial production.

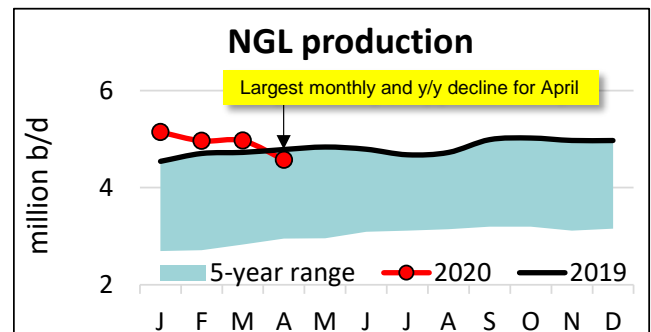
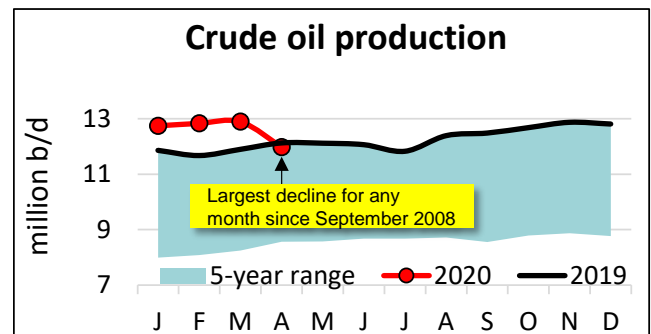
The [Institute for Supply Management’s Purchasing Managers Index \(PMI\)](#), came in with a reading of 41.5 in April. Index values below 50.0 suggest a contraction. The reading reflected weaker production, new orders, and employment; accelerated slowing of supplier deliveries; pricing weakness; and, contracting international trade. Among 18 manufacturing industries covered, only paper products and food, beverage & tobacco products expanded in April.

Furthermore, consumer sentiment deteriorated in the [University of Michigan’s consumer sentiment index](#) reading. The index readings since February have fallen from 101.1 (Feb.) to 89.1 (Mar.), and 71.8 (April), with the latter cementing the largest monthly decline on record. The survey noted that the readings indicate an ongoing recession and the anticipated cycle of the coronavirus.

The ongoing COVID-19 crisis took a toll on the U.S. employment situation in March. According to the [Bureau of Labor Statistics \(BLS\)](#), the unemployment rate rose to 14.7% in April from 4.4% in March, the largest on record since 1948. Non-farm payrolls plummeted by 20,500,000 in April, which was more than 10 times greater than the largest previous monthly payroll decrease.

Supply

U.S. total liquids supply fell by 1.6 mb/d in April



In April, U.S. crude oil production fell to 12.0 mb/d, which was a decrease of 0.9 mb/d from March. Due to the tremendous extent to which U.S. crude oil production had recently grown, however, output in April was only 1.2% below that of April 2019.

However, April was the 3rd largest monthly decrease in U.S. crude oil production over the past 100 years. The only larger decreases were in September 2008

(Great Financial Crisis) and May 1952 (U.S. refinery [workers strike](#)).

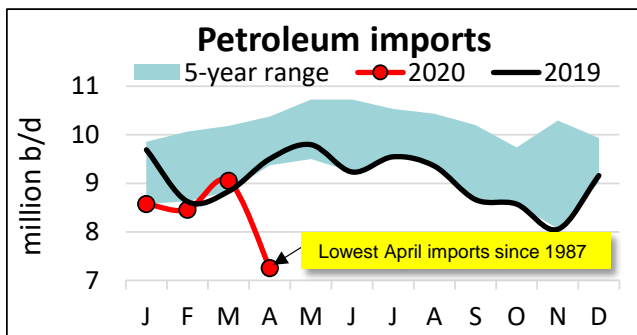
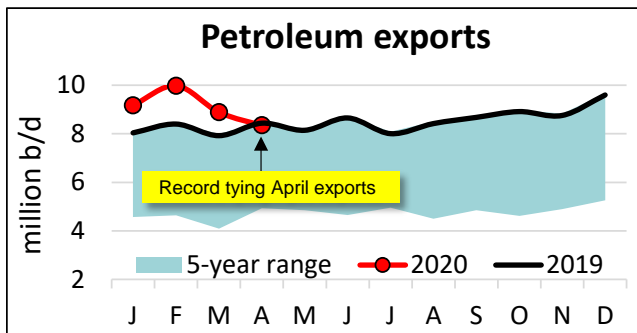
Meanwhile, U.S. natural gas liquids (NGL) production of 4.6 mb/d fell by 0.4 mb/d from March. When crude oil, NGLs and other liquids (refinery gain) are totaled, U.S. liquids supply fell by a combined 1.6 mb/d in April.

