

MICK Oil & Gas Report – E&P Holds Serve Despite Some Headwinds

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As the world's subeconomies and commercial markets escaped from the clutches of COVID from 2021-2023, world oil supply and demand reached equilibrium, which enabled crude prices last year to land at a level in which earnings can be achieved for projects inside and outside of the retail investment channel. That said, political and economic developments remain in 2024 that will work to keep oil/gas prices volatile through the U.S. election year and possibly beyond it.

From a political perspective, and despite the continuing headwinds from the "left" side of our Federal Government seeking to impose their "Green Deal" to displace fossil fuels with solar and wind, the U.S. E&P sector arguably held its own in 2023 in terms of up-stream related business activity, which was demonstrated through a year over year increase in U.S. onshore drilling activities (i.e., rig counts), as well as a significant increase in daily oil and natural gas production. Drilling momentum in the U.S. and particularly the Delaware Basin of the greater Permian has persisted despite political pressures from the left and the economic pressure in the U.S. that surfaced in mid-2022 and Q1 2023 due to the interest rate hikes implemented by the Federal Reserve to reduce inflation. Add in the geopolitical pressures occasioned by the conflicts in Ukraine and the Red Sea, and we can begin to appreciate the volatile price ride we're in for this year and into 2025.

As our firm reported in January 2023, the prospects for economic success in E&P continues with "*incredibly cautious optimism*" going into this year. For oil, a relatively stable price range persisted in 2023 in comparison to what we saw during the Pandemic through much of 2022, as world oil supply and demand slowly yet gradually achieved a balance point due to the economic recoveries of most countries and their subeconomies throughout the world. As the result of this recovery, oil managed to land at \$80 bbl for much of 2023. While we achieved equilibrium from a supply/demand perspective, some moments of uncertainty persisted in 2023 as the result of the geopolitical pressures within Ukraine and the Middle East that caused short-lived oil pricing spikes to \$90-95 bbl in parts of 2023.

As has been the case for the past 20 years, expect natural gas to continue its wild ride through 2024 and 2025 as we deal with changing winter climates and liquefied natural gas ("LNG") exporting infrastructure. In terms of the gas prices in 2023, they were tempered considerably because of the unseasonably warm weather we had in early 2023 and December 2023. While a series of arctic blasts in late December 2023 and early January 2024 worked to cool our national winter climate momentarily, natural gas storage levels come March 31, 2024 will again test U.S. gas prices through most of this year, which hinges upon whether a more normal pattern of cold weather comes into play from now through late March. Against this backdrop, and as mentioned by EQT's Chief Executive Toby Rice during his press appearances last year, the need

for U.S. natural gas abroad on a long-term scale should eventually present better opportunities for favorable natural gas pricing in 2025, 2026, and future years.

Energy Sector Capital Summary

In 2023, we covered fourteen (14) sponsor companies which operate within the upstream ("**E&P**") oil/gas sector and raise money from retail investors. This group of sponsors collectively funded 24 private oil/gas programs that raised \$1.226 billion to support drilling and E&P infrastructure, mineral interest acquisitions, and related projects. This represented a 12.17% year-over-year increase in capital funding from what was reported by these sponsors in 2022 (i.e., \$1.093 billion). This also resulted in the highest capital raise year from the E&P sponsor group that we cover (i.e., since 2005).

For a second year in a row, leading the way in terms of fundraising was U.S. Energy Development Corp. ("U.S. Energy"), at \$483.0 million, which was followed by MDS Energy ("MDS"), at \$196.0 million, and Mewbourne Development Corporation ("Mewbourne"), at \$180.0 million. Collectively, and as was the case in 2023, these three sponsors accounted for approximately 70% of the capital raised by the E&P sponsor group we cover.

