Unconventional and Deepwater Developments have Transformed the U.S. Oil & Gas Supply

Since the early 2000s, the exploration and development of unconventional resources has transformed the oil and gas industry. This transformation has been driven by the discovery of large, tight oil and gas resources in various basins across the United States and beyond. The rise of hydraulic fracturing and horizontal drilling has enabled producers to extract previously undeveloped hydrocarbons from shale and other tight formations.

The unconventional revolution has not only transformed the supply outlook in the United States, but has also transformed the oil and gas companies developing the large resource. As a result, we've seen a dramatic shift in the reserve composition for many producers in a very short period of time.

As a result, we've seen a dramatic shift in the reserve composition for many producers in a very short period of time. The rise of unconventional resources has also led to a shift in capital expenditures toward liquid-weighted unconventional plays. As the oil-to-gas price ratio has remained at historically high levels, operators have been allocating a larger proportion of capital expenditures toward unconventional plays.

The continued focus on the Lower Tertiary and Miocene sub-salt portends both infill drilling and close-in exploration in order to offset field decline. The bulk of current production from the Gulf of Mexico (GOM) is in need of exploration and development to maintain production levels.

Examination of new well permit submissions across plays reveals a period of stagnation in the Miocene Sub-Salt and Lower Tertiary play areas remaining the hot spot for permitting activity in the post-Macondo era. Although other plays have seen sporadic permitting activity, the concentration of planned activity in the Miocene and the overlapping Miocene Sub-Salt and Lower Tertiary plays has accounted for close to 90% of total permits submitted in deepwater GOM. The decline in permitting activity in the Miocene Sub-Salt has been of concern, as it is responsible for the bulk of remaining GOM deepwater production.

Two plays — the Bakken Shale in North Dakota’s Williston Basin and the Eagle Ford Shale in Texas’s Gulf Coast Basin — have produced the most significant volumes and are each producing more than 1,000,000 b/d. Exploration and development continue in prospective basins across the US, with other play areas seeing only sporadic permitting activity. A number of new well permit submissions across plays reveals a concentration of planned activity in the Miocene and the overlapping Miocene Sub-Salt and Lower Tertiary play areas, accounting for close to 60% of total permits submitted in deepwater GOM. The decline in permitting activity in the Miocene play is in line with expectations, as it is responsible for the bulk of current production from the GOM deepwater and is in need of exploration and development to maintain production levels.

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Tight-oil development has led to the resurgence in North America’s oil production. Two plays — the Bakken Shale in North Dakota’s Williston Basin, and the Eagle Ford Shale in Texas’s Gulf Coast Basin — have provided the most significant volumes and are each producing more than 1,000,000 b/d. Exploration and development continue in prospective basins across the continent, although no play has yet yielded the commercial opportunities for growth found in the Bakken or Eagle Ford.

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Supply Transformation Economics

Once a play is delineated, resource play development is generally characterized by offering lower risk profiles than many conventional opportunities, and providing greater scalability for aggressive product growth. However, the range in breakeven economics for domestic tight-oil investments can differ significantly by play, and even within a play. Insight gathered using IHS tools such as IHS Fekete and IHS Enerdeq Browser combined with the forward-looking commercial analysis from IHS North America Supply Analytics aids operators in their search for the most prospective acreage within resource plays.

Two Plays Leading The Charge

Sub-Salt Miocene and Lower Tertiary Plays Fuel Growth in the Deepwater GOM

Analysis of permitting activity in the Gulf of Mexico (GOM) suggests the Miocene and the overlapping Miocene Sub-Salt and Lower Tertiary play areas remain the hot spot for permitting activity in the gulf over the longer term, with other play areas seeing only sporadic permitting activity. Examination of new well permit submissions across plays reveals a concentration of planned activity in the Miocene and the overlapping Miocene Sub-Salt and Lower Tertiary play areas, accounting for close to 60% of total permits submitted in deepwater GOM. The decline in permitting activity in the Miocene play is in line with expectations, as it is responsible for the bulk of current production from the GOM deepwater and is in need of exploration and development to maintain production levels.

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Transforming Reserve Compositions

Oil/Liquids F&D Additions, MMbbl

2009 – 2012 Liquid Weighted Reserve Compositions. Source: IHS Energy

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