



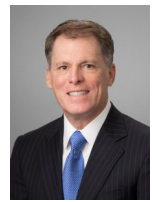
Weekly E&P Update

June 13, 2023

Vol. 23

Region 6 Addresses Issues with Class VI Applications

By Steve Hendrickson
President of Ralph E. Davis Associates



If you have followed the progress of Class VI injection well permitting (used for underground CO₂ storage), you are likely aware that the approval process can take several years. This is primarily due to the extensive list of required elements and the time needed to collect and analyze detailed subsurface data, conduct detailed reservoir modeling, and possibly perform a stratigraphic test to refine the geologic and reservoir models. Moreover, the EPA has faced staffing shortages, further contributing to the delay in approvals.

The EPA's permit application review process consists of two stages. The first stage is the Administrative Review, which ensures that all the necessary elements of the application are included. Once this stage is completed, the application proceeds to the Technical Review, where the technical content is evaluated for accuracy and completeness. Earlier this year, we observed that 30 applications were in the Technical Review phase across multiple EPA regions, and we have heard informally that around 40 additional applications may be in the Administrative Review phase. However, many applications seem to struggle to progress beyond the Administrative Review stage.

Recently, the Office of Underground Injection Control (UIC) in EPA's Region 6 provided guidance to Class VI applicants and others, highlighting the common deficiencies that hinder applications from passing the Administrative Review. Here is a brief summary of the identified issues:

Wellbore Search - The EPA refers to the project area's wellbores as Artificial Penetrations (AP). APs represent a significant leakage risk in CCS projects, and it is crucial to locate all of them and understand their mechanical condition. The EPA expects an exhaustive search for APs, including well records in public databases, old microfilms, aerial surveys, magnetic surveys, and more. Region 6 has issued an additional document providing further guidance on this topic.

AP Well Detail - Once the APs are identified, it is essential to summarize all the construction information related to each well, such as hole sizes, casing sizes, and plugging records. This task can be challenging for wells drilled in the early 1900s, particularly dry holes.

Data Issues - Some applicants have encountered problems related to incomplete submission of modeling files, confusing and inconsistent file naming conventions, and failure to load all the required data files into the designated EPA data repositories.

Mapping - The application necessitates the inclusion of at least one map that incorporates all the required elements from a lengthy list. While collecting all the elements is one aspect, ensuring they are legible on the map can be challenging.

Other Permits - The application mandates a comprehensive list of all permits and approvals, in addition to the UIC permit, that is required for the CCS project.

"Placeholder" Language - According to Region 6's letter, certain sections of the application tend to be written in general terms without providing sufficient details. They emphasize that each application section should be as detailed as possible and be a standalone document.

"Boilerplate" Information - Some applicants have submitted multiple applications with identical generic language in various sections. The EPA expects each application to be specific to the project and avoid using "boilerplate" language.

The guidance from Region 6 covers additional topics and provides more detailed information which cannot be fully summarized in our limited space. If you have yet to receive their guidance documents and would like a copy, please email me, and I will forward them to you.

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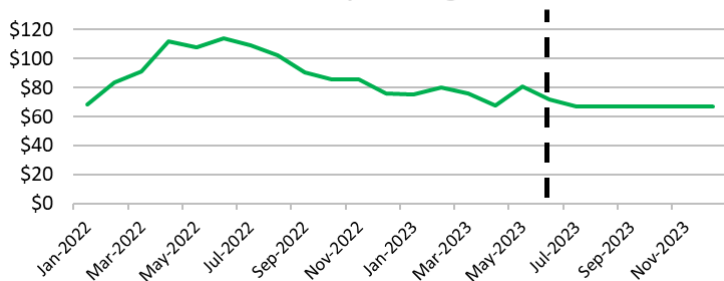
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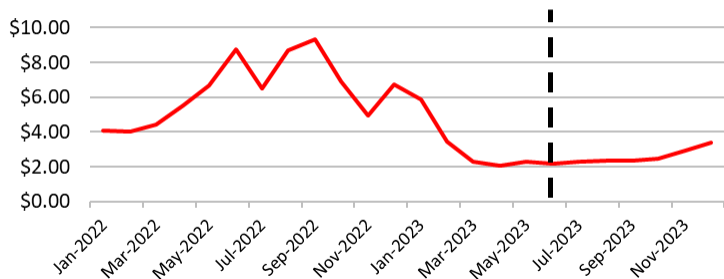


NYMEX FUTURE PRICING

WTI Spot Pricing



HH Spot Pricing



MONDAY'S MARKET CLOSE

NYMEX WTI CRUDE OIL FUTURES
as of June 12, 2023 Close (\$/bbl)

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$67.09	(\$4.62)	\$71.71	\$99.76
2024	\$65.19	(\$3.47)	\$68.66	\$87.20
2025	\$62.74	(\$2.55)	\$65.29	\$78.68
2026	\$60.69	(\$1.94)	\$62.63	\$72.79
2027	\$58.88	(\$1.42)	\$60.30	\$69.29

NYMEX HH NATURAL GAS FUTURES
as of June 12, 2023 Close (\$/MMBtu)

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$2.63	(\$0.03)	\$2.66	\$6.70
2024	\$3.40	(\$0.04)	\$3.44	\$5.33
2025	\$3.89	(\$0.07)	\$3.96	\$4.93
2026	\$3.91	(\$0.04)	\$3.95	\$4.82
2027	\$3.88	(\$0.05)	\$3.93	\$4.75

