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March 2022

EXECUTIVE SUMMARY

- U.S. petroleum demand (20.4 mb/d) slipped in March from an exceptionally high February level (21.6 mb/d).
- U.S. refinery activity and production of crude oil and natural gas liquids (NGLs) rose, including a record high for NGLs.
- As Russia's war on Ukraine increased international prices by more than domestic ones, U.S. petroleum exports rose.
- U.S. crude oil commercial inventories (ex-SPR) fell to their lowest for March since 2014.

In March, U.S. petroleum demand of 20.4 million barrels per day (mb/d) fell by 1.3 mb/d from its exceptional February level, the highest for any month since Aug. 2005. The monthly decrease was driven by 1.0 mb/d lower demand for other oils – intermediate products in refining and petrochemicals that enable consumer products like medical plastics, films, and packaging – that have been essential with the pandemic. Distillate fuel oil demand also fell by 0.4 mb/d m/m from February, consistent the reports that freight trucking activity could have weakened. Motor gasoline demand increased, however, despite record high nominal prices at the pump.

Supply responded in March. Production of U.S. crude oil (11.7 mb/d) and NGLs (5.7 mb/d) each increased by 0.1 mb/d m/m from February. For NGLs, this was the highest production on record since 1973. Also, the U.S. refining capacity utilization rate eclipsed 90% in March for the first time since 2018. These supply responses came at the same time that U.S. crude oil and refined product exports accelerated, due to the Russia's war on Ukraine having spurred international oil prices to the largest premium over domestic ones since June 2019. Consequently, U.S. total petroleum exports rose by 19% m/m (1.5 mb/d) in March and returned the U.S. to being a petroleum net exporter for the first time since Oct. 2021.

Leading economic indicators remained mixed. API's Distillate Economic Indicator™ suggested slower but solid growth of U.S. industrial production and broader economic activity (please see the following [chart](#) for details). However, the [Univ. of Michigan's consumer sentiment index](#) fell in March and has remained lower than in any prior month in the past decade. Historically this index has been a leading indicator of changes in consumer spending that constituted more than two-thirds of the U.S. economy in Q4 2021 per the U.S. Bureau of Economic Analysis ([BEA](#)).

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 - Jet fuel demand returned to over 1.5 mb/d.
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 - Other oils' demand (5.9 mb/d) dropped from record levels.

Prices & Macroeconomy

- **U.S. motor gasoline prices reached a record high.**
- **Leading indicators highlight industrial growth and a rebound in consumer sentiment.**

Supply

- **U.S. crude oil production (11.7 mb/d) increased slightly; record high NGL production (5.7 mb/d).**

International trade

- **A surge in refined product exports drove a return to U.S. petroleum net exports.**

Industry operations

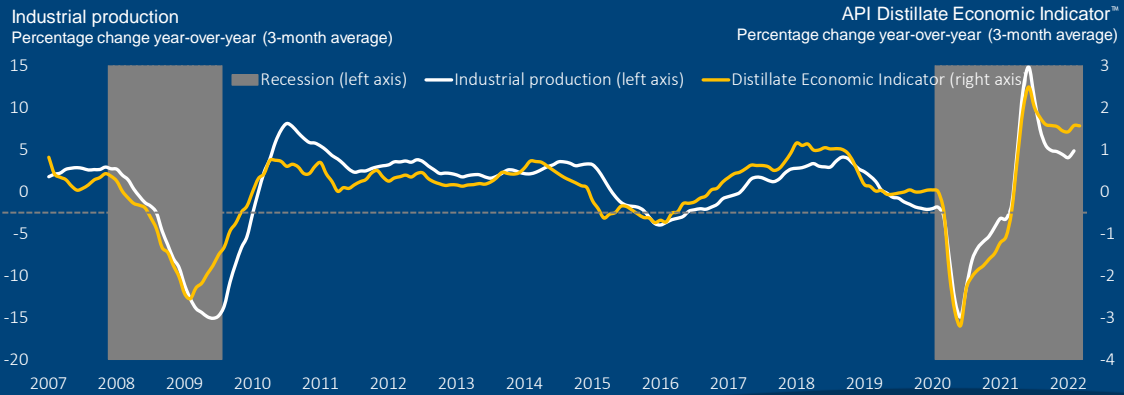
- **As U.S. refining activity accelerated in March, its capacity utilization rate exceeded 90%.**

