



Weekly E&P Update

April 11, 2023

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AI - Another Opportunity to Improve

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President of Ralph E. Davis Associates



When I began my petroleum engineering career in the oil business in the early 1980s, computers played a limited role in my daily work. I worked for a major oil company then, and we used large "mainframe" computers for storing production data and performing accounting calculations. At one time or another, we had the world's most powerful supercomputer working on seismic data processing. No one used a personal computer, and if you needed to make extensive computations, you probably wrote your own code on FORTRAN cards. Obviously, a lot has changed.

A few years later, after everyone had a PC on their desk, I recall making a presentation to a senior manager recommending the purchase of a corporate license for production engineering software that would assist with production and injection surveillance, store digital logs, and create electronic wellbore diagrams. Based on our pilot test of the software, it was clear that it would save a significant amount of time. However, from a return on investment standpoint, the key question was, "How will you use the extra time?"

If the same work was done with fewer people, that would generate a good return, but the company had made significant investments in its people, and the idea of squandering their talents wasn't attractive. Since we usually had more investment opportunities than we could fund, generating more opportunities wasn't necessarily attractive either. Instead, we recognized that generating a positive return on the software investment meant we had to use the extra time to make more thorough analyses to make better investment decisions. Said another way, the software would free up time that we could use to dig deeper into problems than we otherwise could have.

That dynamic has played out repeatedly in my engineering career. Each advancement in computing power has led to more robust software that creates the opportunity for deeper analysis and better decision-making. The development of artificial intelligence platforms using large language models promises to be another chapter in this story. Certainly, many jobs will change, but I doubt that **few will actually go away**. Instead, professionals will learn new skills to get specific work done faster, gain tremendous insight, and spend more time using their experience and judgment to make better decisions and recommendations.

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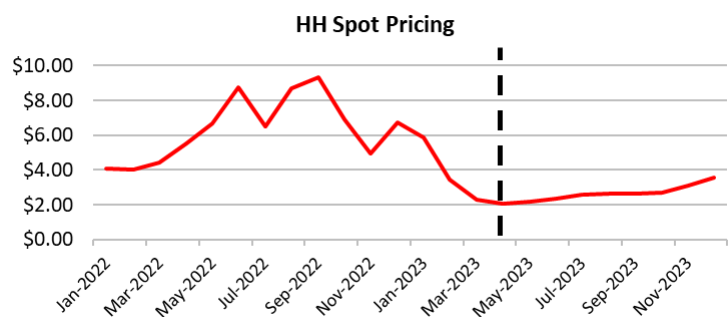
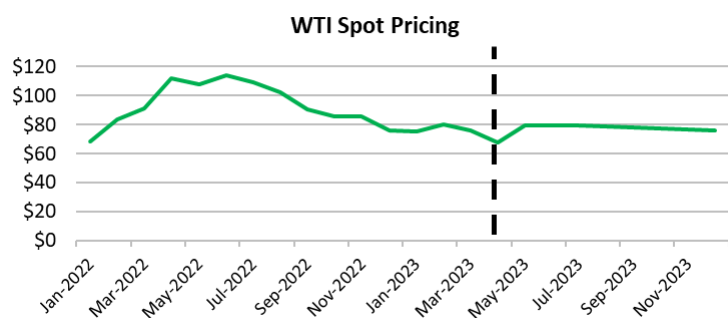
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NYMEX FUTURE PRICING



MONDAY'S MARKET CLOSE

NYMEX WTI CRUDE OIL FUTURES as of April 10, 2023 Close (\$/bbl)

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$78.37	(\$0.68)	\$79.05	\$88.15
2024	\$72.93	(\$0.56)	\$73.49	\$81.29
2025	\$68.23	(\$0.29)	\$68.52	\$76.24
2026	\$64.60	(\$0.16)	\$64.76	\$72.37
2027	\$61.54	(\$0.15)	\$61.69	\$69.56

NYMEX HH NATURAL GAS FUTURES as of April 10, 2023 Close (\$/MMBtu)

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$2.72	\$0.01	\$2.71	\$5.00
2024	\$3.53	(\$0.01)	\$3.54	\$4.10
2025	\$4.17	(\$0.02)	\$4.19	\$4.01
2026	\$4.25	-	\$4.25	\$4.07
2027	\$4.23	-	\$4.23	\$4.09

INDUSTRY METRICS—QUICK SNAPSHOT

	Current	Last Week	WoW Change	%Change
Crude Oil Near-Month Price (\$/bbl)	\$80.50	\$72.98	\$7.52	10%
Natural Gas Near-Month Price (\$/MMBtu)	\$2.02	\$2.18	(\$0.16)	(8%)
Weekly Upstream-Deal Transaction Value (\$MM)	\$5,106.00	\$0.00	\$5,106.00	-
Weekly Number of Upstream-Deal Transactions	3	1	2	200%
Current Total US Rig Count	751	755	(4)	(0.5%)
US Field Crude Oil Production (MMbbl/day)	12.2	12.2	0	-
US Field Dry Natural Gas Production (Bcf/day)	105.0	104.9	0.1	0.1%
Commercial Crude Oil Stocks-Excluding SPR (MMbbl)	470	474	(4)	(0.8%)
Natural Gas Stocks-Working Gas Underground Storage (Bcf)	1,830	1,853	(23)	(1%)
Total Drilled But Uncompleted Wells (DUC-Last Month)	4,773	4,773	0	-

