**<u>PETROLEUM: ROLLING AND TUMBLING</u>**
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"Well, I rolled and I tumbled, cried the whole night long
Well, I woke up this mornin', didn't know right from wrong". Muddy Waters, "Rollin' and Tumblin'"

## OVERVIEW AND CONCLUSION

Of course the petroleum universe "as a whole" has, as do its various individual crude oil streams and assorted refined products, "its own" past, present, and potential future supply/demand/inventory situation. However, the petroleum circus, including so-called specific oil-related variables affecting it, is not a domain entirely separate from other economic and political phenomena. For example, marketplace history reveals that price levels and trends for the petroleum complex intertwine in diverse ways with benchmark global stock, interest rate, and currency arenas, and with other commodity fields such as base and precious metals. These relationships, including convergence/divergence (and lead/lag) ones between the oil marketplace in general and these other financial playgrounds, can and do change, sometimes significantly.

Marketplace history need not repeat itself, either entirely or even partly. Visionaries differ in their perspectives on and conclusions regarding petroleum and other marketplaces, frequently substantially.

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OPEC is an important actor within the oil theater, as are its current producer allies such as Russia. The United States, given its ravenous demand for petroleum plus its booming crude oil output in recent years, also is an important petroleum player. But these entertainers are not independent of other stages and performers.

In the timing and direction of its major price moves, the global petroleum complex does not necessarily or always travel alongside the S+P 500 and other benchmark stock indices. A survey of the critical price turning points since early 2016 for the oil and equity realms nevertheless displays the close connection between petroleum and stock trends.

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For related marketplace analysis, see essays such as: "Wall Street Talking, Yield Hunting, and Running for Cover" (5/14/19); "Economic Growth Fears: Stock and Interest Rate Adventures" (4/2/19); "American Economic Growth: Cycles, Yield Spreads, and Stocks" (3/4/19); "Facing a Wall: Emerging US Dollar Weakness" (1/15/19); "American Housing: a Marketplace Weathervane" (12/4/18); "Twists, Turns, and Turmoil: US and Other Government Note Trends" (11/12/18); "Japan: Financial Archery, Shooting Arrows" (10/5/18); "Stock Marketplace Maneuvers: Convergence and Divergence" (9/4/18); "China at a Crossroads: Economic and Political Danger Signs" (8/5/18); "Shakin' All Over: Marketplace Convergence and Divergence" (6/18/18); "History on Stage: Marketplace Scenes" (8/9/17).

## THE FINANCIAL WORLD TURNS: PETROLEUM AND STOCK MARKETPLACES

The following table includes the S+P 500 and two petroleum price benchmarks, NYMEX crude oil and ICE Brent/North Sea crude oil (both nearest futures continuation). These two oil markers act as a proxy for petroleum prices "in general". As a guide to emerging marketplace stocks in general, let's enlist the MSCI Emerging Stock Markets Index (from Morgan Stanley; "MXEF"). MXEF price trends in recent years often but not always have moved similarly to stock marketplace patterns of the United States and other noteworthy advanced countries.

The survey also contains URTH, the iShares (BlackRock) MSCI World Stock ETF covering "a broad range of developed market companies around the world". As of 3/31/19 (iShares website), the United States comprised 62.1 percent of the index, with Japan holding an 8.1pc share and the United Kingdom 5.8 pc. For detailed discussion of the roles of United States government interest rate trends (and relationships) and the broad real trade-weighted US dollar ("TWD"; Federal Reserve Board, H.10; monthly average, March 1973=100), review "Wall Street Talking, Yield Hunting, and Running for Cover" (5/14/19) and earlier essays.

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Alongside the petroleum complex, various interrelated stock marketplaces reached important turning points in first quarter 2016.

**First Quarter 2016 Major Low: Turning Points**

| NYMEX Crude Oil | ICE Brent/NSea Crude Oil | S+P 500 | Emerging Market Stocks (MXEF) |
|---|---|---|---|
| \$26.19 (1/20/16) | \$27.10 (1/20/16) | 1812 (1/20/16) | 687 (1/21/16) |
| \$26.05 (2/11/16) | | 1810 (2/11/16) | 708 (2/12/16) |

The URTH's related bottom was at 60.81 (1/20/16)/60.52 (2/11/16).