INDUSTRY METRICS—QUICK SNAPSHOT

	Current	Last Week	WoW Change	%Change
Crude Oil Near-Month Price (\$/bbl)	\$70.94	\$71.74	(\$0.80)	(1%)
Natural Gas Near-Month Price (\$/MMBtu)	\$2.32	\$2.16	\$0.16	7%
Weekly Upstream-Deal Transaction Value (\$MM)	\$0.00	\$1,840.00	(\$1,840.00)	(100%)
Weekly Number of Upstream-Deal Transactions	1	2	(1)	(50%)
Current Total US Rig Count	695	696	(1)	(0.1%)
US Field Crude Oil Production (MMbbl/day)	12.4	12.2	0.2	1.6%
US Field Dry Natural Gas Production (Bcf/day)	106.3	105.9	0.4	0.5%
Commercial Crude Oil Stocks-Excluding SPR (MMbbl)	459	460	(0.5)	(0.1%)
Natural Gas Stocks-Working Gas Underground Storage (Bcf)	2,550	2,446	104	4%
Total Drilled But Uncompleted Wells (DUC-Last Month)	4,863	4,863	0	-

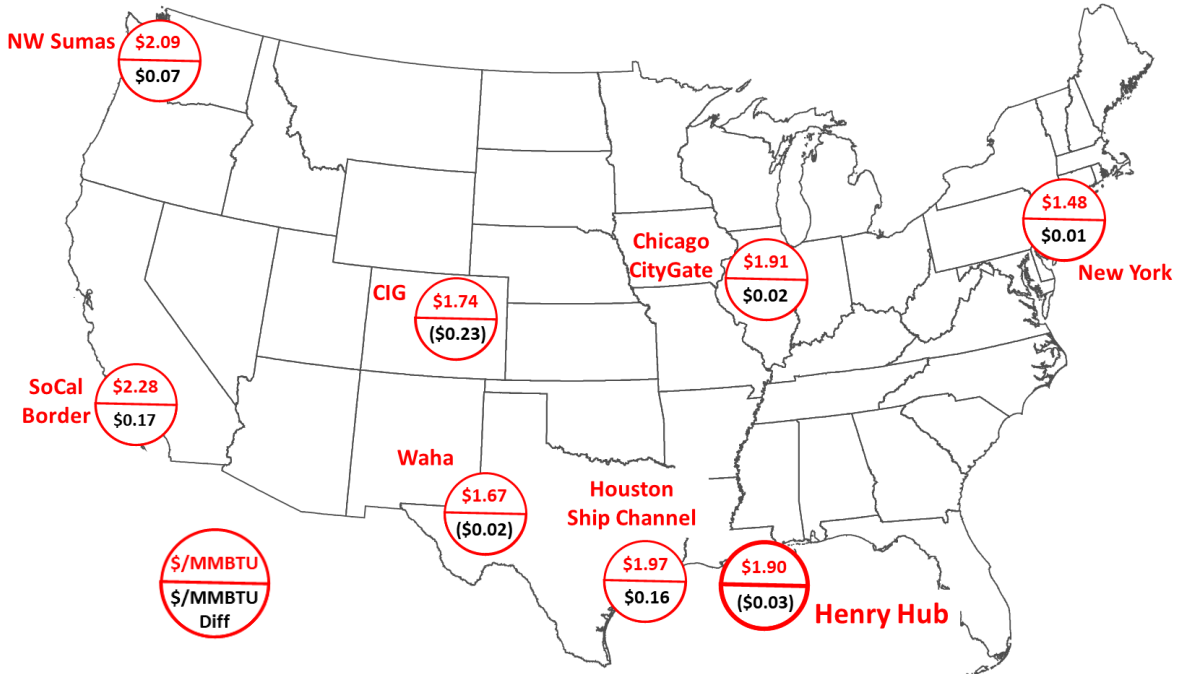
*Source—Energy Information Administration, United States (EIA)