Inventories

- **Crude oil inventories fell to their lowest for March since 2014.**

API's Distillate Economic Indicator™ - March 2022

The Distillate Economic Indicator™ value of +1.3 for March 2022 and three-month average of +1.6 signaled continued growth of U.S. industrial production and broader economic activity



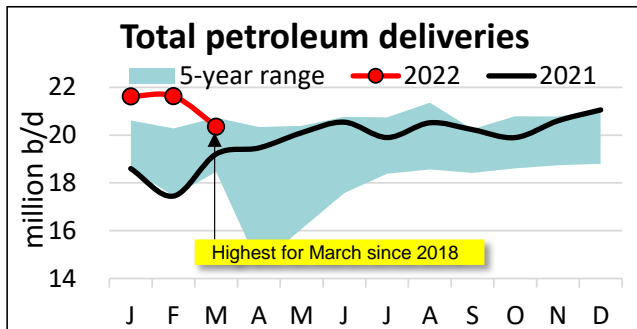
sources: API Monthly Statistical Report; EIA; CME Group; Moody's, Federal Reserve Board; API Team calculations



Details by section

Demand

Highest U.S. petroleum demand (20.4 mb/d) for March since 2018



U.S. petroleum demand, as measured by total domestic petroleum deliveries, was 20.4 mb/d in March. This reflected a 5.9% decrease from February but was still the highest demand for the month of March since 2018.

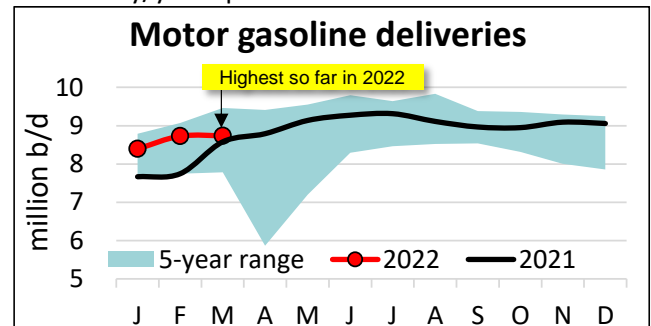
However, the monthly percentage decrease was its second largest for the March in decade and about 70% as strong as that of March 2020, with the onset of the COVID-19 pandemic. "Other oils" (that is, naphtha, gasoil, propane, and propylene) that feed refinery and petrochemical operations, including packaging, films, and medical plastics, dropped by the most. Lower other oils' demand was consistent

with the fall in March of Omicron COVID cases in the United States.

Gasoline

Solid motor gasoline demand (8.7 mb/d) as urban commuting resumed

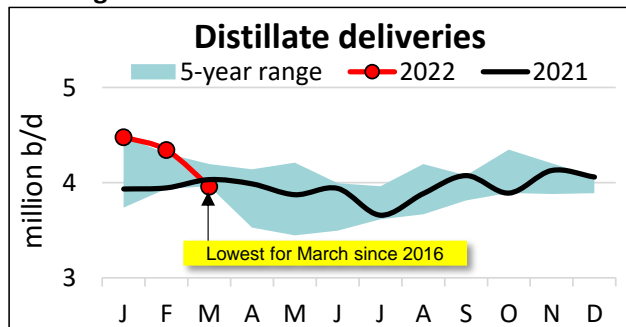
Consumer gasoline demand, measured by motor gasoline deliveries, was 8.7 mb/d in March. This reflected an increase of 0.1% m/m from February and 1.8% y/y compared with March 2021.