**Calendar 2017: Interim High**

| NYMEX Crude Oil | ICE Brent/NSea Crude Oil | S+P 500 | Emerging Market Stocks (MXEF) |
|---|---|---|---|
| \$55.24 (1/3/17) | \$58.37 (1/3/17) | 2401 (3/1/17) | 980 (3/21/17) |
| \$54.94 (2/23/17) | | | |

The March 2017 stock marketplace elevations are minor tops, and arguably not closely tied to the preceding ones in crude oil. Why? Beginning in early first quarter 2017, petroleum complex prices diverged from those in the S+P 500 and MXEF for several months. As oil prices rolled downhill to their mid-June 2017 depths, the S+P 500 kept rising, twisting up to 2454 on 6/19/17.

**June 2017 Petroleum Complex Low**

| | | | |
|---|---|---|---|
| \$42.05 (6/21/17) | \$44.35 (6/21/17) | Not Applicable (stock divergence from petroleum) | NA |

Importantly, after late June 2017, stock marketplace prices and the petroleum complex generally ascended together (converged) up to their January 2018 pinnacles.

**<u>January 2018 High</u>**

| NYMEX Crude **Oil** | ICE Brent/NSea **Crude Oil** | **S+P 500** | Emerging Market Stocks **(MXEF)** |
|---|---|---|---|
| $66.66 (1/25/18) | $71.28 (1/25/18) | 2873 (1/26/18) | 1279 (1/29/18) |

**<u>February 2018 Low</u>**

| | | | |
|---|---|---|---|
| $58.07 (2/9/18) | $61.76 (2/13/18) | 2533 (2/9/18) | 1136 (2/9/18) |

The URTH's related top was 1/26/18's 94.23, and it established a key trough with 2/9/18's 83.58.

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"My heart's beatin' rhythm
And my soul keeps on singin' the blues". Chuck Berry, "Roll Over Beethoven"

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The petroleum marketplace and the S+P 500 generally continued to travel in roughly similar fashion after their February 2018 valleys. Note the similar timing of their autumn 2018 pinnacles.

However, starting around the end of first quarter 2018, price patterns for the S+P 500 and emerging markets stocks diverged to some extent. The S+P 500 stayed relatively strong, reaching new highs in September/October 2018. In contrast, the MXEF stumbled and fell. However, even as the MXEF staggered lower, the timing and direction of several of its interim trend changes paralleled those of the S+P 500.

**<u>Autumn 2018 High</u>**

| NYMEX Crude **Oil** | ICE Brent/NSea **Crude Oil** | **S+P 500** | Emerging Markets Stocks **MXEF** |
|---|---|---|---|
| $76.90 (10/3/18) | $86.74 (10/3/18) | 2941 (9/21/18) 2940 (10/3/18) | Within its bear drop the MXEF had a minor rally from 9/12/18's 999 to 9/28/18's 1053. Compare timing that Sept high with those in S+P 500/URTH. |

The URTH's crest was 9/26/18's 92.84.

Note that the US Treasury 10 year note yield peaked around 3.25 percent (3.25pc on 10/5/19, 3.26pc on 10/9/19), alongside the tops in the S+P 500 (and the MXEF) and crude oil.

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In “Shake”, Otis Redding sings: “When the time’s going bad, now (shake)
Shake with the feeling (shake)”.

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**<u>Low Since Autumn 2018</u>**

| NYMEX Crude Oil | ICE Brent/NSea Crude Oil | S+P 500 | Emerging Markets Stocks MXEF |
|---|---|---|---|
| $42.36 (12/24/18) | $49.93 (12/26/18) | 2347 (12/26/18) | 930 (10/30/18)<br>945 (12/26/18); 946 (1/4/19) |

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Stock marketplace “investors” (and other owners) and holders of petroleum instrument “assets” (including futures and options) ran for their lives in these bearish moves: until around when the Fed devotedly preached its patience gospel! The trusty European Central Bank likewise trumpeted easy money policies anew. Note the very similar timing for the price bottoms in petroleum and the stock benchmarks.

The URTH attained its low on 12/26/18 at 74.72. Severely wounded in its tumultuous trade war conflict with the United States, China’s Shanghai Composite Index established a trough on 1/4/19 at 2441.

The UST 10 year note’s initial yield low on 1/4/19 at 2.54pc occurred alongside those in stocks.