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

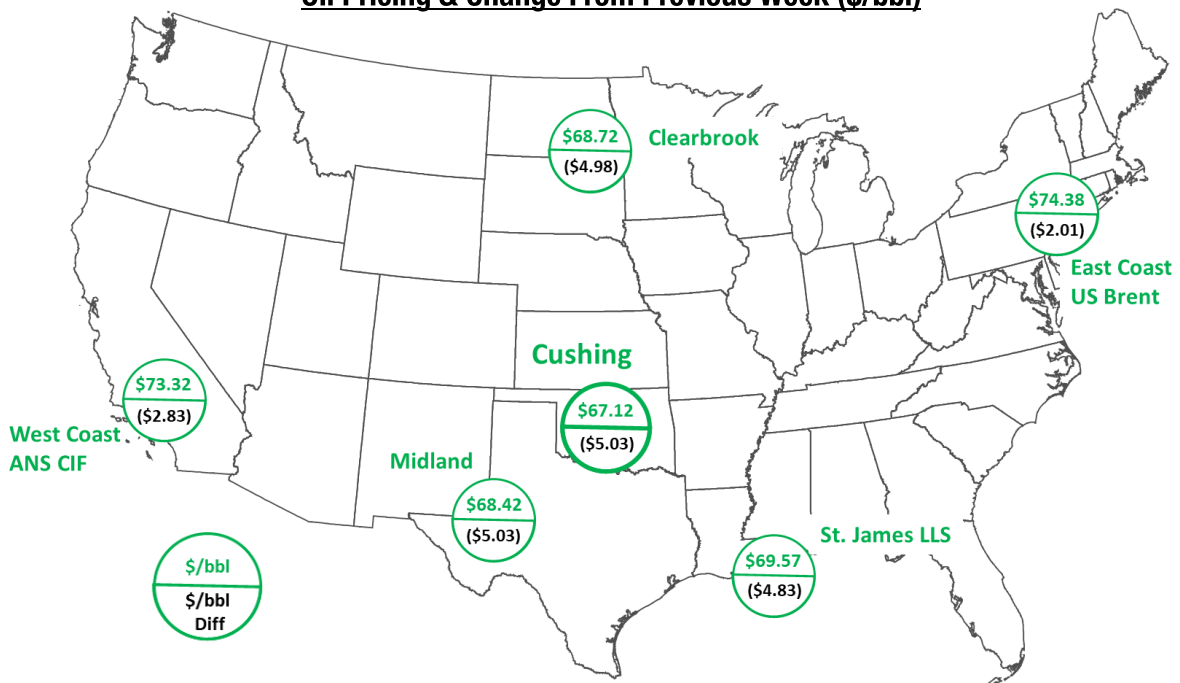


US COMMODITY PRICES CONTINUED

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



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



*Source—Bloomberg LP



SELECTED INDUSTRY HEADLINES

Goldman Sachs Slashes Oil Price Forecast By Nearly 10% As Russian Supply Recovers

Goldman Sachs analysts slashed their oil price forecast by almost 10% on the back of what they see as increasing supply and slower demand for crude.

Mixed Data Keeping Oil Markets On Edge

Oil markets have become highly volatile recently as traders try to make sense of a mix of both bullish and bearish drivers.

Aramco To Supply Full Crude Volumes To Asian Refiners Despite Production Cut

Saudi Aramco has assured at least five North Asian refiners that they will get the full crude volumes they had asked for in July.

Oil Traders Are Daring to Defy Market Kingpin Saudi Arabia (LOGIN CREDENTIALS REQUIRED)

Oil traders are starting to ignore the most important person in the market. It could prove a risky gambit.

U.S. To Purchase 3 Mmbbl For Emergency Reserve

The Energy Department announced recently it planned to purchase 3 million more barrels of crude oil for the Strategic Petroleum Reserve.

China Embarks On Drilling Campaign To Reduce Reliance On Imported Oil

A concrete expanse the size of Monaco jutting off China's southern coastline is the centerpiece in Beijing's efforts to slow its growing dependence on imported oil.

Venezuela's Secret Weapon A "Dark Fleet" Of Oil Tankers

Venezuela's oil vessel "dark fleet" has been pivotal in reviving its economy by facilitating the export of its oil in contravention of U.S. sanctions.

Pioneer Sees \$70-\$100 Oil As Supply Growth Remains Constrained

Constrained production growth will lead to moderately higher prices in the medium term according to shale giant Pioneer Natural Resources.

Generative AI Will Have Profound Impact Across Sectors

Generative AI will have a profound impact across industries. That's what Amazon Web Services (AWS) believes, according to reports, saying Amazon has invested heavily in the development and deployment of artificial intelligence and machine learning for more than two decades for both customer-facing services and internal operations.

Why the U.S. Electric Grid Isn't Ready for the Energy Transition (LOGIN CREDENTIALS REQUIRED)

The current system makes it hard to build the long-distance power lines needed to transport wind and solar nationwide.

Will Trudeau's Plan To Clean Up Canada's Oil Sands Work

Trudeau is coming under pressure for his plan to use CCS technology to clean up Canada's oil sands in his attempt to balance economic and environmental goals.

Engineer Raises Climate Science Above the Din

A retired petroleum engineer read the 2021 report on climate change from the UN Intergovernmental Panel on Climate Change and offers his insights on the complexities and nuances of climate science.



SELECTED RECENT TRANSACTIONS

Chord Energy Divests Permian Assets to Private E&P

Chord Energy is selling non-core acreage and wells, primarily in the Central Basin Platform, to private E&P BCP Resources, which is focused on developing and optimizing legacy assets.

Family Office-Led Private Consortium Acquires PureWest

PureWest Energy, LLC, a leading Rocky Mountain independent natural gas producer has completed an all-cash merger with a newly formed entity sponsored by a private consortium of family offices and financial institutions for a total consideration of \$1.84 billion.

PureWest Energy LLC Sells Producing Wellbores In Wyoming

As part of their recent transaction, PureWest Energy, LLC has closed on a divestiture of producing wellbores to investment vehicles managed by Wincoram Asset Management.

Chord Energy Announces Strategic Acquisition of Williston Basin Assets

Chord Energy Corporation today announced that a wholly owned subsidiary of Chord has entered into a definitive agreement to acquire assets in the Williston Basin from XTO Energy Inc. and affiliates, subsidiaries of Exxon Mobil Corporation, for total cash consideration of \$375MM, subject to customary purchase price adjustments.

Chevron Announces Agreement to Acquire PDC Energy

Chevron Corporation (NYSE: CVX) announced recently that it has entered into a definitive agreement with PDC Energy, Inc. (NASDAQ: PDCE) to acquire all of the outstanding shares of PDC in an all-stock transaction valued at \$6.3 billion, or \$72 per share.

Pompano Resource Transformation Acquires Gulf Coast Oil Field From Paloma Resources

Pompano Resource Transformation, a wholly-owned subsidiary of XMC Strategies, recently announced that it has acquired a Gulf Coast oil asset, including 33 operated oil wells, from Paloma Natural Gas, LLC, which is owned in part by Houston-based private equity firm EnCap Investments.

