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May 2022

EXECUTIVE SUMMARY

- U.S. petroleum exports of crude and refined products rose to a record-high 9.6 mb/d amid Russia's war in Ukraine.
- U.S. crude oil production (11.9 mb/d) increased in May for a third consecutive month.
- U.S. commercial crude oil and total petroleum inventories (ex-SPR) were the lowest for May since 2014.
- With record-high nominal motor fuel prices, U.S. petroleum demand (19.9 million barrels per day, mb/d) fell by 1.0% year-on-year (y/y) versus May 2021.

The leading figure in May's primary data was a record-high international pull for U.S. petroleum exports, including crude oil and refined products, of 9.6 mb/d that coincided with the start of the summer driving season.

Meanwhile, U.S. petroleum demand increased seasonally by 3.2% m/m from April, but notably slid by 1.0% y/y compared with May 2021 as motor gasoline and diesel fuel prices struck record-high nominal levels, according to [EIA](#). One relative bright spot, however, was the highest air travel and thus jet fuel demand since February 2020.

U.S. crude oil production and refining activity both rose during the month, but commercial inventories of crude oil and refined products remained at their lowest for the month since 2014.

Leading economic indicators weakened. API's Distillate Economic Indicator™ suggested slowed growth of U.S. industrial production and broader economic activity (please see the following [chart](#) for details).

CONTENTS

(Click hyperlinks to advance to any section)

Demand

- **U.S. petroleum demand (19.9 mb/d) fell by 1.0% y/y versus May 2021.**
 - With record-high prices, motor gasoline demand fell year-on-year for a second straight month.
 - Distillate demand dropped for a 3rd straight month.
 - Highest jet fuel demand since February 2020.
 - Highest residual fuel oil demand for May since 2011.
 - Other oils' demand down by 9.0% y/y in May.

Prices & Macroeconomy

- **Gasoline prices rose with crude oil prices in May.**
- **Leading indicators showed weaker industrial growth and consumer sentiment.**

Supply

- **3rd straight increase in U.S. crude oil production.**

International trade

- **Highest U.S. petroleum on record since 1947.**

Industry operations

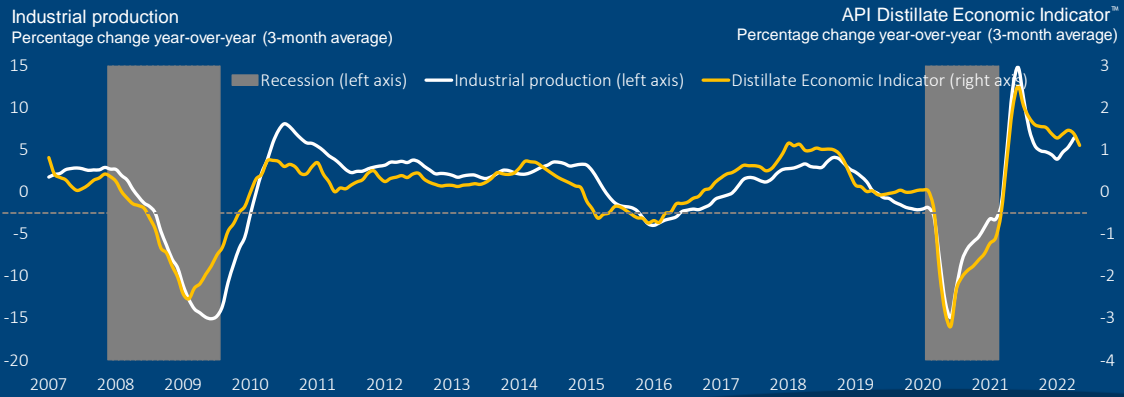
- **U.S. refining capacity utilization rate over 90% for a third straight month.**

Inventories

- **Lowest crude and total petroleum inventories for the month since 2014.**

API's Distillate Economic Indicator™ - May 2022

The Distillate Economic Indicator™ value of +1.0 for May 2022 and three-month average of +1.1 showed continued but slower growth of U.S. industrial production and broader economic activity