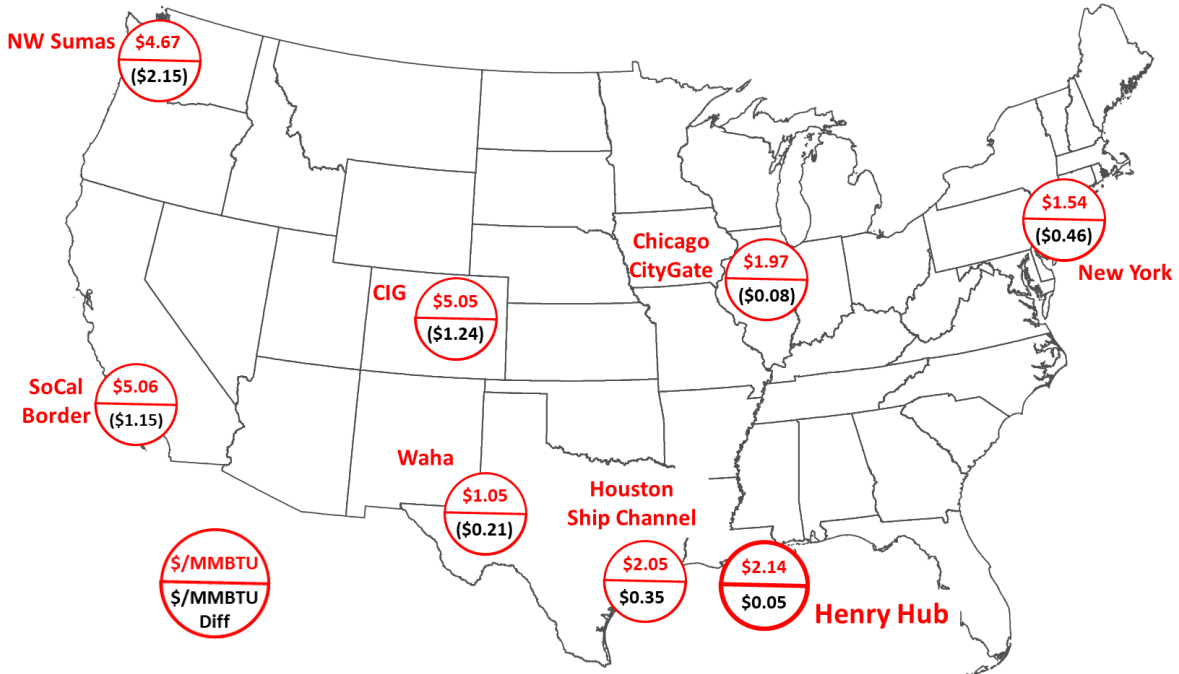
*Source—Energy Information Administration, United States (EIA)

*Source—Baker Hughes North America Rotary Rig Count & PLS M&A Database

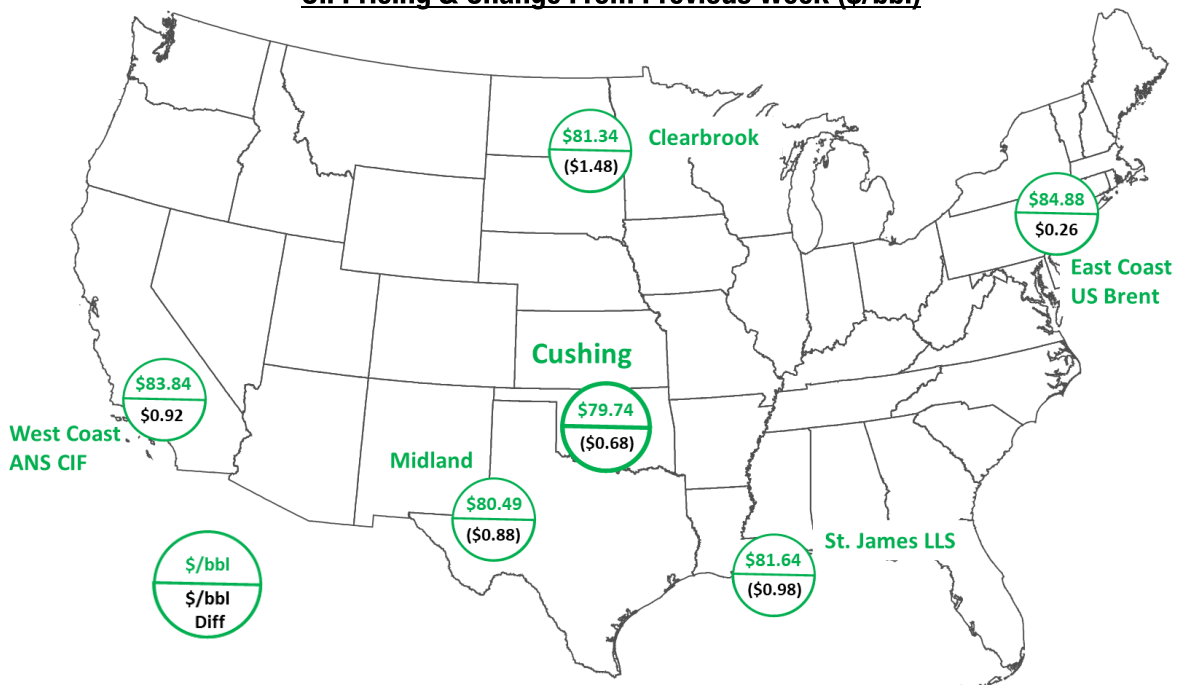


US COMMODITY PRICES CONTINUED

Natural Gas Pricing & Change From Previous Week (\$/MMBtu)



Oil Pricing & Change From Previous Week (\$/bbl)



*Source—Bloomberg LP



SELECTED INDUSTRY HEADLINES

Oil On The Rise: 5 Compelling Arguments Supporting A Bullish Market Outlook Into Year End

Since the pandemic lows, crude oil prices have soared, returning to levels not seen in nine years. The United States Oil Fund ETF (USO), a popular proxy for crude oil, has had a breathtaking march higher since reaching panic lows in April 2020.

What Will Henry Hub Gas Price Be at End of the Year?

Executives from 143 oil and gas firms have predicted where the Henry Hub natural gas price will end up this year as part of the latest Dallas Fed Energy Survey.

Ottawa Partners With Heidelberg To Develop Carbon Capture System

The Canadian government has recently signed an agreement to support German multinational HeidelbergCement AG's \$1.36-billion project to build a full-scale carbon capture, utilization and storage (CCUS) system at its Edmonton cement facility.