Southern Energy Corp. Announces Execution of a Purchase and Sale Agreement in Respect of a Synergistic - 400 Boe/D Asset Acquisition To Consolidate the Gwinville Field

Southern Energy Corp. is pleased to announce that it has entered into a definitive agreement with PetroTX Energy, LLC to acquire the remaining producing acreage in the Gwinville Field not already owned by the Company, in Jefferson Davis County, Mississippi for a cash purchase price of \$3.2 million.

Epsilon Announces A Second Transaction In The Permian Basin

Epsilon Energy Ltd. Recently reported an investment in Ector County, Texas with material follow-on development opportunities. The acquired assets are a 25% working interest in 12,373 gross acres on the Central Basin Platform, operated by a Midland-based private operator.

Trio Petroleum Corp. Signs Acquisition Agreement To Acquire Up To 100% Of Producing Asset

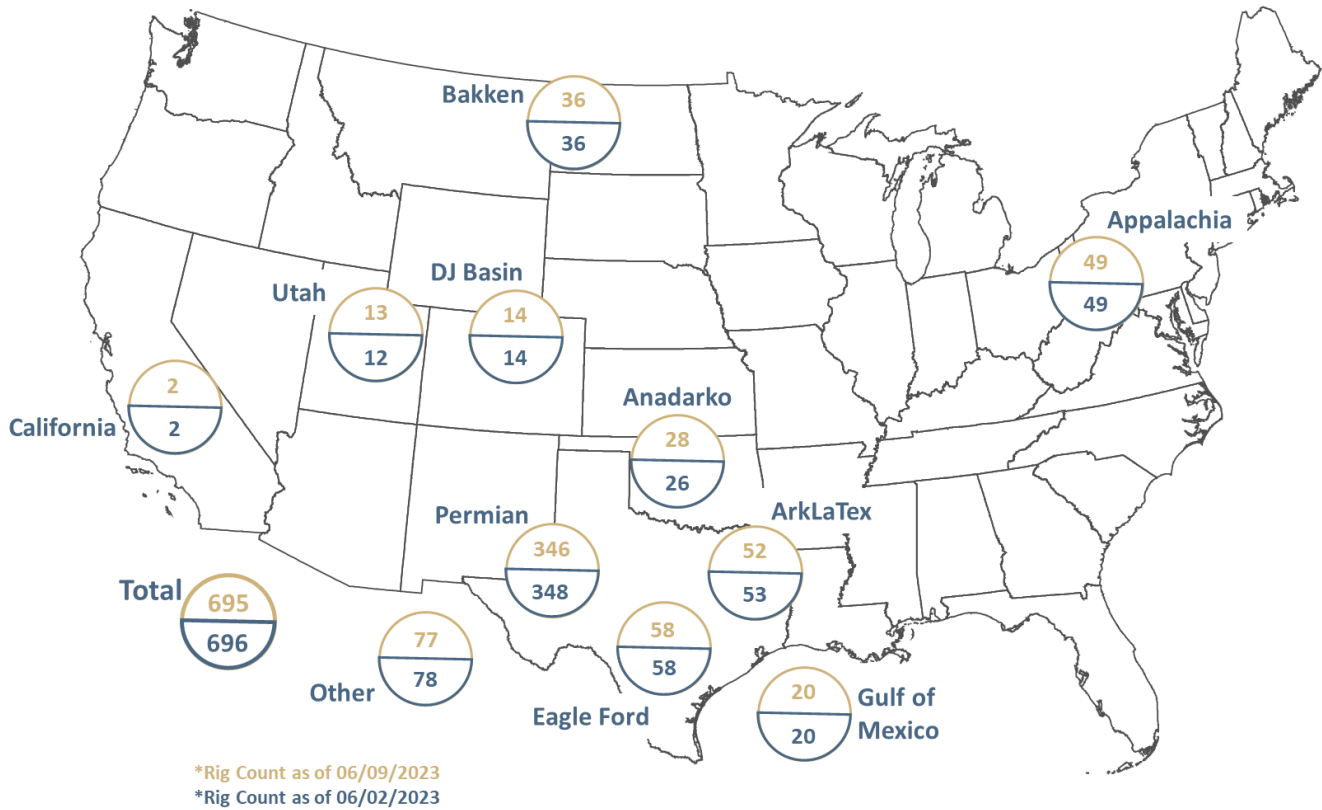
Trio Petroleum Corp. recently announced the signing of an Acquisition Agreement to potentially acquire up to 100% of the working interest in the Union Avenue Field located in Bakersfield, California.

Canada Energy Partners Announces Signing Of Participation Agreement With Wandoo Energy LLC For The Development Of The Kuester-Ochoa Project And Concurrent Unit Financing Of \$2M

Canada Energy Partners Inc. recently announced that they have determined that a lower capital cost acquisition opportunity will satisfy the current capital market appetite in the junior energy markets, so they have entered into a Participation Agreement with Wandoo Energy LLC, a Texas based oil & gas company.