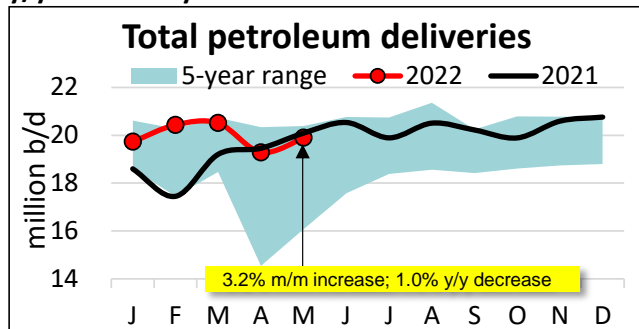
sources: API Monthly Statistical Report; EIA; CME Group; Moody's, Federal Reserve Board; API Team calculations



Details by section

Demand

U.S. petroleum demand (19.9 mb/d) fell by 1.0% y/y versus May 2021



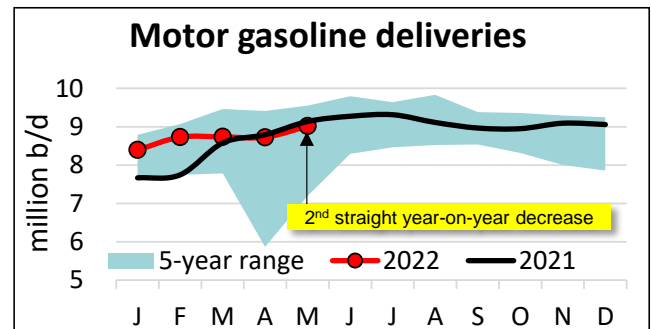
U.S. petroleum demand, as measured by total domestic petroleum deliveries, was 19.9 mb/d in May. This reflected an increase of 3.2% seasonally from April but a decrease of 1.0% y/y compared with May 2021. May 2022 marked a second consecutive month that showed a decrease below the same month in 2021, at the same time as U.S. nominal prices for motor gasoline and diesel fuel struck consecutive monthly record highs per [EIA](#).

Gasoline

With record-high prices, motor gasoline demand fell year-on-year for a second straight month

Consumer gasoline demand, measured by motor gasoline deliveries, was 9.0 mb/d in May. This

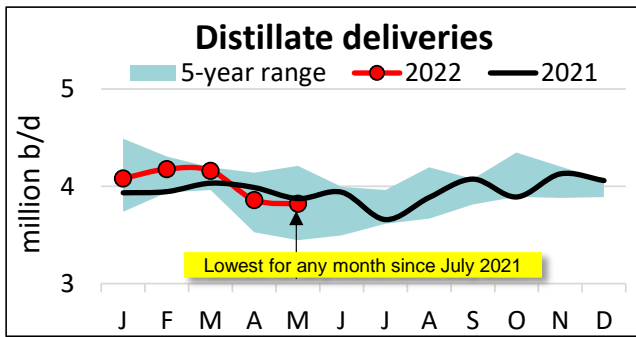
reflected a seasonal increase of 3.3% from April but was down by 1.3% y/y compared with May 2021. As with total petroleum demand, motor gasoline demand in May also marked a second straight month of year-on-year decreases that coincided with consecutive record-high monthly U.S. nominal gasoline prices.



Deliveries of reformulated-type gasoline (consumed primarily in urban areas) fell by 1.0% y/y to 2.8 mb/d, while those of conventional gasoline (consumed mainly in rural areas) decreased by 1.4% y/y to 6.2 mb/d.