Global Artificial Intelligence in Oil & Gas Market Report 2022-2032: Rising Safety and Security Standards Bolsters Adoption

The "Global Artificial Intelligence in Oil & Gas Market 2022-2032 by Component, Operation, Application, and Region: Trend Forecast and Growth Opportunity" report recently predicted that global artificial intelligence (AI) in oil & gas market will reach \$7,942.1 million by 2032.

The 'S' In ESG Doesn't Stand For 'Storytelling'

Every day you read stories about companies making bold environmental or social impact announcements; everyone has a sustainability story to tell. But in the race to prove their impact, many companies put their story before their strategy.

Oil Market Awaits Updates On Crude Supply Challenges

Oil steadied as traders assess challenges to crude supply in the wake of planned output cuts by OPEC+ and in anticipation of news on when Iraq may resume exports from its northern fields.

Trudeau's Crude Pipeline Set to Provide Boost for Canadian Oil (LOGIN CREDENTIALS REQUIRED)

Canadian oil producers beset by years of constrained pipeline capacity expect to garner better prices for their crude when the expanded Trans Mountain conduit starts up next year, opening them to new markets in Asia.

These Are The Countries That Will Be 'Most Hit' If Oil Prices Reach \$100

The surprise output cut by OPEC and its allies sent oil prices rallying — and analysts say major oil importers like India, Japan and South Korea will feel the most pain if prices hit \$100 per barrel, as some have predicted.

Russia Cuts More Oil Production Than Anticipated

Russia has reduced its crude oil production by 700000 bpd in March, a person familiar with Russian Energy Ministry figures told Bloomberg recently.

Aramco To Supply Full Volumes To Asia Despite OPEC+ Oil Cuts

Saudi Aramco has told at least four customers in North Asia they will receive full contract volumes of crude oil in May, several sources with knowledge of the matter said recently.

Hedge Funds Are Still Bearish On Oil But Bulls Are Gaining Steam

After a lackluster end of 2022 and start of 2023, oil bulls are now hopeful that OPEC+ action will tighten the market and drive prices higher.



SELECTED RECENT TRANSACTIONS

Ovintiv To Acquire Leasehold Interest And Related Assets

Ovintiv Inc has entered into agreements to divest its Bakken assets in North Dakota to Grayson Mill Bakken LLC, an affiliate of Grayson Mill Energy LLC.

Ovintiv To Acquire \$4.2B Midland Basin Assets

Ovintiv Inc has entered into a definitive purchase agreement to acquire substantially all leasehold interest and related assets of Black Swan Oil & Gas LLC, PetroLegacy Energy II LLC, and Piedra Energy III LLC.

Phoenix Capital Group Has Acquired Over 560 Net Mineral Acres For A Purchase Price Exceeding \$6M

Phoenix Capital Group Holdings, LLC, doing business as Phoenix Capital Group, is excited to announce it has acquired more than 560 net mineral acres for a purchase price that exceeds \$6 million.

Wedgemount Resources To Acquire Additional Texas Permian Basin Oil And Gas Assets

Wedgemount Resources Corp., is pleased to announce that it has entered into a Purchase and Sale Agreement for the acquisition of additional oil and gas assets located in the prolific Permian Basin of west central Texas.

Principal Solar To Acquire Minerva-Rockdale Leases, Wells, And Assets

Principal Solar, Inc. recently announced that it has executed a Letter of Intent to purchase a controlling working interest in the leases and oil & gas wells along with all of the assets associated with the Minerva-Rockdale Oil Field from Winchester Oil & Gas LLC.

Carrier Energy Partners II Sells Eagle Ford Assets

Carrier Energy Partners II, LLC has closed on the sale of its oil and gas assets in the Eagle Ford Shale in South Texas for total cash consideration of \$145 million.

CPP Investments Partners With IKAV To Acquire Aera Energy

Canada Pension Plan Investment Board (CPP Investments) will partner with international asset management group IKAV to acquire California energy producer Aera Energy LLC.

Riley Permian Announces New Mexico Yeso Trend Acquisition

Riley Exploration Permian, Inc. recently announced that it has entered into a definitive purchase agreement to acquire oil and gas assets from Pecos Oil & Gas, LLC, an affiliate of Cibolo Energy Partners LLC, for cash consideration of \$330 million.

Baytex To Acquire Eagle Ford Operator Ranger Oil, Accelerates Shareholder Returns And Introduces A Dividend With Enhanced Free Cash Flow

Baytex Energy Corp. recently announced that it has entered into a definitive agreement to acquire Ranger Oil Corporation, a pure play Eagle Ford company.

Diamondback Energy, Inc. Announces Fourth Quarter And Full Year 2022 Financial And Operating Results; Increases Base Dividend

Diamondback Energy, Inc. recently announced financial and operating results for the fourth quarter and full year ended December 31, 2022, which includes entering into definitive agreements to divest certain Midland and Delaware Basin assets in Texas.

Chesapeake Energy Corporation Announces Sale Of Second Eagle Ford Package For \$1.4 Billion

Chesapeake Energy Corporation recently announced that it has executed an agreement to sell a portion of its remaining Eagle Ford asset to INEOS Energy for \$1.4 billion.

Verde Bio Holdings, Inc. Announces Acquisition Of Haynesville Shale Mineral And Royalty Interest