RIG ACTIVITY BY US REGION

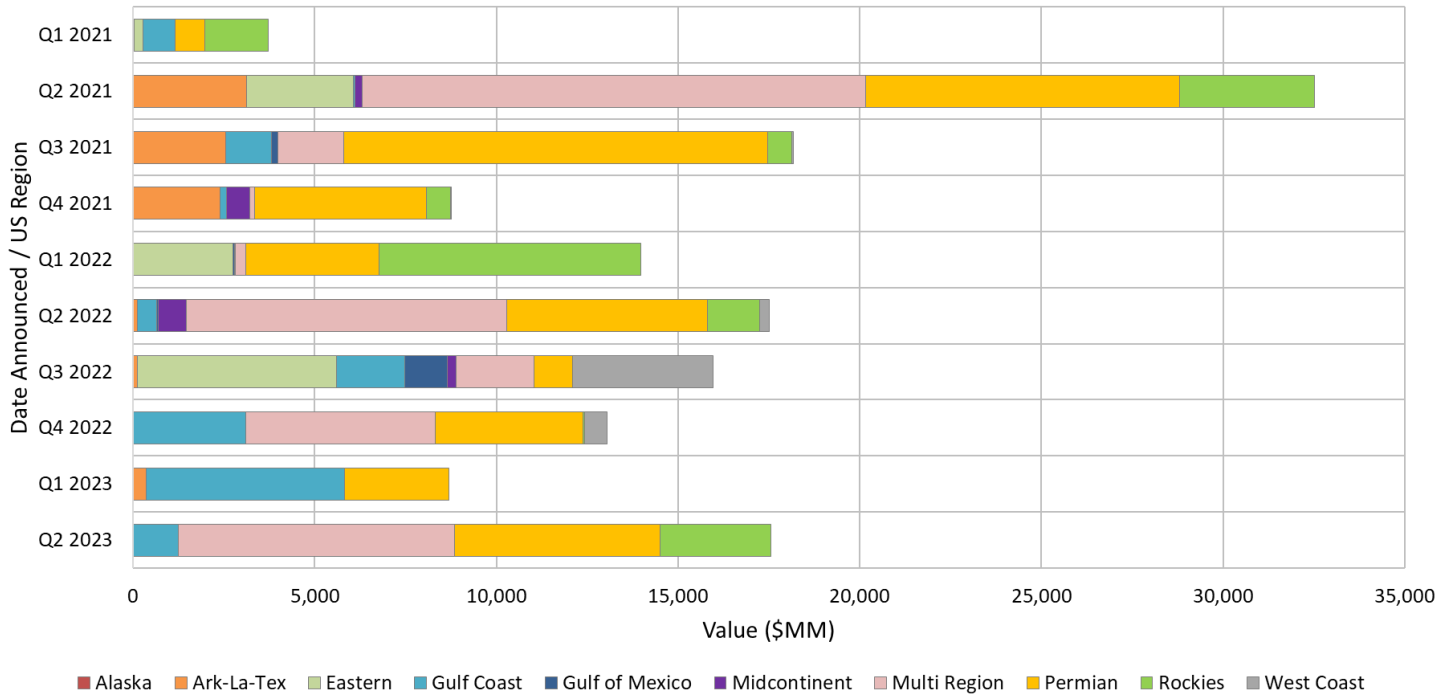


	Week Ending 06/09/2023			Week Ending 06/02/2023		Week Ending 06/10/2022
U.S. Rig Breakouts	Count	+/-	Count	+/-	Count	
Oil	556	1	555	(24)	580	
Gas	135	(2)	137	(16)	151	
Not Specified	4	0	4	2	2	
Directional	51	(1)	52	13	38	
Horizontal	625	(3)	628	(43)	668	
Vertical	19	3	16	(8)	27	
Land (Inc Others)	673	(1)	674	(42)	715	
Inland Waters	2	0	2	(1)	3	
Offshore	20	0	20	5	15	
US Total	695	(1)	696	(38)	733	