Distillate Fuel Oil

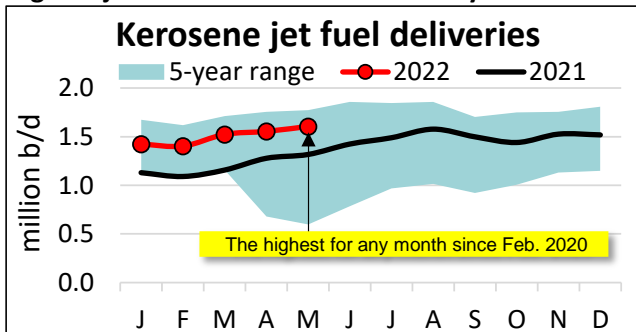
Distillate demand dropped for a 3rd straight month
Distillate deliveries of 3.8 mb/d decreased by 1.0% m/m from April and by 1.4% y/y compared with May 2021.



[DAT iQ industry trendlines](#) showed that spot trucks available in May fell by 2.3% m/m, while the number of available spot loads rose by 14% m/m, which was consistent with lower diesel fuel consumption but also suggested that freight cargoes needing movement [picked up](#) in May.

Kerosene Jet Fuel

Highest jet fuel demand since February 2020



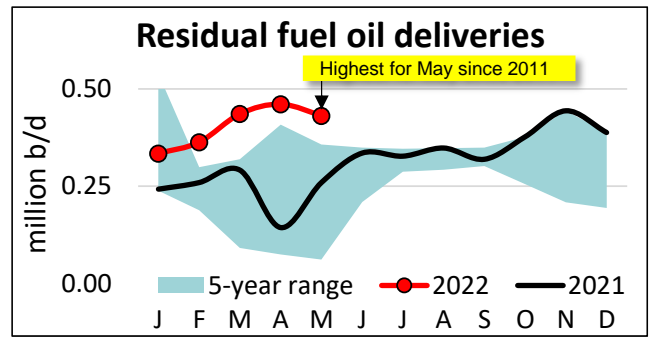
Kerosene-type jet fuel deliveries of 1.6 mb/d in May rose by 3.3% m/m from April and 21.8% y/y compared with May 2021 to their highest for any month since February 2020.

High-frequency data from [Flightradar24](#) and [TSA](#) showed that the total number of passenger and cargo flights increased by 6.1% m/m, while air passenger volumes rose by 2.5% m/m. The International Air Transport Association (IATA) also reported international air travel [rebounded](#) with a North American passenger load factor at 85.8%.

Residual Fuel Oil

Highest residual fuel oil demand for May since 2011

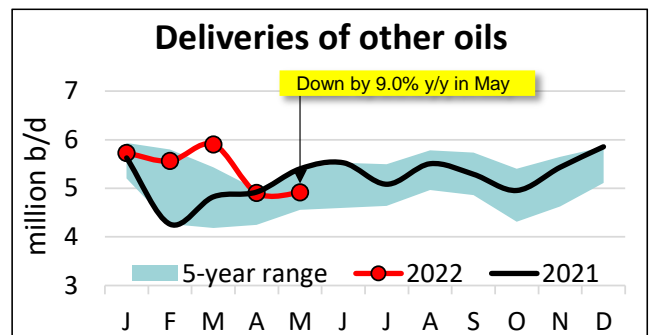
Deliveries of residual fuel oil, which is used as a marine bunker fuel and internationally in electric power production, space heating and industrial applications, were 0.4 mb/d in May, which reflected a decrease of 6.5% m/m from April but an increase of 66.4% y/y versus May 2021.



As fuel prices have risen, it appears likely that substitution of distillates for relatively less expensive residual fuel oil continued in May. Global marine shipping markets also remained tight in the wake of Russia’s war in Ukraine, with rates having doubled since the end of February per Bloomberg.