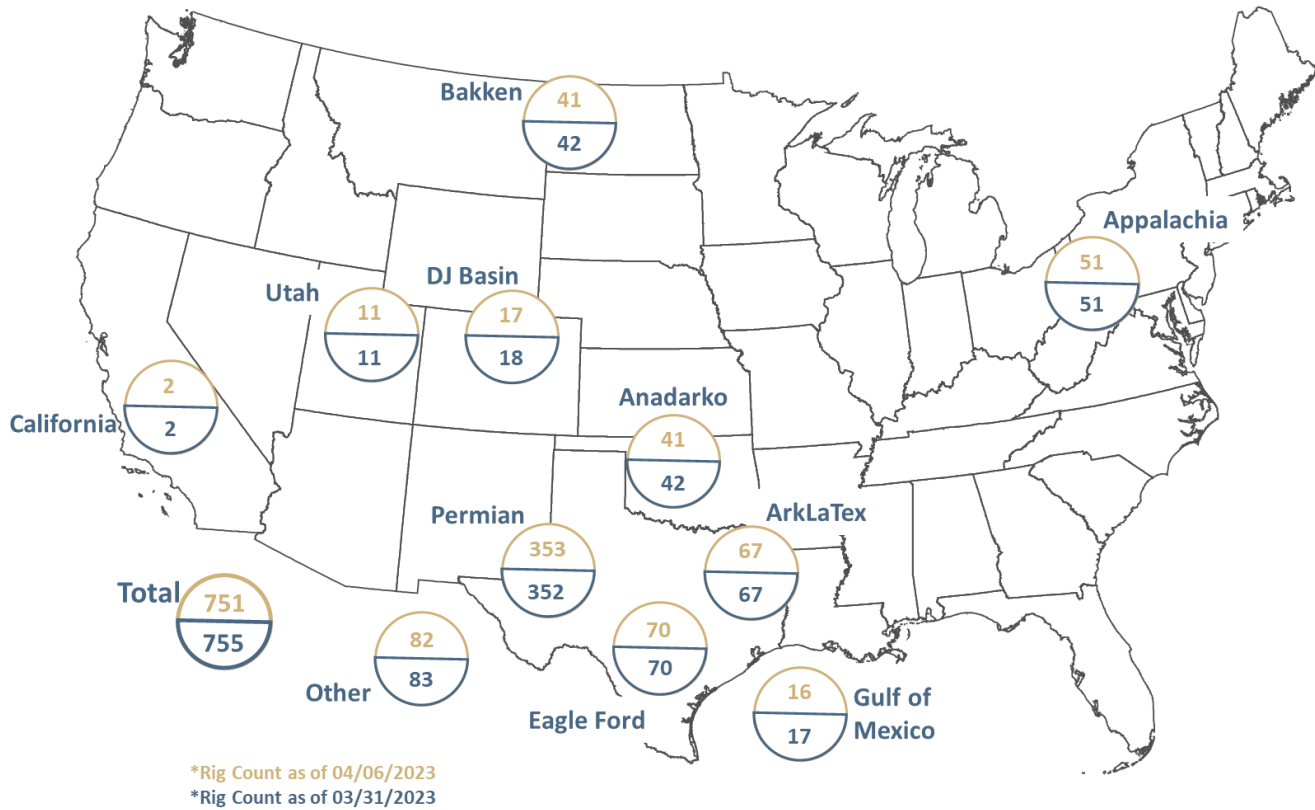
Verde Bio Holdings, Inc. recently announced that it has entered into an agreement to acquire revenue producing mineral and royalty interests in the prolific Haynesville Shale of Northern Louisiana, held by a private seller for a purchase price of \$425,000 in cash.

Foothills Exploration Acquires Certain Leases and Wells In Oklahoma

Foothills Exploration recently announced that it had managed to complete the acquisition of some wells and leases in Comanche County in Oklahoma.