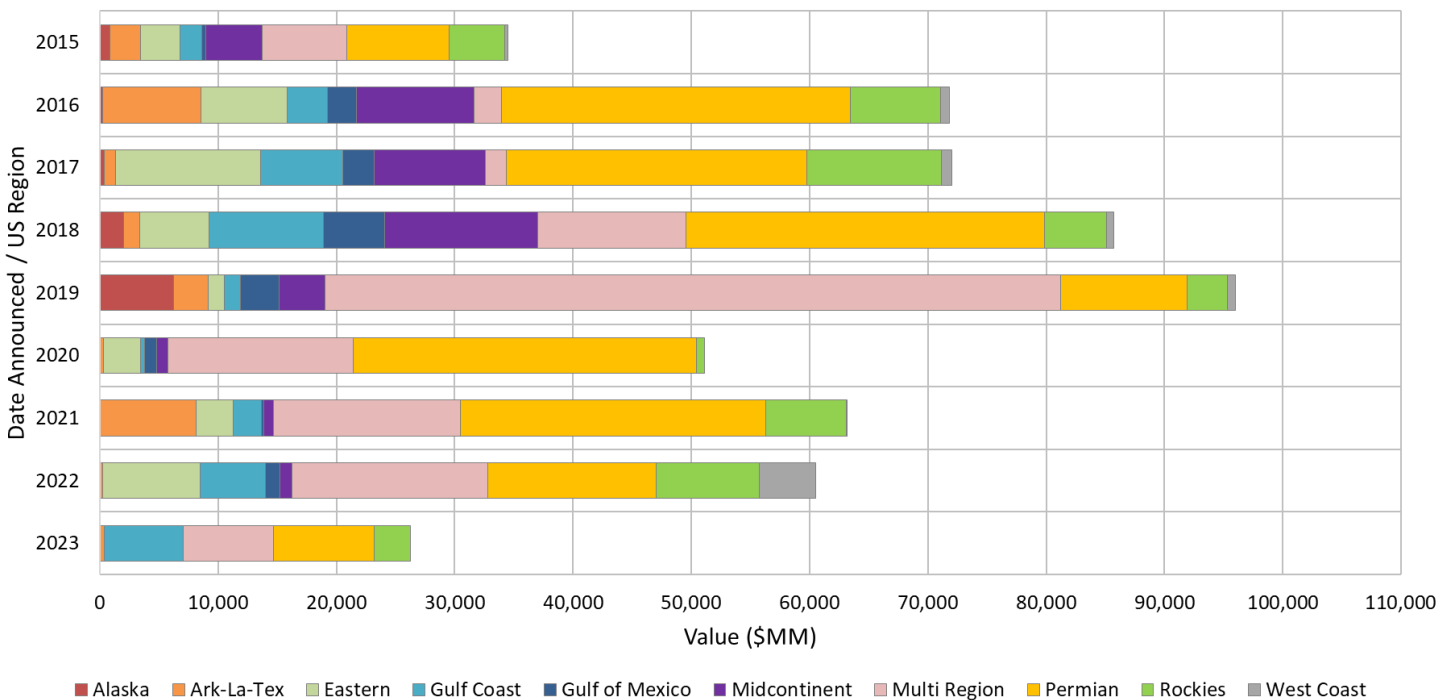
*Source—Baker Hughes Weekly Rig Counts



DEAL VALUE BY US REGION (BY QUARTER)



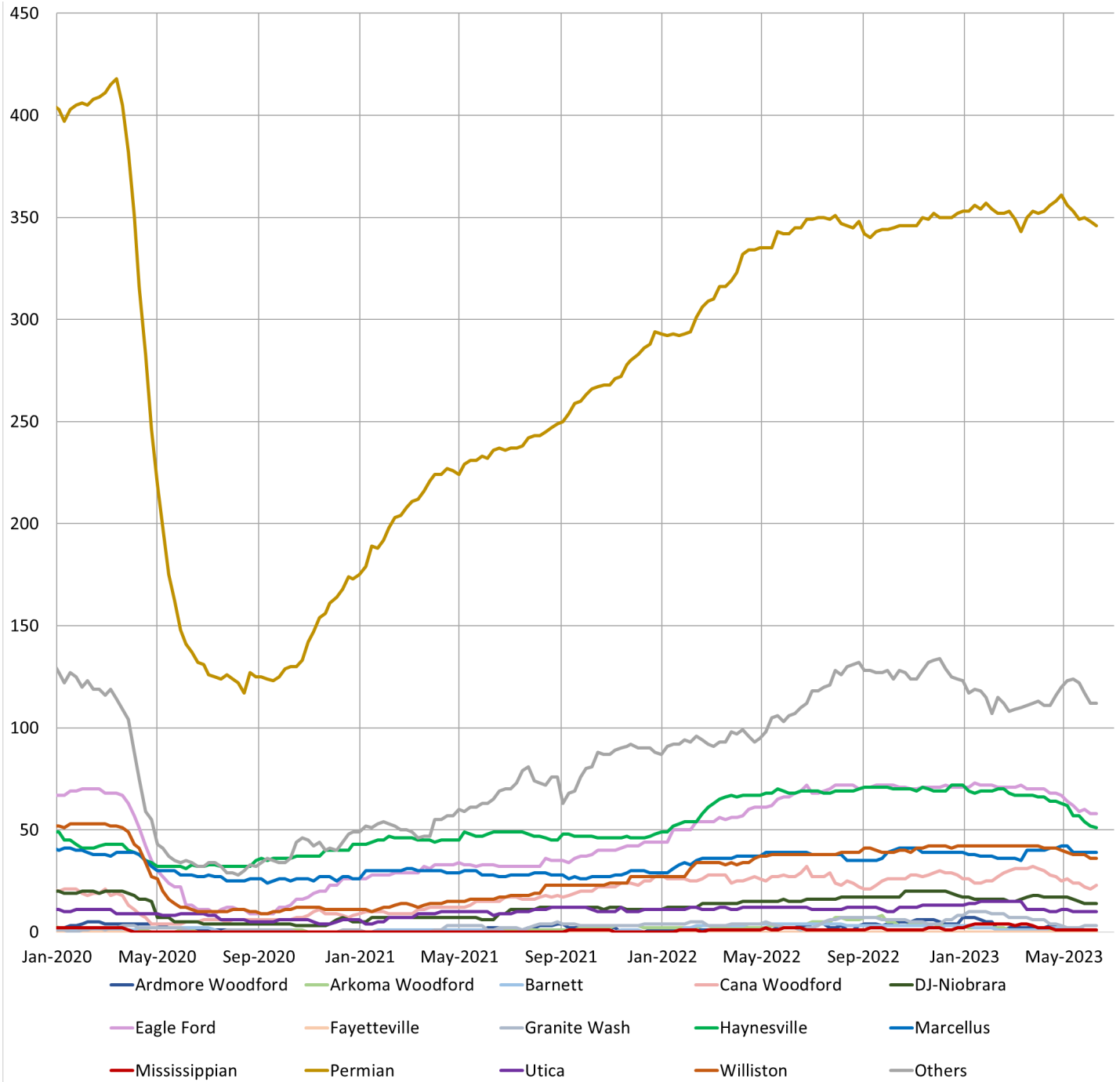
DEAL VALUE BY US REGION (BY YEAR)