Other Oils – Naphtha, Gasoil, Propane & Propylene

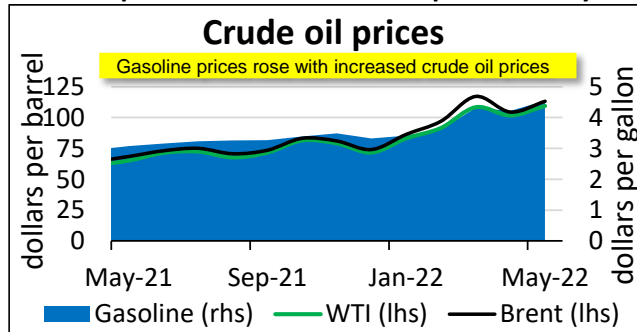
Other oils’ demand down by 9.0% y/y in May



Deliveries of refinery and petrochemical liquid feedstocks – that is, naphtha, gasoil, and propane/propylene (“other oils”) – were 4.9 mb/d in May, which was an increase of 0.2% m/m, but a decrease of 9.0% y/y compared with May 2021. The year-on-year drop likely reflected a combination of slower broad economic activity and, with continued emergence from the pandemic, less demand for medical plastics, films, and packaging.

Prices

Gasoline prices rose with crude oil prices in May



In May, West Texas Intermediate (WTI) crude oil prices decreased by 7.6% m/m to \$109.55 per barrel. Brent crude oil spot prices averaged \$113.34 per barrel and implied a Brent-WTI crude oil price differential of \$3.79 per barrel.

Crude oil remained the top input cost in making gasoline per [EIA](#). The U.S. average conventional gasoline price was \$4.55 per gallon in May, up by 7.9% m/m from April and 23.7% y/y compared with May 2021 to a record-high nominal level, per [EIA](#).

Macroeconomy

Leading indicators showed weaker industrial growth and consumer sentiment

API's Distillate Economic Indicator™, which is based primarily on diesel/distillate supply, demand, and inventories, had a reading of +1.0 in May and a three-month average of +1.1, suggesting that U.S. industrial production and broader economic activity have continued to grow, but at a slowed rate.

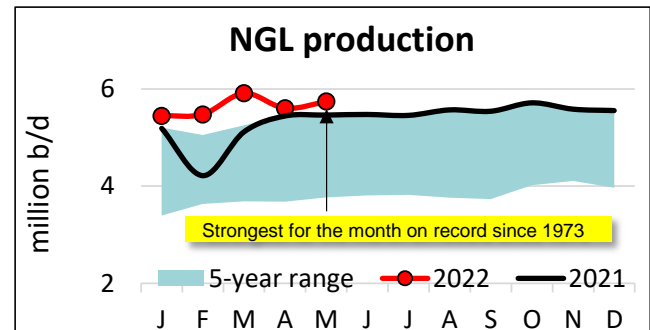
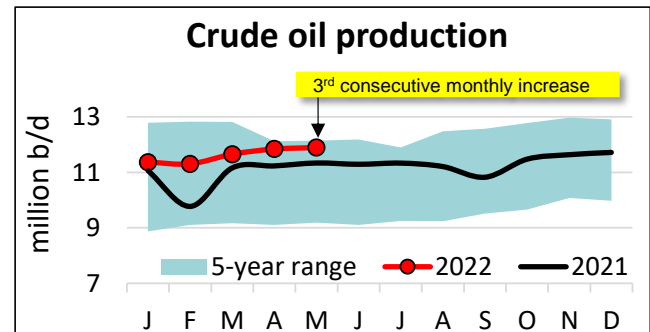
The Institute for Supply Management's manufacturing Purchasing Managers Index (PMI) had a reading of 56.1 in May, a 0.7 percentage point increase from April. Index values above 50.0 suggest an expansion in the overall economy, and the manufacturing PMI exceeded that threshold for a 24th consecutive month. Within the index, there were monthly increases in the index's measures of new orders, production, inventories, backlog of orders, and new export orders. And there were monthly decreases in the index's measures of employment, prices, imports, supplier deliveries, and customers' inventories. Fifteen manufacturing industries surveyed reported growth in May, with Furniture and Related Products the lone decrease.