These production decreases corresponded with a record decrease in U.S. drilling activity according on [Baker Hughes](#), which reported oil-targeted drill rig activity of 325 rigs for the week ended May 1, down by 52% over the past two months for the largest decrease in over 30 years.

International trade

U.S. petroleum imports fell by more than exports in April

All things considered, U.S. petroleum exports held up relatively well in April. The U.S. petroleum exports for the month totaled 8.4 mb/d, of which 3.2 mb/d was crude oil. For total exports, this was a decrease of 0.5 mb/d from March, but it was nearly on par with exports in April 2019. By contrast, U.S. petroleum imports of 7.3 mb/d in April fell by 1.8 mb/d between March and April. On net, the U.S. flipped back to being a petroleum net exporter for the month.

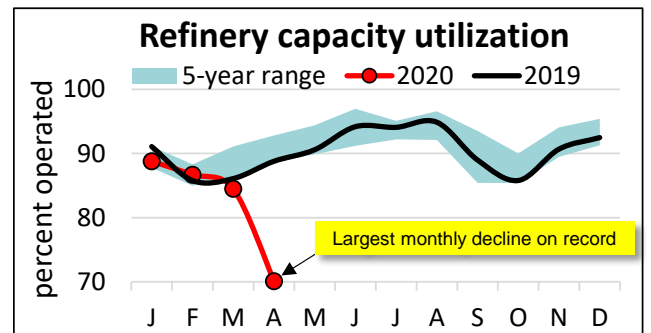
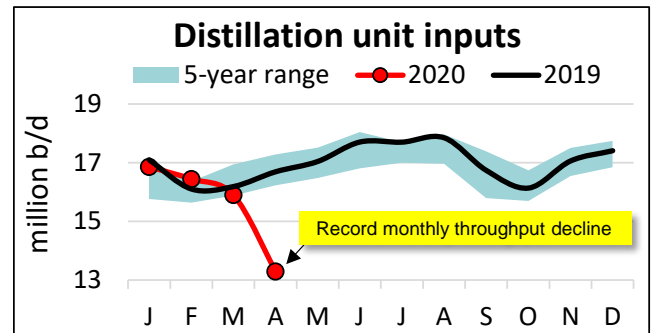


Industry operations

Refinery throughput lowest since 1991, capacity utilization at a record low

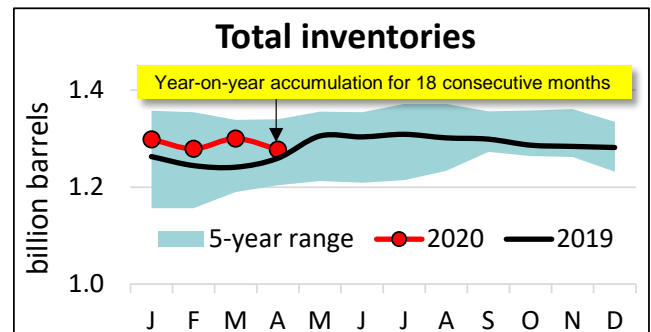
With decreased anticipated petroleum demand and exports, U.S. refinery throughput of 13.3 mb/d fell in April by 2.6 mb/d, the largest decline on record since 1985.

This throughput implied a capacity utilization rate of 70.1%, which was a decrease of 14.4 percentage points from March and the lowest monthly rate on record since 1985.



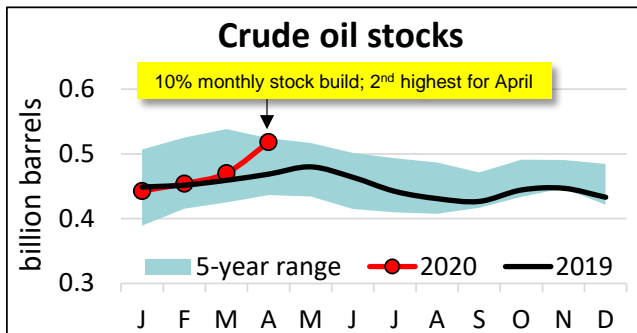
Inventories

Total inventories increased year-on-year for the 18th consecutive month.



U.S. total petroleum inventories, including crude oil and refined products but excluding the Strategic Petroleum Reserve, were 1.3 billion barrels in April and accumulated year-on-year for the 18th consecutive month.

Within the total, as refinery throughput and finished product demand fell, crude oil stocks rose by 10% between March and April to their second highest amount for the month and 20 million barrels below the maximum 538.6 million barrels stored in March 2017.