Deliveries of reformulated-type gasoline (consumed primarily in urban areas) rose to 2.9 mb/d and were up by 0.9% m/m from February. By comparison, conventional gasoline (consumed mainly in rural areas) decreased by 0.3% m/m to 5.9 mb/d. The relative changes are consistent with a recovery in urban commuting as the Omicron variant of the pandemic eased.

Distillate Fuel Oil

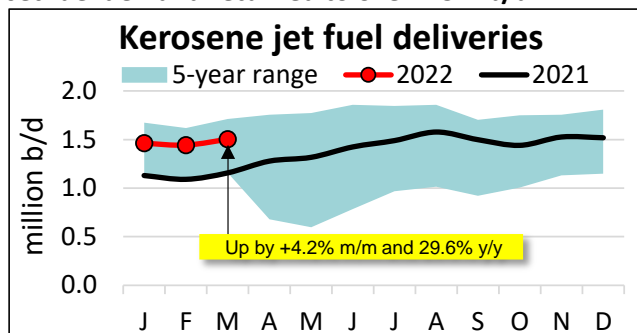
Distillate demand dropped along with freight trucking



Distillate deliveries of 4.0 mb/d decreased by 8.8% m/m from February to their lowest for the month of March since 2016. [DAT iQ industry trendlines](#) showed that spot trucks available in March increased by 29.0% m/m, while the number of available loads rose by only 2.2% m/m, which appeared to be consistent with the possibility that the [trucking activity and freight demand slowed](#).

Kerosene Jet Fuel

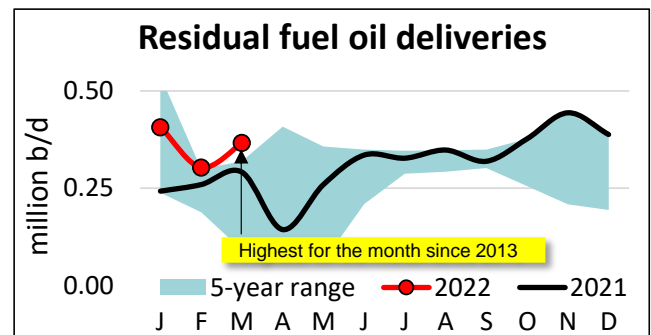
Jet fuel demand returned to over 1.5 mb/d



Kerosene-type jet fuel deliveries of 1.5 mb/d in March – their highest so far in 2022 – increased by 4.2% m/m from February and 29.6% y/y compared with March 2021. High-frequency data from [Flightradar24](#) and [TSA](#) showed that the numbers of flights and air passenger volumes also rose by 8% m/m and 18.5% m/m, respectively. The International Air Transport Association (IATA) indicated that air [passenger](#) and [cargo](#) volumes have picked up despite Russia’s war on Ukraine and “challenges in the trading environment.”

Residual Fuel Oil

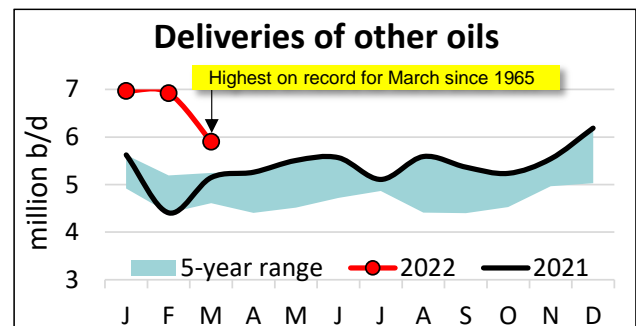
Highest March residual fuel oil demand since 2013



Deliveries of residual fuel oil, which is used as a marine bunker fuel and internationally in electric power production, space heating and industrial applications, were 0.4 mb/d in March, which reflected increases of 21.1% m/m and 26.1% y/y. The increases occurred despite reports of a [drop](#) in marine shipping activity but could have reflected shipping fuel substitution towards relatively less expensive residual fuel oil in lieu of distillates.