The [University of Michigan's consumer sentiment index](#) fell to 50.1 in early May from readings of 58.4 in May and 65.2 in April. The preliminary June reading was reaching the index's lowest recorded value on record since 1952 and was comparable to the low point of the 1980 recession.

According to the [Bureau of Labor Statistics \(BLS\)](#), the unemployment rate held steady at 3.6% for a third straight month in May. Non-farm payrolls increased by a preliminary estimate of 390,000 m/m, nearly on par with payroll additions in March but still the lowest since April 2021.

Supply

3rd straight increase in U.S. crude oil production



U.S. crude oil production of 11.9 mb/d in May increased by 0.4% m/m from April and 4.9% y/y compared with May 2021. This remained 1.1 mb/d below the highest U.S. crude oil production, which occurred in November 2019.

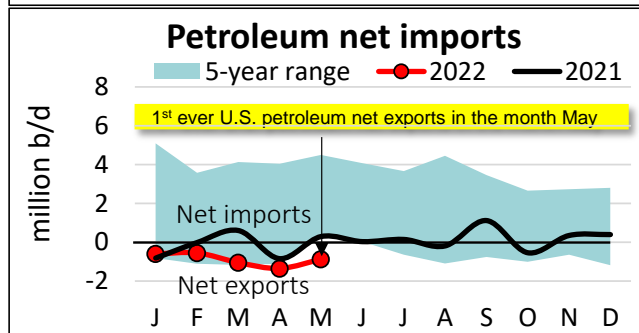
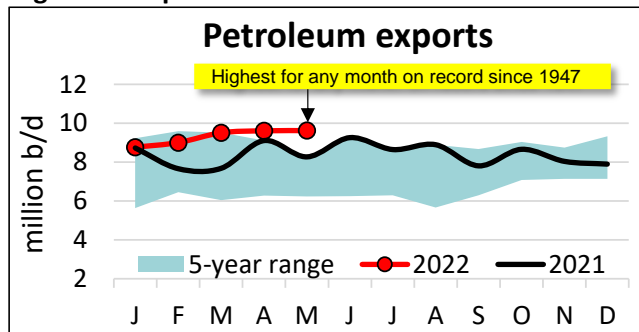
[Baker Hughes](#) reported 569 active oil-directed rigs in May, a 3.7% m/m (20 rigs) increase from April but 29.1% less than the 801 rigs that ran in May 2019, which as a benchmark preceded the strongest U.S. crude oil production later that year.

Natural gas-directed drilling rose by 4.5% m/m (6 rigs) to 149 rigs in May at the same time as natural gas futures prices at Henry Hub exceeded \$8.00 per

million Btu for every delivery month through January. 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 rose by 2.5 m/m to 5.7 mb/d, its highest level for the month of May on record since 1973.

International trade

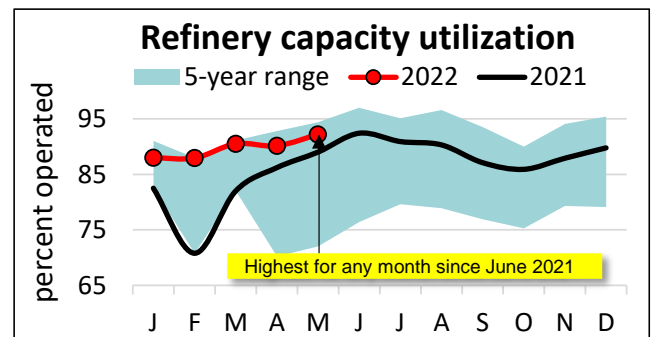
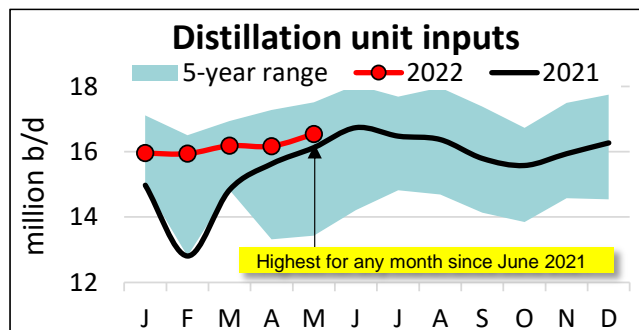
Highest U.S. petroleum on record since 1947