“Wall Street Talking, Yield Hunting, and Running for Cover” stressed that “the frantic price rally in several key marketplace benchmarks commencing around end year 2018 also probably reflected an ardent quest for “yield” (“return”) by “investors” and other asset purchasers. In addition to buying the S+P 500, yield hunters searched for sufficient return in territories such as other advanced nation stocks, emerging marketplace stocks, lower-grade United States corporate debt, emerging marketplace sovereign debt securities denominated in US dollars, and the petroleum complex.”

**<u>High Since End 2018/Early 2019</u>**

| NYMEX Crude Oil | ICE Brent/NSea Crude Oil | S+P 500 | Emerging Markets Stocks MXEF |
|---|---|---|---|
| $66.60 (4/23/19) | $75.60 (4/25/19) | 2954 (5/1/19) | 1099 (4/17/19);<br>1085 (5/3/19) |

The S+P 500 pirouetted above its initial high on 1/26/18 at 2873 with its autumn 2018 and spring 2019 highs. Yet the S+P 500’s May Day 2019 pinnacle at 2954 surpassed its 1/26/18 crest at 2873 by a meager 2.8 percent (S+P 500’s autumn 2018 height edged only 2.4 percent above that 1Q18 elevation.

The URTH’s high occurred in conjunction with that in the S+P 500, on 5/1/19 at 92.25.

What about very recent lows in stocks and oil? See the S+P 500's 2729 on 6/3/19 (close to 3/8/19's 2722). The URTH low occurred on 6/3/19, at 86.31. NYMEX crude oil achieved a related trough at on 6/5/19 at $50.60; Brent/North Sea's bottom was $59.45 on 6/5/19. How about on the refined products side? NYMEX RBOB/Gasoline's (nearest futures continuation) low was 6/5/19's 1.663, with that in NYMEX heating oil/diesel's 1.740 likewise that day.

The UST 10 year yield built a temporary yield floor with 3/28/19's 2.34 percent. But its yield tripped down beneath this, probably in a "flight to quality" (race to a safe haven), touching 2.05 percent on 6/7/19. This US interest rate yield fall (as well as equity price declines, which were accompanied by mournful yells and fervent pleas by stock owners) sparked renewed acrobatic rhetoric from the Federal Reserve Board and the European Central Bank (underscore the negative rates for the German 10 year government note). These financial guardians hinted at easier money (potential for lower policy rates, etc.) to achieve their adored inflation targets and sufficient economic growth.

## OIL: SUPPLY, DEMAND, AND INVENTORIES

The band "Oingo Boingo" trumpets in "Capitalism": "There's nothing wrong with making some profit".

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The continued determination of leading OPEC members (such as Saudi Arabia) and some key non-OPEC oil producing nations to subdue their crude oil output has tended to underpin petroleum prices to some extent over the past few years. Compliance with crude oil output schemes generally has been satisfactory. The Saudis and their allies will not readily sacrifice their long-sought production restraint agreement achieved in late 2016 with several important non-OPEC exporters. Given its hunger for revenues, global political ambitions, and signs of domestic unrest, does Russia want petroleum prices to plummet sharply?

Worries regarding supply availability help to bolster oil prices. Some troubles (as usual) relate to the Middle East. American sanctions against Iran (the corresponding US threats against other nations in this context) have slashed Iranian output. Ongoing Venezuelan turmoil has cut that nation's output sharply. Libyan and Nigerian production might be endangered further.

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What is deemed an average, normal, typical, reasonable, or appropriate oil inventory total varies according to personal opinion, and to the inventory practice and preferences embraced by the industry in general. A "just-in-time" inventory orientation tends to keep as little inventory around as possible relative to actual and anticipated supply and consumption patterns. A "just-in-case" inventory holding bias (picture fears of shortages from potential or actual supply interruptions due to war, political unrest, or embargo) favors maintaining "extra" petroleum supplies around.

The International Energy Agency's "Oil Market Report" (5/15/19; next issue 6/14/19) said that at the end of first quarter 2019, OECD industry inventories, at 59.8 days of forward demand, rested at the "lowest level since July 2018". Relative to the end of first quarter 2016 (recall the petroleum complex price bottom in 1Q16), when OECD inventories of 66 days of coverage towered over average levels, the OPEC production discipline arrangements have achieved substantial progress.