In terms of funding growth, about half of the sponsors from the E&P group reported yearover-year gains in fundraising, which helped to continue the capital raising momentum that was established in 2021-2022 after the headwinds of COVID subsided (i.e., with \$273 million being the capital raise from the E&P group in 2020 during the Pandemic year). A chart of the fundraising totals of the E&P sponsors we cover is provided below:

Company	Strategy	2023 Raise	2022 Raise	2021 Raise	2020 Raise
Mewbourne	Drilling-Horizontal Wells in the Permian Basin, Texas Panhandle and Anadarko Basin	\$180.00 MM	\$250.00 MM	\$119.80 MM	\$55.31 MM
MDS	<i>Drilling</i> -Horizontal Wells in the Marcellus Shale Play	\$196.00 MM	\$225.00 MM	\$146.919 MM	\$60.0 MM
STL	<i>Drilling</i> -Marcellus Shale of Eastern Pennsylvania	\$31.00 MM	\$42.50 MM	\$29.5 MM	\$17.3 MM
U.S. Energy	Drilling-Permian Basin, Powder River Basin and Eagle Ford Shale Play; the QOF is an OZ Fund Seeking Working Interests and Other Upstream Assets	\$388.0 MM drilling; \$80.0 MM QOF program; \$15.0 MM 1031 program	\$267.93 MM drilling; \$56.65 MM QOF program; \$8.10 MM 1031 program	\$145.0 MM drilling; and \$45.0 MM QOF program	\$64.0 MM drilling; and \$20.0 MM QOF program
Waveland	Opportunity Fund Targeting Minerals and Non-Operated Working Interests in the Bakken Shale	\$94.482 MM	\$42.64 MM	\$13.255 MM	\$22.0 MM
Resource Royalty	<i>1031 Program</i> Acquiring Minerals and Royalties in STACK Play of Oklahoma	\$29.592 MM	\$32.9 MM	\$11.067 MM	\$5.373 MM

Table 1 -

Montego	1031 Programs Acquiring	\$77.0 MM	\$62.20 MM	\$19.730 MM	\$12.5 MM
Minerals	Minerals and Royalties in				
	the Permian Basin and East				
	Texas				
JHO	Drilling-Oil Producing	\$3.782 MM	\$5.00 MM	\$6.704 MM	\$4.35 MM
	Zones in Tennessee				
White Hawk	Royalty Fund Acquiring	\$21.20 MM	\$65.70 MM	NA	NA
Energy	Mineral Rights, Royalties,				
	and Overriding Royalties				
Barrow Shaver	Drilling-E. Texas Bossier	\$36.50 MM	\$4.95 MM	NA	NA
Resources	and Cotton Valley;				
	Horizontal Drilling for				
	Oil/Nat. Gas				
Texakoma	Drilling-Granite Wash Play	\$32.0 MM	\$30.00 MM	\$20.00 MM	\$15.00 MM
Resources,	in Tex. Panhandle;				
LLC	Horizontal Drilling for				
	Oil/Nat. Gas				
Texas Standard	Drilling-Barnett Shale	\$40.0 MM	\$4.0 MM	NA	NA
Energy	Combo Play in N. Tex.;	(first full			
	Horizontal Drilling for	year)			
	Oil/Nat. Gas				
Unspecified	Two additional Reg. D	\$2.0 MM	NA	NA	NA
	sponsors also collectively				
	raised equity for Mid Con.				
	Based E&P projects				
Totals		\$1.226 billion	\$1.093 billion	\$556 million	\$273 million

2023 E&P Capital by Strategy

Total Capital:	\$1,226,666,905
Contributing	
Sponsors:	14
Drilling:	\$909,400,600 (74%)
E&P Opportunity Funds:	\$174,482,305 (14%) (includes a QOZ fund)
Minerals/Royalties:	\$142,792,000 (12%) (84% were structured as direct interest)

Ten Internal Revenue Code ("IRC") Section 1031 ("§1031") eligible programs were wholly or partially funded in 2023 by Resource Royalty, Montego Minerals, and U.S. Energy. Overall, the §1031 energy capital raised last year (\$121.592 million) increased from what was reported in 2022 (\$103.20 million) and 2021 (\$31.0 million). Based upon relatively stable oil pricing, as well as longer-term natural gas market developments, we think this segment will hold serve in 2024.