With Russia’s war in Ukraine, U.S. petroleum exports – crude oil and refined products – of 9.6 mb/d in May rose to their highest on record for any month since 1947. Consequently, the U.S. remained a petroleum net exporter of 0.9 mb/d in May. However, this reflected a decrease from record-high net exports of 1.4 mb/d in April, due mainly to increased U.S. crude oil imports.

Industry operations

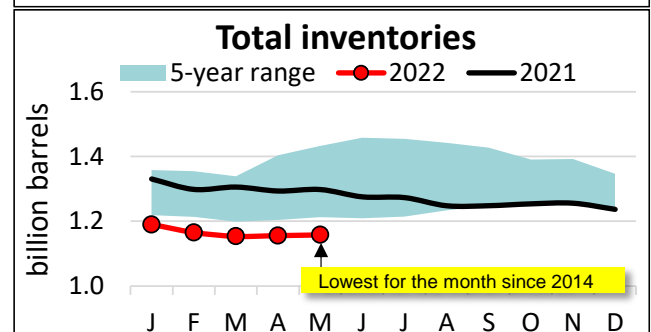
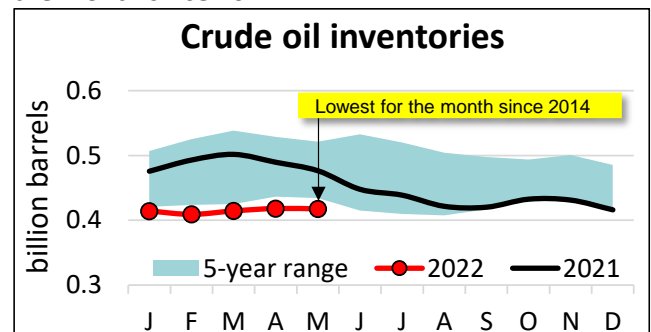
U.S. refining capacity utilization rate over 90% for a third straight month



In May, U.S. refinery throughput, measured by gross inputs into crude distillation units, was 16.5 mb/d and implied a capacity utilization rate of 92.2%. The throughput and capacity utilization rates rose by 2.3% m/m and 2.1% m/m, respectively, from April to their highest levels since June 2021. This also was the third straight month in which U.S. refining capacity utilization exceeded 90%.

Inventories

Lowest crude and total petroleum inventories for the month since 2014



U.S. crude oil inventories fell by 0.1% m/m from April and 12.4% y/y vs. May 2021 to 417.5 million barrels, their lowest for the month since 2014. With increased refinery production, total petroleum inventories, including crude oil and refined products (but excluding the Strategic Petroleum Reserve) of 1.16 billion barrels rose by 0.2% m/m from April but were down by 10.8% y/y compared with May 2021, also their lowest for the month since 2014.