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



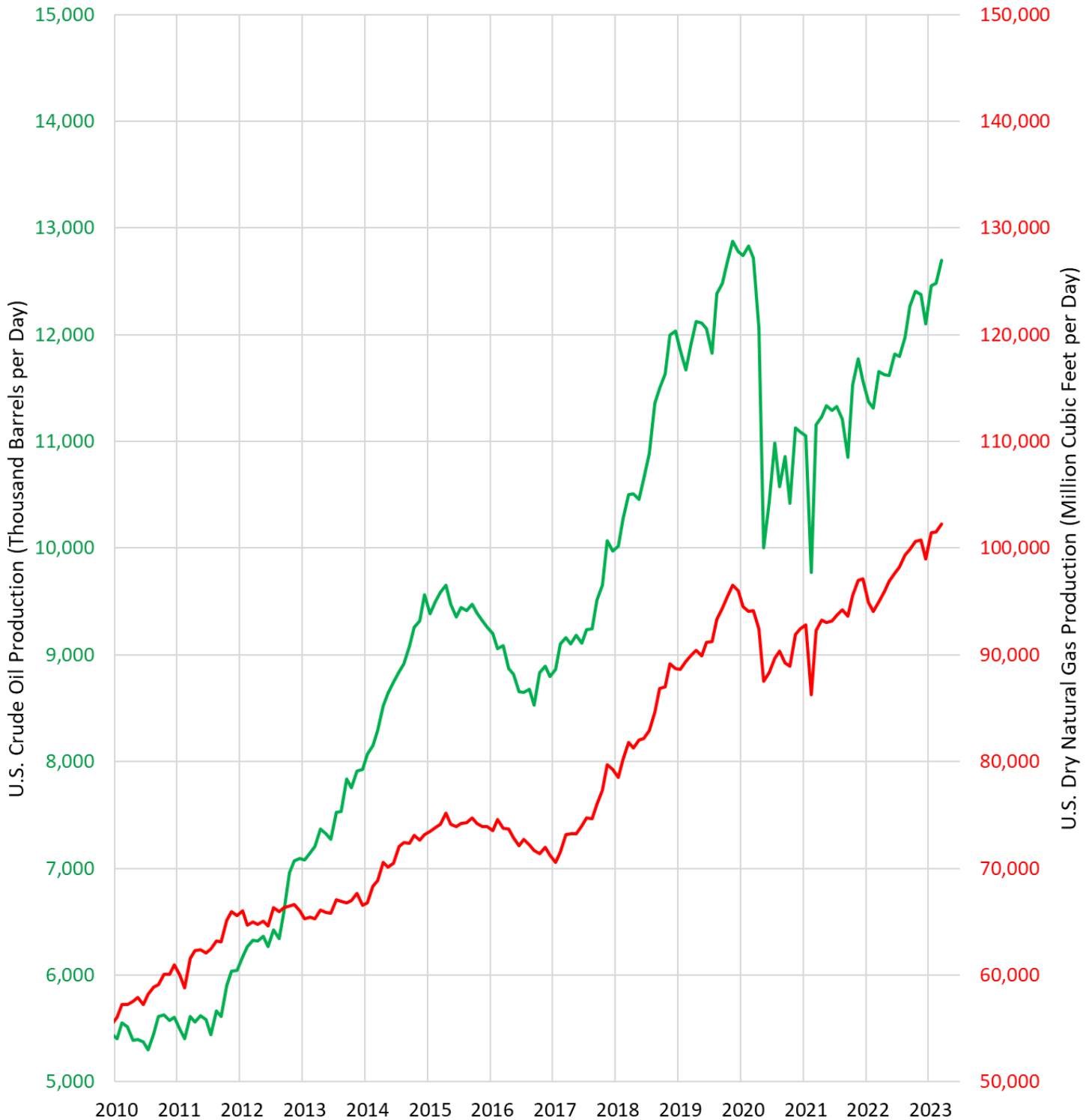
RIG ACTIVITY BY US REGION



*Source—Baker Hughes Weekly Rig Counts



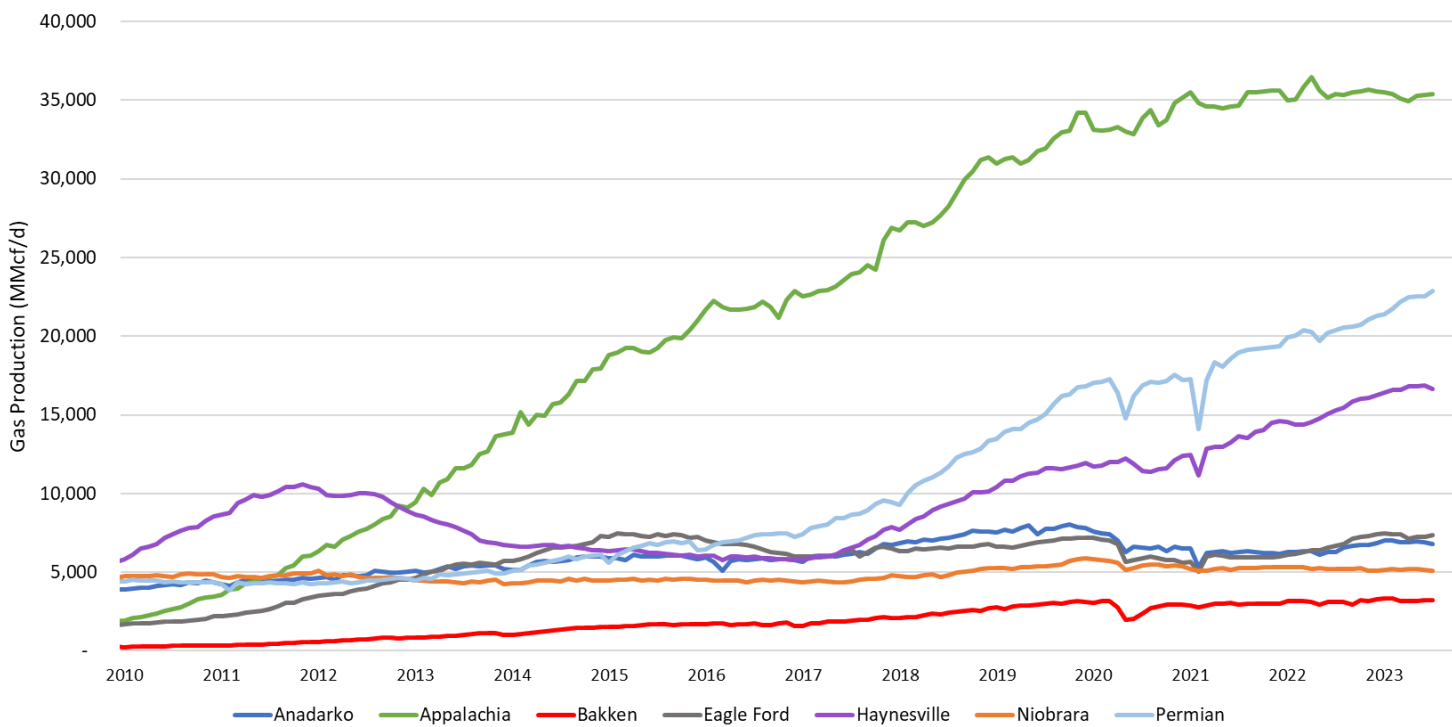
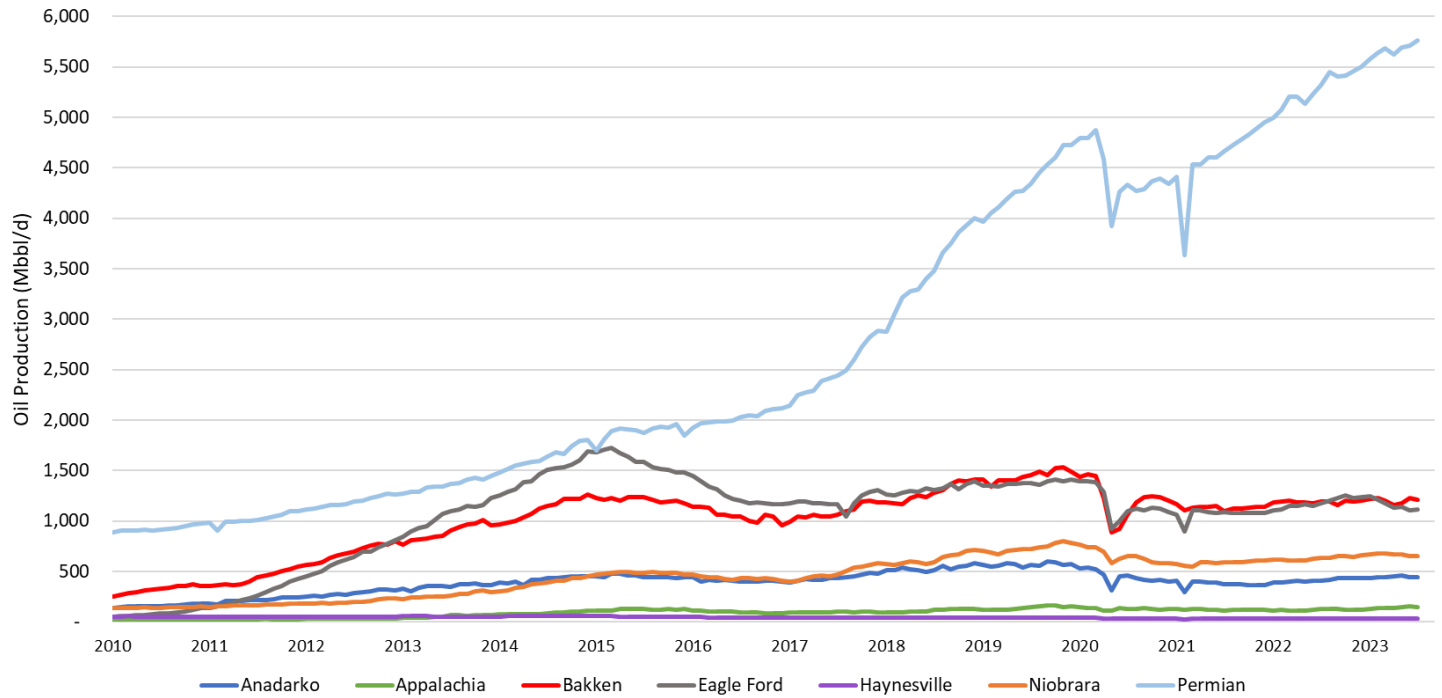
US DAILY CRUDE (MMbbl) & DRY NATURAL GAS PRODUCTION (MMcf)



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



HISTORICAL PRODUCTION OF SELECTED US SHALE REGIONS



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



UPCOMING EVENTS

June 2023

<u>Unconventional Resources Technology Conference (URTeC)</u>	June 13-15	Denver, CO
<u>Society Of Petroleum Evaluation Engineers (SPE) Annual Meeting</u>	June 17-20	Newport, RI
<u>Salesforce For Energy (with Opportune)</u>	June 22	Houston, TX
<u>Telluride Executive Series</u>	June 27-29	Telluride, CO

July 2023

Banff Energy Summit	July 12-14	Banff, Alberta, Canada
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August 2023

<u>Enercom Denver</u>	August 14-16	Denver, CO
<u>TXCPA Energy Conference</u>	August 25	Houston, TX

*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.