RIG ACTIVITY BY US REGION

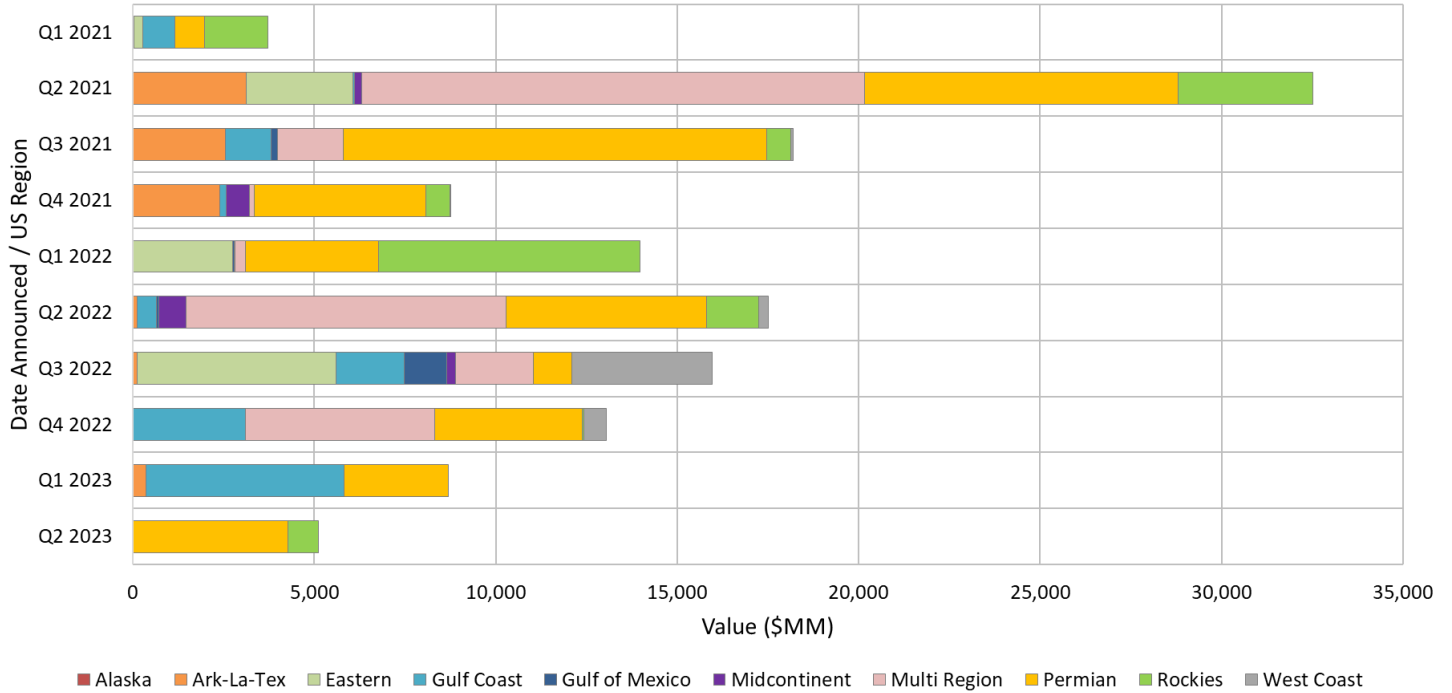


	Week Ending 04/06/2023			Week Ending 03/31/2023		Week Ending 04/07/2022
U.S. Rig Breakouts	Count	+/-	Count	+/-	Count	
Oil	590	(2)	592	44	546	
Gas	158	(2)	160	17	141	
Not Specified	3	0	3	1	2	
Directional	51	0	51	19	32	
Horizontal	686	(5)	691	55	631	
Vertical	14	1	13	(12)	26	
Land (Inc Others)	733	(3)	736	58	675	
Inland Waters	1	0	1	(1)	2	
Offshore	17	(1)	18	5	12	
US Total	751	(4)	755	62	689	

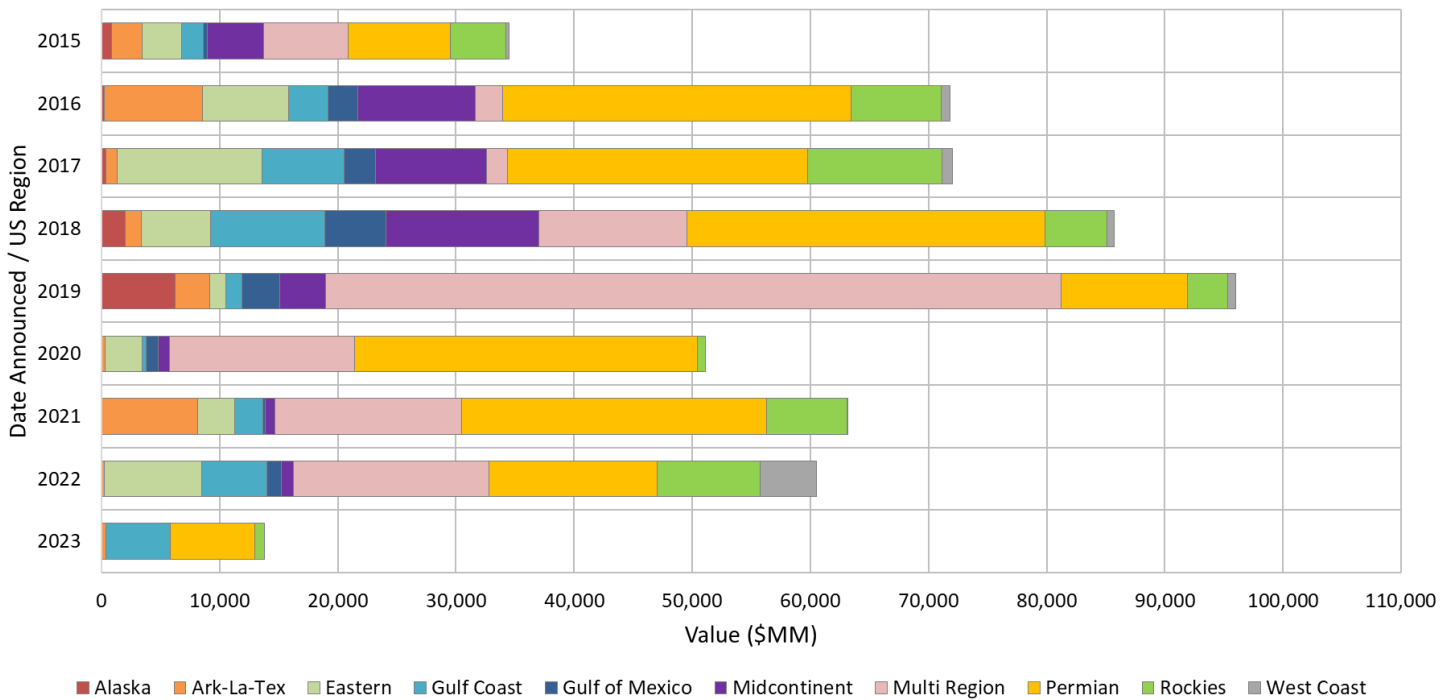
*Source—Baker Hughes Weekly Rig Counts



DEAL VALUE BY US REGION (BY QUARTER)