We note that the size of the E&P sponsor group that we cover has been moderately stable over the past few years (e.g., generally 10 to 14 E&P sponsors from 2017-2023), with drilling programs outpacing royalties and opportunistic funds in terms of fundraising (and with the 75/25 allocation of retail funded E&P capital among drilling and other deployment strategies generally also holding true as to the years leading up to 2023). The fundraising of this sponsor group has been incredibly choppy since 2017 (\$330 MM 2017, \$401 MM 2018, \$369 MM 2019, \$273 MM 2020, \$556 MM 2021, \$1.093 billion 2022, \$1.226 billion 2023). The choppiness has been caused

by incredible market volatility, coupled with the fact that the oil/gas sector continues to seek the reestablishment of investor trust that was lost because of performance failures by several companies that no longer raise capital in the retail channel. Based upon current oil market fundamentals and longer-term natural gas pricing developments due to anticipated LNG export growth, the E&P sponsor group appears to be fairly positioned to achieve a respectable volume of capital raising in 2024/2025.

What's Driving the Market Today?

Oil

The following market information was derived from multiple informational sources:

As of January 22, 2024, the WTI spot price for oil was \$75.19 per barrel ("**bbl**") of oil, with the Brent spot price being \$80.10 per bbl. The Energy Information Administration ("**EIA**") forecasts that the Brent crude oil price will average \$82 per bbl in 2024, about the same as in 2023, and then fall to \$79 per bbl in 2025. The EIA expects that the world's oil production growth will slightly outpace demand growth, allowing oil inventories worldwide to build modestly and place some downward pressure on crude prices.

From the EIA Short Term Outlook published January 6, 2024, the Brent crude spot price averaged \$78 per bbl in December 2023, a decrease of \$5/bbl compared with November 2023. Despite the latest round of OPEC+ production cuts announced on November 30, 2023, oil prices fell based on ongoing concerns about global oil demand growth and on rising global oil inventories, which the EIA estimates increased by 0.8 million bbls per day in Q4 2023. The EIA expects that the OPEC+ production cuts will lead to global oil inventory withdrawals of 0.8 million bbls per day on average in Q1 2024. After a period of relative balance from 2Q 2024 through 1Q 2025, the EIA expects global oil inventories will build over the final three quarters of 2025 as slowing demand growth again is outpaced by rising supply growth.

The EIA expects that falling global oil inventories in 1Q 2024 will push Brent prices to an average of \$85 a bbl in March 2024. Relatively balanced markets for the rest of 2024 with some inventory builds in 2025 will put slight downward pressure on crude oil prices through the remainder of the EIA's forecast. As a result, the average Brent crude price is expected by the EIA to fall to \$81 per bbl in December 2024 and below \$80 per bbl in the second half of 2025. However, several key uncertainties that could affect future prices remain. Heightened tensions around the critical Red Sea shipping channel and other developments in the Middle East have added upward price pressure since early December 2023 and have the potential to disrupt global oil trade flows and drive-up global oil prices.

The EIA expects growth in global liquid fuels consumption (e.g., petrol, kerosene, diesel, heating oil, etc.) will be lower over the next two years with forecast consumption growing by 1.4 million bbls per day (1.4%) in 2024 and by 1.2 million bbls per day (1.2%) in 2025. Although this growth in 2024/2025 is less than the liquid fuels consumption growth last year, it is largely consistent with the 1.2% average annual growth in liquid fuels consumption over the 20 years. The EIA attributes the reduction in growth to slowing oil demand growth in China due to stalling GDP growth, increasing vehicle fleet efficiency, and an end to Pandemic recovery-related growth in

2023. Despite the lower oil demand growth mentioned previously, global consumption of liquid fuels is still expected to reach a new record of over 103.5 million bbls/day in 2025.

The EIA forecasts that global liquid fuels production growth will slow. Production is expected to rise by 0.6 million bbls per day in 2024, down from 1.7 million bbls per day of growth in 2023, as OPEC+ continues its policy of production restraint and U.S. shale oil production growth decelerates in late 2024. In 2025, the EIA forecasts global liquid fuels production to rise by 1.6 million bbls/day, about 50% of which is expected to come from future increases in OPEC+ crude oil production.

We note that the EIA's pricing sentiment (i.e., Brent \$82 bbl in 2024 and \$79 bbl in 2025, which suggest a WTI pricing level of \$74-\$77 bbl next two years) is consistent with the pricing expectations of Citigroup (i.e., \$75 WTI) but contrasts with the forecasts published for 2024 by Bank of America and Goldman Sachs, which have both forecast WTI prices to achieve a generally higher level next year (i.e., \$85 bbl and \$87 bbls, respectively).