Nevertheless, current oil inventory levels are several days above the long term average. Use end year inventory statistics as a guideline for quarterly inventories in general. From 1996-2014, end year OECD oil industry inventory (relative to forward quarter average daily petroleum product demand) averaged about 54.2 days of consumption (see the International Energy Agency's "Annual Statistical Supplement" and its monthly "Oil Market Report"). End year 2015 OECD inventory was 64 days, as was end year 2016's. End 4Q17 stood at 60 days, and so did end 4Q18.

Thus over the time span of end years 1996-2018, the average OECD industry inventory was about 55.6 days of consumption. End 1Q19 OECD's 59.8 days coverage is 4.2 days above average (59.8 less 55.6 days). Even if the desired inventory level holding has shifted upward relative to the 55.6 days long run average (perhaps partly due to a just-in-case inventory approach), stockpiles at end 1Q19 probably are around (rather than below) such a "new normal" level.

The IEA estimates OPEC crude oil output at about 30.2 million barrels per day in both March and April 2019. OPEC believes its crude production is about 30.0mmbd in each of these months ("Monthly Oil Report"; see Tables 5.9 and 11.1; 5/14/19, next release 6/13/19). Suppose 2019 global oil demand is about 100 million barrels per day, and that the full year calendar 2019 call on OPEC crude oil is about 30.6mmbd (about the IEA and OPEC estimates; see IEA Table 1). Assume average OPEC crude oil production for April 2019 through the end of this year is 30.0mmbd.

Then there will be a global stock draw of about 165 million barrels from end March 2019 through end December (275 days times .6mmbd is 165mm barrels). This represents about 1.6 days of coverage relative to full year 2019 consumption of approximately 100 million barrels per day. Suppose 1.6 days of stock reduction occurs in both OECD commercial inventories and elsewhere (non-OECD stockpiles) for the balance of calendar 2019. Therefore, end year 2019 OECD industry inventories will be about 58.2 days (59.8 less 1.6 days) of actual calendar 2019 demand (this calculation will be close to related days coverage estimates employing first quarter 2020 consumption; 1Q19 demand was about 99.1mmbd).

This hypothetical end year 2019 days coverage for OECD industry vaults over 1996-2018's average by about 2.6 days (58.2 minus 55.6 days). Thus OECD supplies at end calendar 2019 probably will be adequate.

Suppose global petroleum consumption grows 1.3 percent in calendar 2020 (based on IEA figures, the year-on-year change for calendar 2019 relative to 2018). If OPEC production remains around 30.0mm, inventories will tighten further. However, to what extent will slower than anticipated (desired) worldwide economic growth reduce demand for the oil of OPEC (and its allies). Would some producing nations sell more crude oil, at least for a while, to maintain revenues (or keep their market share)? Or, at what point might Saudi Arabia and its collaborators cut production dramatically to defend prices?

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Oil producers of course would like to earn massive revenues. But desired oil price targets, whether for OPEC, other sovereigns, or corporations are not uniform. Perspectives as to what is a "reasonable" ("rational") "average", "normal", "low", or "high" price are entirely subjective.

According to the International Monetary Fund, Saudi Arabia's fiscal breakeven oil price (the price at which the fiscal balance is zero for 2019 is $85.40 per barrel. The Saudi external breakeven petroleum price for 2019 is $55.70 per barrel. See "Regional Economic Outlook Update: Middle East and Central Asia"; April 2019, Table 6). However, in actual marketplace practice, Saudi Arabia may view price levels different from these as low (or too low), acceptable or appropriate (satisfactory; reasonable, rational; fair value), high (or too high), or irrational.

As a very conjectural guideline, Saudi Arabia as ringmaster, the rest of OPEC, and OPEC's friends (such as Russia) probably at present view $40.00 to $50.00 per barrel for Brent/North Sea crude oil as too depressed, $50.00 to $60.00 as low, $60.00 to $75.00 as reasonable, $75.00 to $85.00 as high (with the upper end of that range as too high if the global economy is slowing down significantly or feeble), and over $85.00 (at least nowadays) as too lofty (though they might happily allow some "overshooting" on the upside). However, with America's 2020 national election looming, the Trump Administration probably will complain (and perhaps threaten a Strategic Petroleum Reserve sale) if crude oil prices near or exceed $75.00 to $80.00 per barrel (US voters do not enjoy high gasoline or diesel fuel prices).