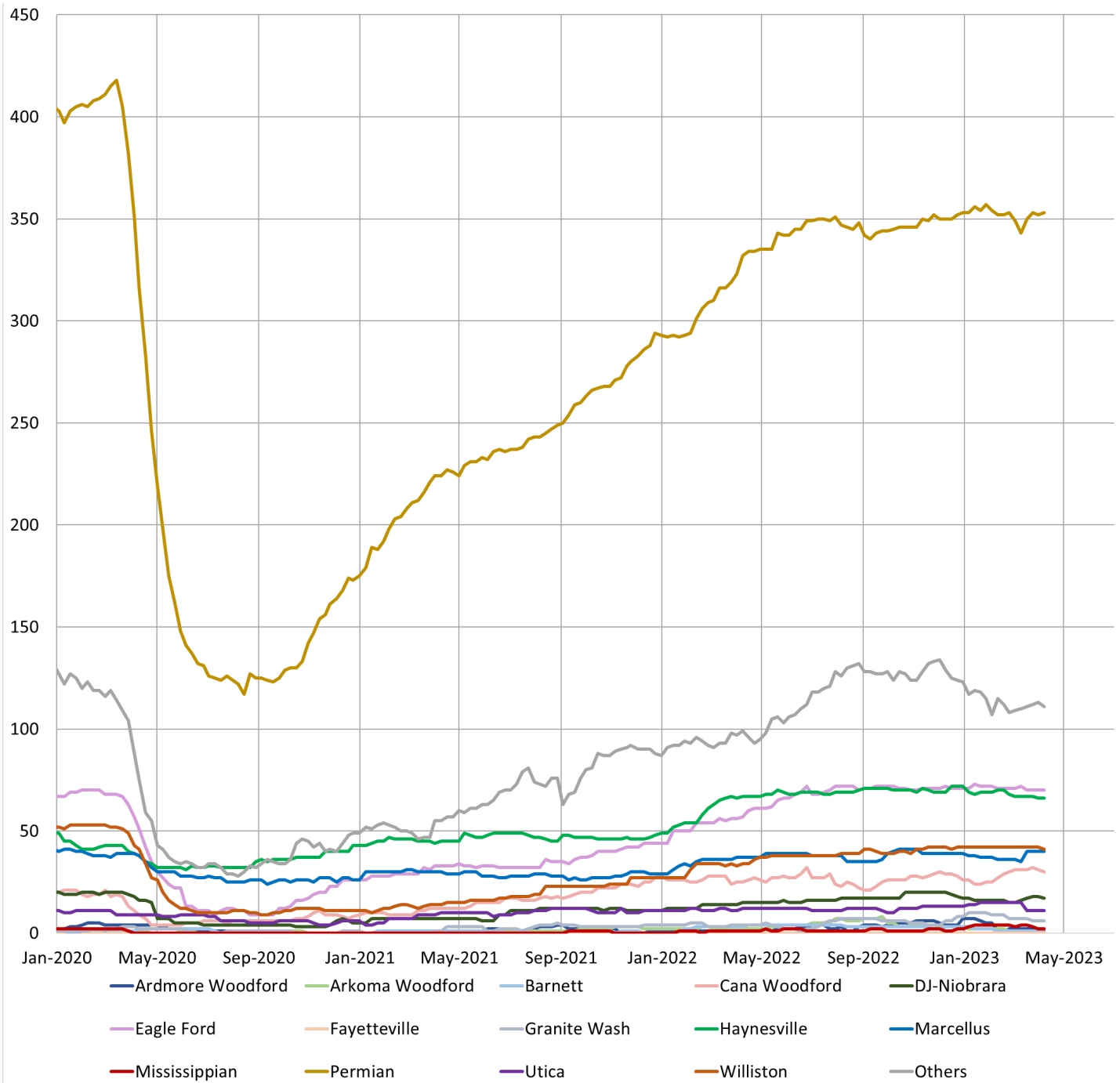
DEAL VALUE BY US REGION (BY YEAR)



*Source—PLS M&A Database (Charts exclude terminated deals)