Other Oils – Naphtha, Gasoil, Propane & Propylene

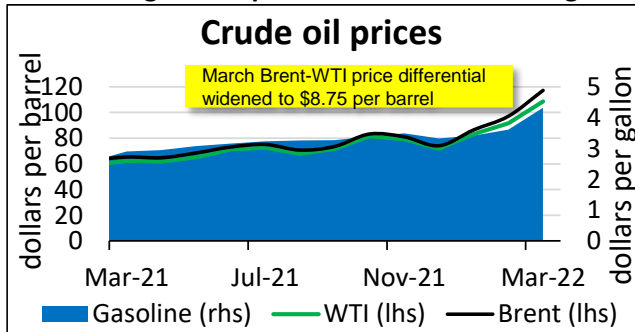
Other oils’ demand (5.9 mb/d) dropped from record levels



Deliveries of refinery and petrochemical liquid feedstocks – that is, naphtha, gasoil, and propane/propylene (“other oils”) – were 5.9 mb/d in March, down by 1.0 mb/d m/m from February, but up by 22.4% y/y compared with March 2021. The monthly drop likely reflected lower demand for medical plastics, films, and packaging as the global numbers of Omicron COVID cases decreased per [Johns Hopkins](#).

Prices

U.S. motor gasoline prices reached a record high



In March, West Texas Intermediate (WTI) crude oil prices increased by 18.4% m/m to \$108.50 per barrel. Brent crude oil spot prices averaged \$117.25 per barrel and implied a Brent-WTI crude oil price differential of \$8.75 per barrel, its largest since June 2019, as international prices spiked following Russia's war on Ukraine.

Crude oil remained the top input cost in making gasoline per [EIA](#). The U.S. average conventional gasoline price was \$4.32 per gallon in March, up by 19.7% m/m from February and \$1.42 per gallon in March 2021, according to [AAA](#). This was the highest nationwide average gasoline price on record since 1995 per the U.S. Energy Information Administration ([EIA](#)).

Macroeconomy

Leading indicators highlight industrial growth, but a continued drop in consumer sentiment

API's Distillate Economic Indicator™, which is based primarily on diesel/distillate supply, demand, and inventories, had a reading of +1.3 in March and a three-month average of +1.6, suggesting that U.S. industrial production and broader economic activity have continued to grow, but at a slower rate than the February reading of +2.3 showed.

The Institute for Supply Management's manufacturing Purchasing Managers Index (PMI) had a reading of 57.1 in March, a 1.5 percentage point decrease from February. Index values above 50.0 suggest an expansion in the overall economy, and the manufacturing PMI exceeded that threshold for a 22nd consecutive month. Within the index, there were monthly increases in the index's measures of manufacturers and customers'

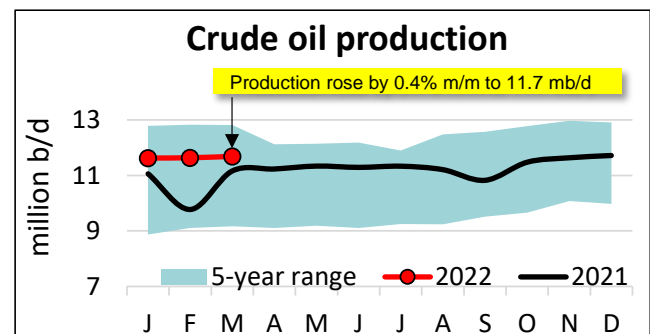
inventories, employment and prices. And there were monthly decreases in the index's measures of new orders, production, supplier deliveries, new export orders, imports, and the backlog of orders. fifteen of the 17 manufacturing industries surveyed reported growth in March with "no letup yet in supply chain challenges."

The [University of Michigan's consumer sentiment index](#) rebounded to a reading of 65.4 in early April from 59.4 in March. The survey noted that both values "remained below January's reading and lower than in any prior month in the past decade.... Nonetheless, the April survey offer[ed] only tentative evidence of small gains in sentiment, which [was] still too close to recession lows to be reassuring."