The Saudis and their teammates probably will do cartwheels to defend the Brent/North Sea crude oil price around $40.00 to $45.00 (or if they fear a fall to that range). Compare central bankers such as the European Central Bank and the Federal Reserve Board, who broadcast vociferously their willingness to "do whatever it takes" to achieve their policy goals (legislative mandates).

OPEC meets June 25-26, 2019.

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America's remarkable oil production revolution (the thrilling shale oil story) has boosted the nation's output and placed pressure on OPEC and other oil producers. Scan the trend for United States Lower 48 States crude oil production (excluding the Gulf of Mexico).

According to the US Energy Information Administration's "Short-Term Energy Outlook" (Table 4a; 5/7/19 report, next release 6/11/19), Lower 48 States crude oil production peaked at about 7.7 million barrels per day in March 2015. It tumbled violently, falling to 6.5mmbd in December 2016. Look how it soared thereafter. December 2017 crude output was about 8.0mmbd, leaping to about 9.6mmbd in December 2018. It was 9.7mmbd in April 2019. The EIA predicts December 2019 production will reach 10.5mmbd.

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History shows that sometimes significant highs, lows, and patterns in net noncommercial petroleum positions are in rough harmony with important oil price trends. Glance at the sharp jump in the net noncommercial long position within the petroleum complex (CFTC's Commitments of Traders; benchmark NYMEX crude oil/diesel/RBOB plus ICE Brent/North Sea crude oil; futures and options combined) from around the time of the petroleum complex's late December 2018 low up to its May 2019 high.

On 1/8/19, the net noncommercial long position ("NCL") for the oil complex reached a low of about 386,000 contracts (5.7 percent of total open interest), close in time to Brent/North Sea's 12/26/18 low at $49.93. The 1/8/19 net NCL trough represented a sharp fall from net NCL crowns of about 1.37 million contracts on 1/23/18 (18.1 percent of total open interest; peak pc of OI was 2/6/18's 18.6pc) and 4/24/18 (over seventeen pc of OI). That early January 2019 level also eroded significantly from 9/25/18's later net NCL drop-off point (near early October 2018 oil price peaks) of 1.08mm contracts (15.5pc of total open interest).

The recent plateau in the net NCL position, 4/23/19's 854,000 contracts (12.2 pc total open interest; 4/30/19's net NCL was 12.4pc of OI), occurred alongside Brent/North Sea crude oil's $75.60 price high on 4/25/19. This substantial petroleum net noncommercial buying from around early January 2019 to 4/23/19 (regardless of whether marketplace experts brand it as "speculation", "investment", or "trading") probably reflected an enthusiastic quest for yield (return), to some extent encouraged by bullish tales about the fundamental petroleum supply/demand picture (such as OPEC output policy and discipline; fears regarding declining crude oil output from places such as Iran and Venezuela).

As prices for various oil instrument assets got kicked lower, the net noncommercial long total retreated. As of 6/4/19, the petroleum complex net NCL was 613m contracts (9.3pc of OI). Brent's low since 4/25/19's $75.60 apex occurred 6/5/19 at $59.45.

To some investors (alternative investors; speculators), commodities are an "asset class". They allegedly can offer satisfactory potential for a good (decent, reasonable) return ("yield") or be an appropriate "diversification" for their financial portfolio. Petroleum's being viewed, labeled, and honored as an "asset" (or alternative asset) reflects its "financialization", the linking of perspectives on and trends for the oil marketplace with those in stock, interest rate, and currency districts. The substantial volume of noncommercial visitors within petroleum arenas and their importance to petroleum price movements evidence that oil is "not only/merely a commodity". Trends in net noncommercial long petroleum positions, when interpreted alongside the intertwining of trends in oil and stock (and other) marketplaces, underlines the significance of oil as a financial asset.

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Renewed price declines for the petroleum complex relative to its April 2019 summit probably would warn of (or confirm) price deterioration in emerging marketplace stocks as well as advanced nation ones. However, very significant timing turns in the petroleum complex do not always occur at the same time as those in major global stock marketplaces. Recall 2007-08. Is the more explosive rally (thus far) since early June 2019 in the S+P 500 relative to fluctuations in the petroleum complex reflecting a developing divergence between America's stock playground and petroleum patch prices?