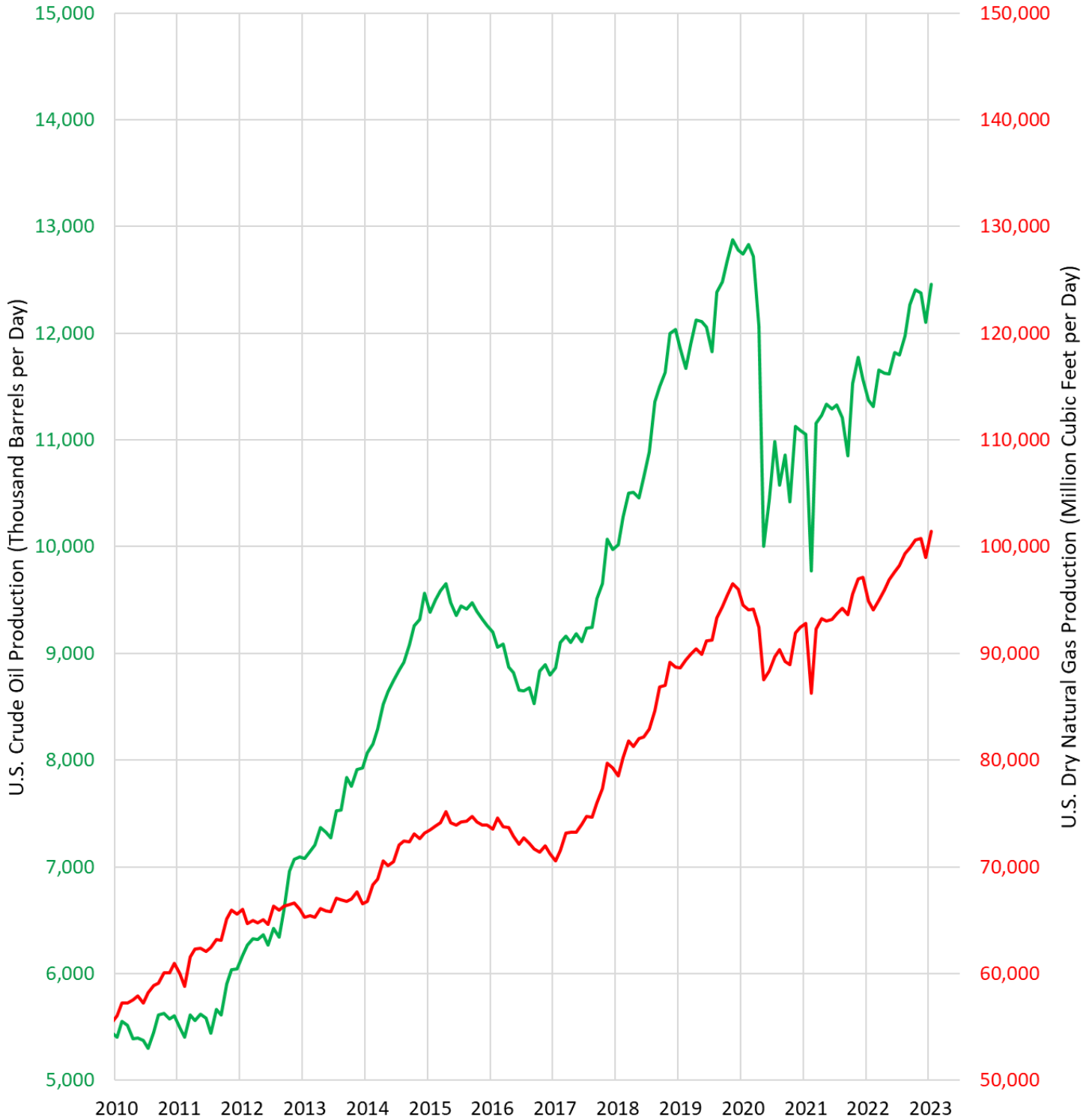
RIG ACTIVITY BY US REGION



*Source—Baker Hughes Weekly Rig Counts



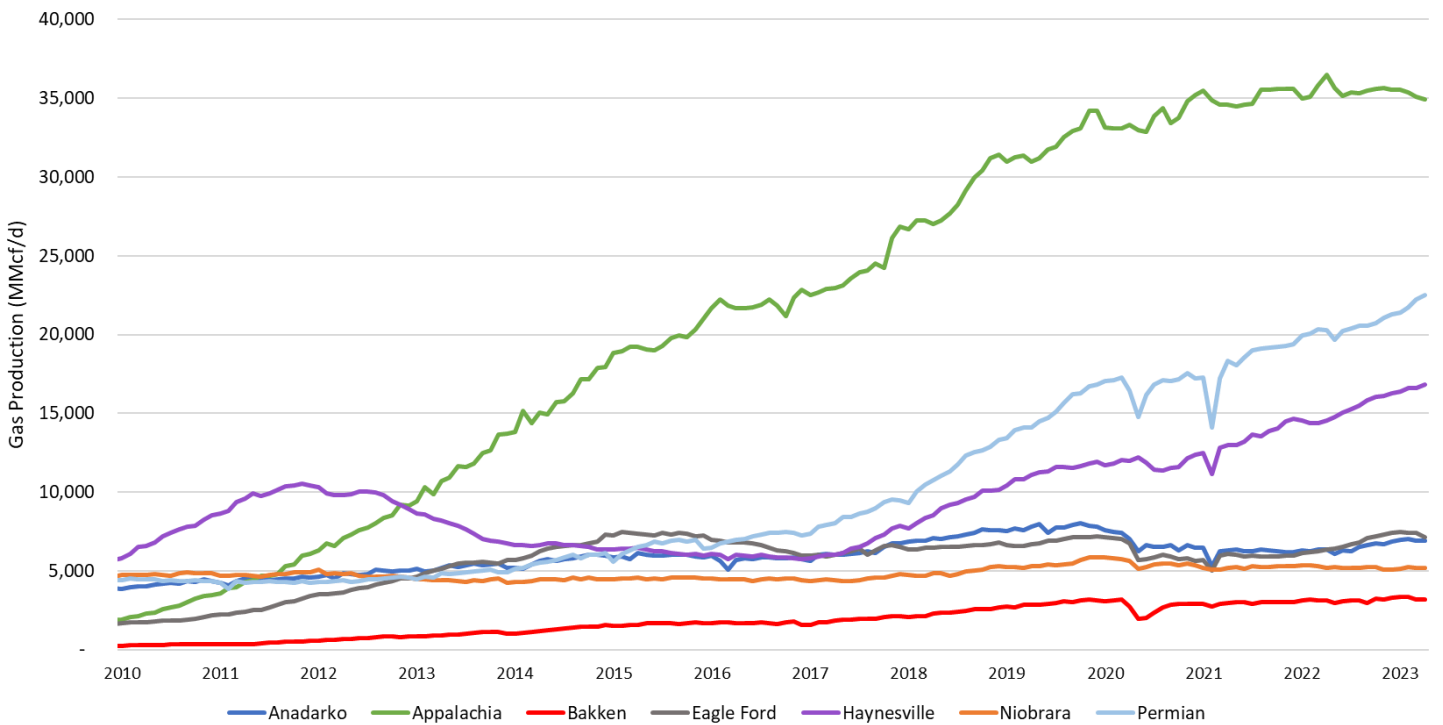
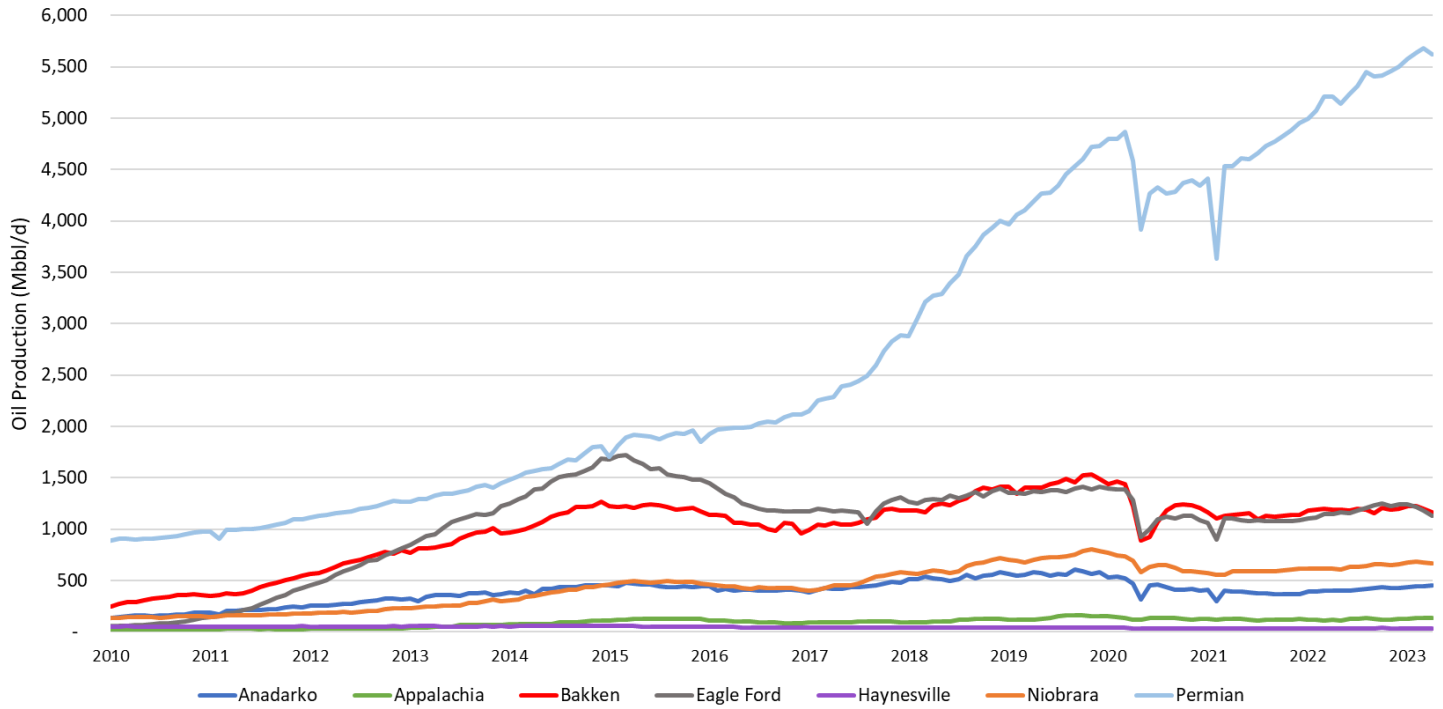
US DAILY CRUDE (MMbbl) & DRY NATURAL GAS PRODUCTION (MMcf)