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

Disposition and Supply	April			Year-to-Date		
	2020 ²	2019	% Change	2020 ³	2019	% Change
Disposition:						
Total motor gasoline.....	5,654	9,356	(39.6)	7,898	9,059	(12.8)
Finished reformulated.....	1,736	3,085	(43.7)	2,482	2,905	(14.6)
Finished conventional.....	3,918	6,272	(37.5)	5,415	6,154	(12.0)
Kerosene-jet.....	616	1,750	(64.8)	1,330	1,674	(20.6)
Distillate fuel oil.....	3,199	3,980	(19.6)	3,829	4,204	(8.9)
≤ 500 ppm sulfur.....	3,150	3,935	(19.9)	3,772	4,115	(8.4)
≤ 15 ppm sulfur.....	3,134	3,928	(20.2)	3,754	4,097	(8.4)
> 500 ppm sulfur.....	49	45	8.9	58	88	(34.1)
Residual fuel oil.....	223	169	32.0	194	247	(21.5)
All other oils (including crude losses).....	4,605	4,723	(2.5)	5,060	5,059	0.0
Reclassified ⁴	(97)	123	na	28	5	na
Total domestic product supplied.....	14,200	20,101	(29.4)	18,339	20,248	(9.4)
Exports.....	8,354	8,440	(1.0)	9,093	8,197	10.9
Total disposition.....	22,554	28,541	(21.0)	27,432	28,445	(3.6)
Supply:						
Domestic liquids production						
Crude oil (including condensate).....	11,974	12,123	(1.2)	12,614	11,888	6.1
Natural gas liquids.....	4,573	4,787	(4.5)	4,915	4,690	4.8
Other supply ⁵	936	1,152	(18.8)	1,112	1,129	(1.6)
Total domestic supply.....	17,483	18,062	(3.2)	18,640	17,708	5.3
Imports:						
Crude oil (excluding SPR imports).....	5,349	7,025	(23.9)	6,203	6,997	(11.4)
From Canada.....	3,578	3,881	(7.8)	3,847	3,803	1.1
All other.....	1,771	3,144	(43.7)	2,356	3,194	(26.2)
Products.....	1,904	2,479	(23.2)	2,137	2,177	(1.9)
Total motor gasoline (incl. blend.comp)....	411	857	(52.0)	498	634	(21.5)
All other.....	1,493	1,622	(7.9)	1,638	1,544	6.1
Total imports.....	7,253	9,504	(23.7)	8,340	9,175	(9.1)
Total supply.....	24,736	27,565	(10.3)	26,980	26,883	0.4
Stock change, all oils.....	2,182	(976)	na	(452)	(1,563)	na
Refinery Operations:						
Input to crude distillation units.....	13,286	16,691	(20.4)	15,627	16,530	(5.5)
Gasoline production.....	6,422	10,010	(35.8)	8,646	9,884	(12.5)
Kerosene-jet production.....	665	1,728	(61.5)	1,396	1,730	(19.3)
Distillate fuel production.....	5,017	5,054	(0.7)	4,941	5,047	(2.1)
Residual fuel production.....	180	388	(53.6)	223	363	(38.6)
Operable capacity.....	18,963	18,802	0.9	18,929	18,785	0.8
Refinery utilization ⁶	70.1%	88.8%	na	82.6%	88.0%	na
Crude oil runs.....	12,843	16,338	(21.4)	15,083	16,234	(7.1)

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)

	April 2020	March 2020	April 2019	% Change From	
				Month Ago	Year Ago
Stocks (at month-end, in millions of barrels):					
Crude oil (excluding lease & SPR stocks).....	518.6	470.4	468.8	10.2	10.6
Unfinished oils.....	93.0	99.1	96.1	(6.2)	(3.2)
Total motor gasoline.....	259.1	254.2	230.2	1.9	12.5
Finished reformulated.....	0.0	0.1	0.0	(0.4)	(30.6)
Finished conventional.....	22.7	21.7	21.5	4.6	5.6
Blending components.....	236.4	232.4	208.7	1.7	13.3
Kerosene-jet.....	39.0	38.4	40.9	1.6	(4.6)
Distillate fuel oil.....	146.6	121.8	128.2	20.4	14.4
≤ 500 ppm sulfur.....	137.3	112.7	117.0	21.8	17.3
≤ 15 ppm sulfur.....	133.9	109.4	117.7	22.3	13.8
> 500 ppm sulfur.....	9.3	9.1	11.2	2.2	(16.7)
Residual fuel oil.....	35.1	34.5	27.9	1.7	25.7
All other oils.....	186.0	261.2 R	267.1	(28.8)	(30.4)
Total all oils.....	1,277.4	1,279.6 R	1,259.3	(0.2)	1.4