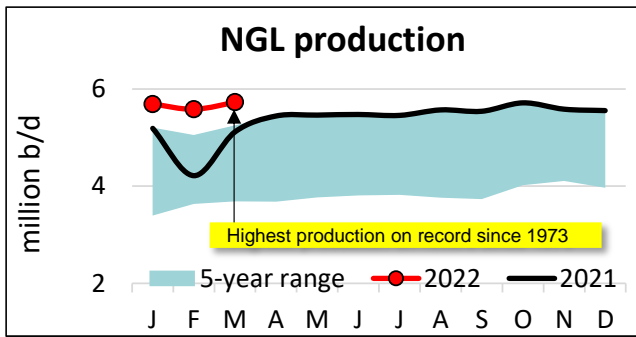
According to the [Bureau of Labor Statistics \(BLS\)](#), the unemployment rate fell by 0.2% to 3.6% in March. Non-farm payrolls increased by a preliminary estimate of 431,000 m/m, their smallest increase since September 2021.

Supply

U.S. crude oil production (11.7 mb/d) increased slightly; record high NGL production (5.7 mb/d)



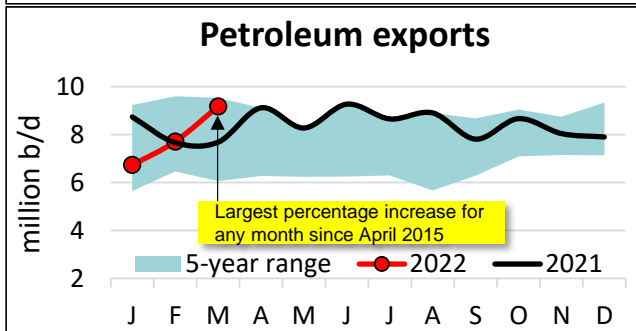
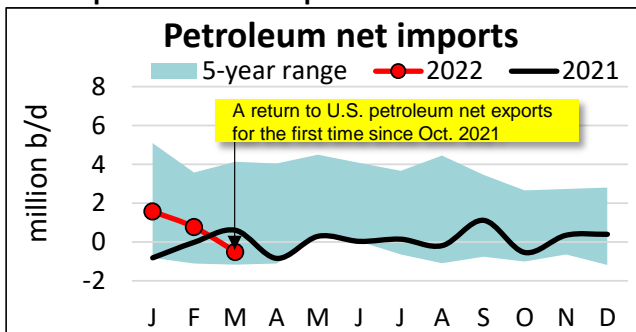
U.S. crude oil production of 11.7 mb/d in March increased by 0.4% m/m and 4.7% y/y. Despite the increase, however, crude oil production remained 33,000 barrels per day lower than it was in December 2021. [Baker Hughes](#) reported 533 active oil-directed rigs in March, a 2.2% m/m increase from February but 36.3% less than the 828 rigs that ran in March 2019, which as a benchmark preceded the strongest U.S. crude oil production later that year.



Natural gas-directed drilling rose by 10.7% m/m (13 rigs) to 136 rigs in March as natural gas spot prices at Henry Hub of \$4.90 per million Btu increased by 4.5% m/m from February. The extraction of natural gas liquids (NGLs) depends to the relative values of ethane, propane and butane, which historically have tended to correspond with those of crude oil. NGL production increased by 2.6% m/m to 5.7 mb/d, its highest level on record since 1973.

International trade

A surge in refined product exports drove a return to U.S. petroleum net exports

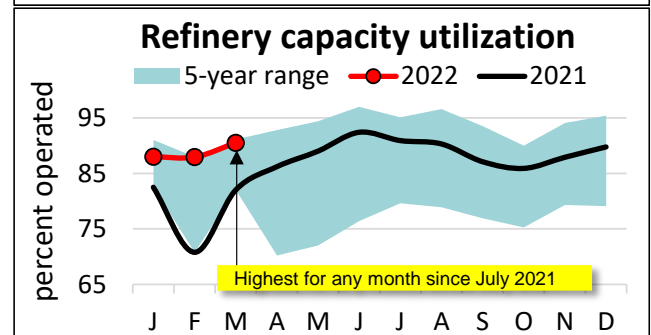
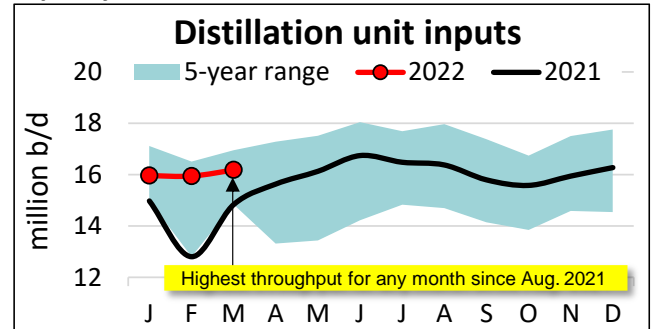