*Source—Energy Information Administration, United States (EIA)



HISTORICAL PRODUCTION OF SELECTED US SHALE REGIONS



*Source—Energy Information Administration, United States (EIA)



UPCOMING EVENTS

April 2023

<u>World Oilman's Minerals & Royalty Conference (MARC)</u>	April 10-11	Houston, TX
<u>HBA & HPF Spring Social</u>	April 13	Houston, TX
<u>Small Steps Wine Classic</u>	April 19	Houston, TX
<u>2023 World Oilman's Poker Tournament</u>	April 26-28	Las Vegas, NV
<u>World Oilman's Tennis Tournament (WOTT)</u>	April 26-29	Houston, TX
<u>Houston Producers Forum/SPE Fourth Annual Crawfish Boil</u>	April 27	Houston, TX

May 2023

<u>Offshore Technology Conference 2023</u>	May 1-4	Houston, TX
<u>Her Justice Annual Photography Auction + Benefit</u>	May 9	New York , NY
<u>Energy Valuation Conference</u>	May 11	Houston, TX
<u>North American Petroleum Accounting Conference</u>	May 18-19	Dallas, TX
<u>DUG Permian Basin & Eagle Ford Conference & Exhibition</u>	May 22-24	Fort Worth, TX

June 2023

<u>Society Of Petroleum Evaluation Engineers (SPEE) Annual Meeting</u>	June 17-20	Newport, RI
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July 2023

<u>Banff Energy Summit</u>	July 12-14	Banff, Alberta, Canada
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*Denotes an Opportune Sponsored Event



ABOUT RALPH E. DAVIS ASSOCIATES

Ralph E. Davis Associates LLC (RED) is an industry-leading petroleum engineering and geosciences firm committed to satisfying the individual needs of clients. We accomplish this by holding ourselves to the highest standards of integrity and professionalism to deliver honest, direct and actionable insights to help clients achieve their strategic objectives. We distinguish ourselves by combining reservoir engineering, geoscience evaluation techniques and advanced data analytics with economic analyses to provide our clients with individual, customized solutions.

Banks, bondholders, private equity firms, financial institutions and law firms around the world trust in RED's diverse services and unrivaled upstream oil and gas expertise to deliver comprehensive solutions that help clients make informed decisions. We add value to every engagement by employing a team approach, leveraging Opportune LLP's experienced bench of experts in transactional due diligence, tax advisory, investment banking, restructuring and valuation.

We offer technical and economic analyses to deliver our clients a complete, independent, accurate and detailed assessment of the value of their assets. We apply a robust set of technical capabilities to assist our clients. Our capabilities include:

- Reservoir engineering and geosciences
- Economic forecasting and reporting
- Data analytics and geospatial analysis

KEY CONTACTS



Steve Hendrickson is the President of Ralph E. Davis Associates, an Opportune LLP company. Steve has over 35 years of professional leadership experience in the energy industry with a proven track record of adding value through acquisitions, development and operations. Steve is a licensed professional engineer in the state of Texas, and holds an M.S. in Finance from the University of Houston and a B.S. in Chemical Engineering from The University of Texas at Austin. He recently served as a board member of the Society of Petroleum Evaluation Engineers (SPEE) and is a registered FINRA representative.



John Beaird is Vice President of Ralph E. Davis Associates, an Opportune LLP company. John has 39 years of oil and gas management, reservoir engineering, and petroleum economics evaluation experience. Recent relevant experience includes the Permian, Western Gulf, Tx-La-Miss Salt, Mid-Continent, Denver-Julesburg, Wind River, Williston Basin, and Appalachian Basins. John is a registered Petroleum Engineer in the State of Texas and holds a B.S. in Petroleum Engineering from Louisiana Tech University. He is also an active member of the Society of Petroleum Evaluation Engineers (SPEE).



Yvonne Trujillo is a Senior Petroleum Engineer at Ralph E. Davis Associates, an Opportune LLP company. Yvonne has over 25 years experience in the oil and gas industry with extensive expertise in reserves engineering, SEC and PRMS/SPE reporting and economics and asset evaluation in conventional and unconventional reservoirs in the U.S. Lower 48. Yvonne earned a B.S. in Mechanical Engineering at Simon Bolivar University in Caracas, Venezuela and an M.S. in Petroleum Engineering at the University of Houston.



David Edwards is a Petroleum Engineer at Ralph E. Davis Associates, an Opportune LLP company. David has over three years of reserves engineering experience in conventional and unconventional reservoirs. Before RED, David was a Petroleum Engineer at a lower middle market A&D advisory firm where he handled the technical processes for marketed assets. He began his career with an operator in Dallas, where he contributed to its engineering, operations, and A&D teams. David holds an M.B.A. from The University of Texas Permian Basin and a B.S. in Petroleum Engineering from The University of Oklahoma.