We note that the EIA's pricing sentiment is higher in comparison to the NYMEX futures prices published on January 22, 2024, which ranged from \$72-75 per bbl through 2024 and \$69-71 per bbl in 2025.

January 22, 2024 NYMEX Contract Month	Contract Price
Mar. 2024	\$75.42/bbl
Sept. 2024	\$73.69/bbl
Jan. 2025	\$71.50/bbl
Mar. 2025	\$69.59/bbl
Sept. 2025	\$69.24/bbl
Source: Bloomberg	

In his market podcast shown on December 21, 2023, Dan Steffens, President of the Energy Prospectus Group, published moderately bullish sentiment for oil stabilizing at or above \$80 bbl for this year. In support of his viewpoint, Mr. Steffens warned that we should expect volatility throughout much of 2024 due to the geopolitical pressures in Ukraine and the Red Sea, but with market fundamentals generally supporting an average of \$80/bbl this year. Some additional points mentioned in support of his cautious optimism include the following:

- The Fed's recent announcement that its monetary policy is now tight enough to sufficiently reduce inflation to a level consistent with its announced target (i.e. 2%);
- Anticipated tightness in the gap between daily oil production/consumption in 2024; and
- The world's population continues to grow at 130,000 persons per day, which will continue to put pressure on oil demand.

Based upon the circumstances mentioned above, Mr. Steffens has forecasted oil prices for 2024 to average \$80/bbl on WTI, which if true would moderately exceed WTI's price average for 2023 (i.e., \$78 bbl) but would be consistent with the average oil prices realized on WTI over the past three years.

A summary of WTI's prices from 2019 through 2023 is presented below:

2019:	\$56.99/bbl
2020:	\$39.68/bbl (COVID)
2021:	\$68.17/bbl
2022:	\$94.53/bbl
2023:	\$77.64/bbl
Five-Yr. Avg.:	\$67.94/bbl
Three-Yr. Avg.:	\$80.11/bbl

Natural Gas

The EIA expects the annual average U.S. benchmark Henry Hub spot price to be under \$3.00 per million British thermal units ("**MMBtu**") in 2024 and 2025, although it increases from 2023.¹ Record natural gas production and high gas storage inventories that remain above the five-year storage average are expected to keep gas prices tempered over the next two years. The Henry Hub spot price in the EIA's forecast is expected to average between \$2.60/MMBtu and \$2.70/MMBtu in 2024, an increase of about 10 cents/MMBtu from 2023. In 2025, the EIA expects the Henry Hub price to increase again to average more than \$2.90/MMBtu, as LNG exports increase.

Although the EIA expects average Henry Hub prices to remain below \$3/MMBtu for the next two years, the EIA has acknowledged the potential for gas prices to break through its estimate. On this point, weather and expected shifts in the mix of sources used to generate electricity create uncertainty in the EIA's \$3/MMbtu forecast. Monthly consumption in the residential and commercial sectors, which consume the largest share of natural gas in the winter for space heating, can vary greatly depending on prevailing temperatures. Similarly, the electric power sector consumes the largest share of natural gas during the summer to meet air-conditioning demand. Summer temperatures that are well above normal, like those experienced on the West Coast during late summer 2022, can increase electricity demand and natural gas consumption beyond the EIA's forecast. In addition, growth in use of renewable energy and the slowing deployment of natural gas generating capacity may affect natural gas used to generate electricity. As such, the EIA expects to see some of the effects of the changes in generation capacity in the second half of this year.

Natural gus price av	eruge
2019	\$2.58/mcf
2020	\$2.03/mcf
2021	\$3.89/mcf
2022	\$6.45/mcf
2023	\$2.53/mcf

Natural gas price average

Five Yr. Average: \$3.50/mcf

¹ An MCF is a natural gas volume measurement unit, whereas a BTU is a measure of natural gas heating content. For conversion purposes, 1 MCF = 1.038 BTU. As such, the two acronyms are sometimes used interchangeably in sponsor product marketing materials.

In respect to natural gas pricing, we remind you of the need to factor local pricing adjustments into project underwritings in cases where gas prices trade at a discount or premium to the NYMEX base price. An example of this need would apply to projects located within the Marcellus Shale Play in east and central Pennsylvania, where natural gas prices have generally sold at about \$1.00 per mcf under NYMEX base price.²

What's Going on in the Field?