## MARKETPLACE CONVERGENCE IN THE PETROLEUM PATCH

"And I never lost one minute of sleepin'
Worryin' 'bout the way things might have been
Big wheel keep on turnin'
Proud Mary keep on burnin'
"Rollin', rollin', rollin' on the river". Creedence Clearwater Revival, "Proud Mary"

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The petroleum complex's crude oil and refined product members of course do not march together in exactly the same fashion. Their major (and minor) trends can vary, both as to when they start and end, as well as the distance (percentage moves) they travel. Nevertheless, recall the preceding overview for the timing of critical trend changes in NYMEX and Brent/North Sea crude oil (nearest futures continuation). The following table shows the close similarity of major and important intermediate trends for many critical refined product signposts; these resemble those in the two crude oil benchmarks. This thereby underlines the often-close association (connection) in recent years between trends for the petroleum complex "as a whole" and the S+P 500 and other global stock benchmarks.

"USGC" refers to the US Gulf Coast region. NYMEX RBOB/Gasoline and Heating Oil/Diesel are for NY Harbor delivery (nearest futures continuation).

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| | USGC Regular Gasoline | NYMEX RBOB/ Gasoline | USGC Diesel | NYMEX HO/Diesel | USGC 3.0pc Residual Fuel Oil |
|---|---|---|---|---|---|
| 1Q16 Major Low | .821 (2/9/16) | .898 (2/9/16) | .798 (1/20/16) | .849 (1/21/16) | $15.13 (1/20/16) |
| End 2016/ Early 2017 High | 1.715 (1/3/17) | 1.710 (1/3/17) | 1.726 (12/30/16) | 1.764 (1/3/17) | $48.88 (1/5/17) |

[Although NYMEX RBOB's nearest futures top on 4/12/17 at 1.771 modestly exceeded (by about 3.6 percent) its January 2017 elevation, the marketplace thereafter slipped down to its June 2017 trough.]

| | | | | | |
|---|---|---|---|---|---|
| June 2017 Low | 1.359 (6/15/17) | 1.396 (6/21/17) | 1.328 (6/21/17) | 1.354 (6/21/17) | $39.63 (6/21/17) |

[Following its 8/28/17 close at 1.696, USGC regular gasoline skyrocketed to a high of 2.047 on 8/31/17, but then quickly crashed to 1.566 on 10/2/17.]

| | | | | | |
|---|---|---|---|---|---|
| January 2018 High | 1.953 (1/26/18) | 1.953 (1/30/18) | 2.082 (1/26/18) | 2.143 (1/26/18) | $57.88 (1/26/18) |

[USGC gasoline's 1/26/18 high price was the same as RBOB's on 1/30/18.]

| | | | | | |
|---|---|---|---|---|---|
| February 2018 Low | 1.656 (2/13/18) | 1.652 (2/13/18) | 1.777 (2/14/18) | 1.808 (2/14/18) | $51.63 (2/9/18) |

[USGC gasoline's final low for this period was 3/8/18's 1.655.]

| | | | | | |
|---|---|---|---|---|---|
| Autumn 2018 Major High | 2.197 (10/3/18) | 2.150 (10/3/18) | 2.395 (10/3/18) | 2.450 (10/3/18) | $73.63 (10/9/18) |

[USGC gasoline attained its initial top on 5/22/18 at 2.184, alongside the major high in NYMEX RBOB/gasoline. NYMEX RBOB's major high was 5/22/18's 2.286, with 10/3/18's 2.150 height the final high and drop-off point. Both products nosedived after October 2018 alongside their petroleum complex comrades.]

| | | | | | |
|---|---|---|---|---|---|
| Low Since Autumn 2018 | 1.186 (12/24/18) | 1.245 (12/26/18) | 1.542 (12/24/18) | 1.642 (1/2/19) | $45.13 (12/24/18) |
| High Since End 2018/ Early 2019 | 2.062 (4/10/19) | 2.156 (4/25/19) | 2.086 (5/16/19) | 2.138 (5/16/19) | $68.88 (4/25/19) |

[On 4/22/19, USGC gasoline made a minor top at 2.060 bordering its 4/10/19 one. Also relevant on the timing front, USGC diesel's initial high was 4/22/19's 2.071.]

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