The U.S. petroleum returned to being a net exporter of total petroleum – crude oil and refined products – of 0.5 mb/d in March. The reversion to exports occurred despite U.S. petroleum imports that increased by 0.2 mb/d m/m. Rather, the driver was a 1.5 mb/d monthly increase in U.S. exports, including an increase of more than 1.0 mb/d of refined product exports helping to meet global

demand at an uncertain time when international petroleum prices rose by relatively more than U.S. ones.

Industry operations

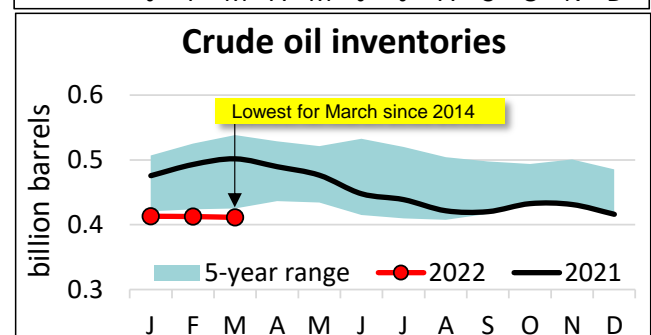
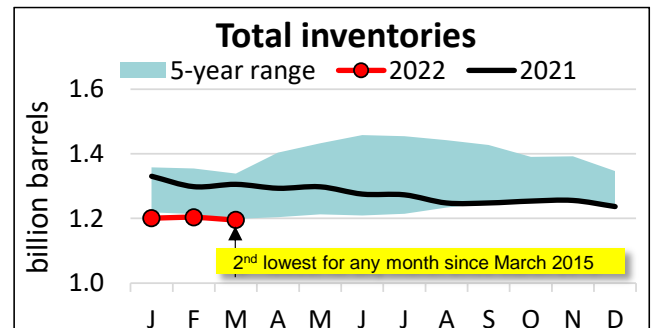
As U.S. refining activity accelerated in March, its capacity utilization rate exceeded 90%



In March, U.S. refinery throughput was 16.2 mb/d and implied a capacity utilization rate of 90.5%. This was highest throughput for any month since July 2021 – and the highest capacity utilization rate for the month of March since 2018.

Inventories

Crude oil inventories fell to the lowest for March 2014



Total petroleum inventories, including crude oil and refined products (but excluding the Strategic Petroleum Reserve), total inventories of 1.20 billion barrels increased by 0.2% m/m from February and 8.5% y/y compared with March 2021.

U.S. crude oil inventories fell by 0.3% m/m to 411.4 million barrels, their lowest for any month since Aug. 2018. Crude oil inventories have remained below their five-year range and at their lowest level for the month of March since 2014.