Presently, U.S. oil production is at about 13.25 million bbls per day, which is about one million bbls per day less than what was reported a year ago. As such, oil production has rebounded from the COVID affected levels reported throughout 2020 (i.e., 10.78 million bbls per day average April through December 2020) and all of 2021 (i.e., 11.17 million bbls per day average). This increase resulted from the headwinds of the economic recovery coming out of COVID in 2021 and 2022, which resulted in completions of many wells that had been drilled but were not completed (i.e., DUC wells) at the time the Pandemic surfaced.³

While oil production is at a high level, note that the U.S. rig count, which stood at 620 onshore rigs as of January 19, 2024, has come down from the 771 rigs reported just a year prior. On this point, rig counts within ALL major U.S. Basins are down from the levels reported a year prior, with the counts in the natural gas plays experiencing perhaps the greatest levels of reduction due to lower prices. As there are still over 3,500 DUCs remaining to be completed across all U.S. Basins (821 in the Permian Basin), we may continue to see a modicum of disconnect between the U.S. oil produced daily and the general direction of rig counts across the on-shore U.S.

Basin	Primary	1/19/2024	Year Ago
	Product	Rig Count	Rig Count
Arkoma/Woodford Region	Gas	25	32
Barnett Shale	Gas	1	2
DJ-Niobrara	Gas	12	16
Eagle Ford Shale	Oil	55	72
Granite Wash	Gas	2	10
East Texas &	Gas	42	69
Haynesville Shale			
Marcellus Shale	Gas	29	37
Mississippian Play	Gas	2	4
Permian Basin	Oil	307	354
Utica Shale	Gas	13	15
Williston Basin/Bakken	Oil	34	42

Source: Baker Hughes, 1/19/24

² Gatherco Published DTI Basis (2022-2023).

³ FEDERAL RESERVE BANK OF DALLAS, Energy Slideshow (Jan. 11, 2024) (reporting a draw down in DUCs in the Permian from about 3,000 uncompleted wells during 2020 to 821 uncompleted wells remaining as of January 2024).

Motivation to Drill – What are the Break-Evens?

Despite recent pricing headwinds facing natural gas drilling projects, oil prices have arguably held serve over the past year, with the 2023 average WTI of \$78 bbl being generally consistent with WTI's trailing three-year average (\$80/bbl). This stabilization in oil pricing presents opportunities for U.S. E&P companies to continue their earnings patterns by reallocating rigs and resources from natural gas plays to areas where crude is more abundant.

Despite oil's decent ride over the past couple years, we CAUTION that cost inflation has reduced, to some extent, the profit margins that were realized by the E&P industry post-COVID (i.e., 2021/2022). An illustration of how inflation has affected E&P profit margins is shown within the following table (with break-evens reported on a "**per bbl**" basis):

Break Even I onnes				
Play	Avg. Break Even for	Avg. Break Even for	2 Yr. Cost	
	Drilling (Jan. 2022)	Drilling (Jan. 2024)	Increase	
Permian-Midland	\$46	\$58	+26%	
Permian-Delaware	\$49	\$61	+24%	
Permian-Other	\$53	\$66	+25%	
Eagle Ford	\$46	\$56	+17%	
Other U.S. Shale	\$58	\$61	+5%	
Other U.S. Non-Shale	\$53	\$63	+17%	

Table 2 – Drilling	
Break Even Points	

Federal Reserve Bank of Dallas Survey

Based upon the findings of an oil/gas industry survey published by the Federal Reserve Bank of Dallas (January 11, 2024), many E&P companies are, in fact, gearing up to increase their drilling and production over the next 12 months. Within a survey of several executives from 144 oil/gas drilling and field service companies, the average forecasted oil price for year-end 2024 was \$78 per bbl, with the group of executives predicting natural gas to end the year at \$3.09 per mcf. In response to the question of whether the surveyed firms were likely to increase or decrease their E&P expenditures in 2024, 69% stated that they intended to either increase or maintain their expenditures year over year from 2023. Coincidentally, and in response to a question about their grow or maintain their oil/gas production over the next 12 months.