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

Disposition and Supply	May			Year-to-Date		
	2022 ²	2021	% Change	2022 ³	2021	% Change
Disposition:						
Total motor gasoline.....	9,017	9,137	(1.3)	8,636	8,393	2.9
Finished reformulated.....	2,843	2,873	(1.0)	2,702	2,596	4.1
Finished conventional.....	6,174	6,264	(1.4)	5,934	5,797	2.4
Kerosene-jet.....	1,605	1,318	21.8	1,503	1,197	25.6
Distillate fuel oil.....	3,821	3,874	(1.4)	4,018	3,955	1.6
≤ 500 ppm sulfur.....	3,813	3,869	(1.4)	4,001	3,934	1.7
≤ 15 ppm sulfur.....	3,805	3,815	(0.3)	3,993	3,883	2.8
> 500 ppm sulfur.....	8	5	60.0	16	21	(23.8)
Residual fuel oil.....	431	259	66.4	405	239	69.5
All other oils (including crude losses)	4,916	5,401	(9.0)	5,273	5,023	5.0
Reclassified ⁴	108	105	na	133	179	na
Total domestic product supplied.....	19,898	20,094	(1.0)	19,967	18,986	5.2
Exports.....	9,624	8,270	16.4	9,308	8,297	12.2
Total disposition.....	29,522	28,364	4.1	29,275	27,283	7.3
Supply:						
Domestic liquids production						
Crude oil (including condensate).....	11,892	11,334	4.9	11,617	10,931	6.3
Natural gas liquids.....	5,742	5,461	5.1	5,638	5,099	20.0
Other supply ⁵	1,070	1,174	(8.9)	1,155	1,082	6.7
Total domestic supply.....	18,704	17,969	4.1	18,410	17,113	7.6
Imports:						
Crude oil (excluding SPR imports).....	6,416	5,828	10.1	6,275	5,764	8.9
From Canada.....	3,571	3,544	0.8	3,804	3,662	3.9
All other.....	2,845	2,284	24.6	2,471	2,102	17.6
Products.....	2,337	2,742	(14.8)	2,143	2,382	(10.0)
Total motor gasoline (incl. blend.comp).....	863	1,120	(22.9)	605	841	(28.1)
All other.....	1,474	1,622	(9.1)	1,538	1,542	(0.2)
Total imports.....	8,753	8,569	2.1	8,418	8,146	3.3
Total supply.....	27,457	26,538	3.5	26,828	25,259	6.2
Stock change, all oils.....	(2,065)	(1,826)	na	(2,447)	(2,024)	na
Refinery Operations:						
Input to crude distillation units.....	16,542	16,130	2.6	16,185	14,911	8.5
Gasoline production.....	9,760	9,867	(1.1)	9,377	9,152	2.5
Kerosene-jet production.....	1,721	1,308	31.6	1,561	1,173	33.0
Distillate fuel production.....	4,962	4,746	4.6	4,819	4,448	8.3
Residual fuel production.....	242	206	17.5	243	194	25.2
Operable capacity.....	17,941	18,128	(1.0)	17,942	18,116	(1.0)
Refinery utilization ⁶	92.2%	89.0%	na	90.2%	82.3%	na
Crude oil runs.....	16,024	15,595	2.8	15,667	14,443	8.5

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)

	May 2022	April 2022	May 2021	% Change From	
				Month Ago	Year Ago
Stocks (at month-end, in millions of barrels):					
Crude oil (excluding lease & SPR stocks).....	417.5	418.0	476.6	(0.1)	(12.4)
Unfinished oils.....	87.3	88.5	90.8	(1.4)	(3.8)
Total motor gasoline.....	220.6	228.2	239.9	(3.3)	(8.0)
Finished reformulated.....	0.0	0.0	0.0	0.6	85.0
Finished conventional.....	18.4	17.9	20.3	2.8	(9.5)
Blending components.....	202.2	210.3	219.5	(3.9)	(7.9)
Kerosene-jet.....	40.2	36.5	43.4	10.1	(7.3)
Distillate fuel oil.....	109.2	104.9	140.0	4.1	(22.0)
≤ 500 ppm sulfur.....	100.8	97.4	130.1	3.5	(22.5)
≤ 15 ppm sulfur.....	94.3	94.3	126.9	0.0	(25.7)
> 500 ppm sulfur.....	8.4	7.5	9.9	12.0	(14.7)
Residual fuel oil.....	27.8	27.8	31.7	0.0	(12.3)
All other oils.....	255.2	251.9 R	275.4	1.3	(7.3)
Total all oils.....	1,157.8	1,155.8 R	1,297.6	0.2	(10.8)