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

Disposition and Supply	March			Year-to-Date		
	2022 ²	2021	% Change	2022 ³	2021	% Change
Disposition:						
Total motor gasoline.....	8,734	8,577	1.8	8,473	8,004	5.9
Finished reformulated.....	2,860	2,598	10.1	2,705	2,433	11.2
Finished conventional.....	5,874	5,980	(1.8)	5,768	5,571	3.5
Kerosene-jet.....	1,504	1,158	29.9	1,457	1,128	29.2
Distillate fuel oil.....	3,959	4,033	(1.8)	4,120	3,972	3.7
≤ 500 ppm sulfur.....	3,917	4,023	(2.6)	4,076	3,950	3.2
≤ 15 ppm sulfur.....	3,913	3,932	(0.5)	4,070	3,897	4.5
> 500 ppm sulfur.....	42	10	320.0	44	22	100.0
Residual fuel oil.....	367	291	26.1	336	264	27.3
All other oils (including crude losses).....	5,904	4,825	22.4	6,162	4,926	25.1
Reclassified ⁴	(118)	320	na	(14)	153	na
Total domestic product supplied.....	20,350	19,204	6.0	20,534	18,447	11.3
Exports.....	9,169	7,679	19.4	8,574	8,035	6.7
Total disposition.....	29,519	26,883	9.8	29,108	26,482	9.9
Supply:						
Domestic liquids production						
Crude oil (including condensate).....	11,682	11,160	4.7	11,555	10,693	8.1
Natural gas liquids.....	5,730	5,116	12.0	5,641	4,860	20.0
Other supply ⁵	1,140	1,101	3.6	1,162	1,047	10.9
Total domestic supply.....	18,552	17,376	6.8	18,358	16,600	10.6
Imports:						
Crude oil (excluding SPR imports).....	6,310	5,787	9.0	6,303	5,724	10.1
From Canada.....	3,765	3,843	(2.0)	3,814	3,766	1.3
All other.....	2,545	1,944	30.9	2,490	1,958	27.2
Products.....	2,355	2,501	(5.8)	2,128	2,236	(4.8)
Total motor gasoline (incl. blend.comp)....	616	924	(33.3)	521	682	(23.6)
All other.....	1,739	1,577	10.3	1,607	1,554	3.4
Total imports.....	8,665	8,288	4.5	8,431	7,961	5.9
Total supply.....	27,217	25,664	6.1	26,789	24,561	9.1
Stock change, all oils.....	(2,302)	(1,218)	na	(2,319)	(1,921)	na
Refinery Operations:						
Input to crude distillation units.....	16,185	14,834	9.1	15,961	14,251	12.0
Gasoline production.....	9,393	9,283	1.2	9,111	8,744	4.2
Kerosene-jet production.....	1,431	1,101	30.0	1,486	1,097	35.5
Distillate fuel production.....	4,890	4,506	8.5	4,735	4,292	10.3
Residual fuel production.....	250	227	10.1	238	195	22.0
Operable capacity.....	17,891	18,090	(1.1)	17,972	18,108	(0.8)
Refinery utilization ⁶	90.5%	82.0%	na	88.8%	78.7%	na
Crude oil runs.....	15,654	14,383	8.8	15,464	13,807	12.0

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)

	March 2022	February 2022	March 2021	% Change From	
				Month Ago	Year Ago
Stocks (at month-end, in millions of barrels):					
Crude oil (excluding lease & SPR stocks).....	411.4	412.7	501.9	(0.3)	(18.0)
Unfinished oils.....	87.2	84.3	93.3	3.4	(6.6)
Total motor gasoline.....	238.6	245.7	237.6	(2.9)	0.4
Finished reformulated.....	0.0	0.0	0.0	(0.3)	(53.8)
Finished conventional.....	17.8	18.5	20.2	(3.8)	(12.0)
Blending components.....	220.8	227.2	217.4	(2.8)	1.6
Kerosene-jet.....	35.6	38.7	39.0	(8.0)	(8.6)
Distillate fuel oil.....	115.3	117.2	145.5	(1.6)	(20.7)
≤ 500 ppm sulfur.....	107.7	109.9	136.8	(2.0)	(21.3)
≤ 15 ppm sulfur.....	104.7	107.4	133.1	(2.5)	(21.4)
> 500 ppm sulfur.....	7.6	7.3	8.6	4.1	(11.9)
Residual fuel oil.....	26.8	26.6	30.9	0.8	(13.3)
All other oils.....	279.8	267.2	257.0	4.7	8.9
Total all oils.....	1,194.7	1,192.4	1,305.2	0.2	(8.5)