Continuing to drive the motivation to drill/produce oil/gas is the fact that both can be produced at profitable levels in many regions despite gradual reductions in prices since 2022, with the operating costs in the major portions of the Permian remaining stable over such period. Even in areas where production costs have increased, the break-even prices continue to provide opportunities for companies to operate at profitable levels. A table illustrating the movements within U.S. E&P operating costs is presented in the table below.

Table 3-Operating
Break Even Points

Dieak Even i onits				
Play	Avg. Price to	Avg. Price to	Trailing 2 Yr.	
	Recover Op. Costs	Recover Op. Costs	Cost Increase	
	(Q1 2022)	(Q1 2024)		
Permian-Midland	\$27	\$29	+7%	
Permian-Delaware	\$26	\$29	+10%	
Permian-Other	\$33	\$40	+25%	
Eagle Ford	\$17	\$31	+80%	
Other U.S. Shale	\$33	\$33	0%	
Other U.S.	\$34	\$45	+35%	
Non-Shale				

Federal Reserve Bank of Dallas Survey

Market Volatility – Revisiting Where We Have Been

It goes without saying that the past 15 years have been a roller coaster ride for oil/gas prices. We've seen oil as high as \$140 per bbl (July 2008) and as low as negative \$37 per bbl (May 2020). More recently, however, we've seen oil land at \$70-90 bbl over the past 24 months, with natural gas landing at \$2.50-\$3.25 mcf over most of 2023. Acknowledging that bull markets are welcomed for those that guide investors seeking to put money into the E&P sector, history teaches us that we need to be disciplined in terms of our return expectations. The pricing cycles of the past several years can be summarized as follows:

- A floundering real estate market in 2007-2008 due to the sub-prime loan market collapse motivated many in the financial services sector to move money from real estate to crude, which drove oil prices to \$140 bbl in July 2008. However, the Great Recession that hit in late 2008 dropped oil back to \$30 bbl before a recovery to \$60-80 bbl in late 2009/2010.
- The shale boom that took U.S. oil production from under four million bbls oil per day in late 2008 to more than nine million bbls per day in 2014 over-supplied the global market. Saudi Arabia's failed attempt to regain market share in 2014 caused the oil price to decline from over \$100 per bbl to under \$30 per bbl. The double bottom in early 2016 appeared to be the end of this cycle, and oil moved back over \$70 per bbl in the summer of 2018.
- The U.S. vs. China trade war took oil back under \$50 per bbl. The signing of phase one of the trade agreement had oil back on track to the \$70s. In the first week of 2020, oil was trading over \$62 per bbl, and everyone thought the price was heading higher.
- Then came COVID and the oil crash in April 2020. From April through the first week of May, we saw prices settle below \$20 bbl and even dip well below \$0 for a day.

• Finally, COVID loosened its grip on world economies in 2021, which caused the world's appetite for crude to resume with a flurry. This caused worldwide oil consumption to spike from 91 million bbls day in 2020 to 100 million-plus bbls day presently. The rebalancing of supply and demand resulted in oil prices moving back to a \$70-90 bbl level over the past 18 months.

Despite the rhetoric in the press, the White House and on Wall Street about renewable energy displacing crude as the world's chief source of energy, the world's appetite for crude will unquestionably remain steadfast as the world's population increases by about 50 million persons per day. That said, we MUST not forget the inherent volatility associated with oil/gas commodities, and how that has played to the chagrin of many public and private E&P companies over the past several years that over borrowed and eventually collapsed.

Conclusion

Despite past optimism about the prospects of oil today and natural gas long-term, we must remain steadfast in our underwriting of oil/gas companies, because no one is immune to the next cycle. For this reason, we must pay attention to break even prices and the break points in which an E&P sponsor's pro forma becomes unprofitable. At a sponsor due diligence level, we must also pay attention to a sponsor's patterns of success in good times and bad, as well as their short-term liquidity, leverage use, and overall dependence upon the retail channel's funding for survival (i.e., with all of these being major reasons for E&P sponsor blow-ups over the past several years). As cap. ex. and lease operating costs have increased because of improved pricing fundamentals, we must stay the course in the quest for sponsors and products that have prospects for success under less fortunate market circumstances than what we've seen from 2021-2023. As we have written in our past year-end reports, stay committed to cautious due diligence. As history has taught us, the next cycle will come – we just don't know when.

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