

# VALUING OIL & GAS ASSETS:

## the Complexities and Key Considerations

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*Whether in court or out of court, in most restructuring situations involving stakeholders with various claims to a Company's assets, the valuation of these assets is a critical component. In restructurings involving oil and gas reserves, the valuation analyses are often more complex because of the technical data and skillset required to value these reserves.*

In the recent Sabine Oil & Gas and Energy XXI cases, stakeholders clashed over competing interests, and claims hinged on very different views of the value of the respective companies' assets. These cases highlight the importance of retaining professionals who fully understand the technical aspects of performing a valuation analysis on oil and gas assets, and who can also apply their experience in valuing these types of assets in order to tailor their assumptions and inputs to the unique characteristics of the specific assets associated with the restructuring. In the Energy XXI case, Loughlin Management Partners + Company ("LM+Co"), a boutique restructuring advisory firm based in New York, partnered with HJ Gruy and Associates, Inc. ("Gruy"), a petroleum engineering firm based in Houston, to provide a comprehensive valuation analysis on a specifically targeted

portion of the Company. This article outlines the general approach LM+Co and Gruy applied in their analysis, and also suggests several important considerations for teams attempting to value oil and gas assets.

Although valuing oil and gas assets is not necessarily more difficult than valuing other asset classes, valuing these types of assets requires a detailed understanding of the relative merits of traditional valuation methods. Valuing oil and gas assets, which comprise a depleting asset base where value is correlated to constantly changing commodity prices and historical production trends, demands a thorough understanding of the technical details included in a company's reserve database. Although commodity prices fluctuate, the value estimates of the underlying oil and gas assets

should be based on current conditions, and are not intended to reflect unforeseeable economic or environmental events that could alter the fair market value subsequent to the valuation date.

### The Market Approach and Income Approach

When estimating the value of a company or a group of assets, both a Market Approach and an Income Approach should be employed, and this holds true when estimating the value of oil and gas assets. A Market Approach, such as a Comparable Company Analysis or Precedent Transactions Analysis, provides the relative value of the target assets based on how investors price similar assets. The Market Approach provides an estimate of value based on external information related to the subject company. An Income Approach, such as a Discounted Cash Flow ("DCF") Analysis or, specifically when valuing oil and gas assets, a Net Asset Value ("NAV") Analysis, provides an estimate of value based on internal information from the company, specifically the projected cash flows attributable to the target assets. It is key to recognize, when utilizing any of these methodologies, that there are relative merits and limitations associated with each, and these merits and limitations are magnified by the financial detail available in each unique situation.

A Market Approach provides an estimate of value based on how investors price similar assets by using a multiple on a common metric. Although sales, free cash flow, and EBITDA are commonly used metrics in this approach, the metric need only be observable, not necessarily financial. Care needs to be exercised when selecting the metric for a Market Approach valuation.

The most common and widely accepted method to value an oil and gas company is a Net Asset Value Analysis, and nearly every valuation estimate for oil and gas assets will include a NAV. However, relying solely on the results of a NAV analysis leaves the estimate of value susceptible to some potential shortcomings of this method. Although a NAV Analysis is essentially a very

detailed DCF Analysis which includes very specific information on the selected oil and gas reserves, all of the other methods mentioned above should be considered and evaluated when performing a valuation analysis on oil and gas assets. The quality of the data available will ultimately dictate which methods to use and the appropriate weighting of each method.

and risk<sup>3,4</sup>. In the Energy XXI case, it is important to note that, although there were no other comparable publicly traded companies operating in the shallow waters of the Gulf of Mexico, other onshore oil and gas companies contained cash flows, growth potential and risk profiles similar enough to be used to estimate how the market would likely value the Energy XXI assets.

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### Comparable Company Analysis

A Comparable Company Analysis looks at publicly-traded, comparable companies and calculates a valuation using multiples of financial data based on the Total Enterprise Value ("TEV", the combined value of the equity and the debt, net the cash on the balance sheet) of the chosen comparable companies. This approach provides the public market view on the value of similar companies or assets, but may be limited by the subjectivity inherent in trying to determine the relative similarity of the "comparable companies". Comparable Company Analysis is recognized and well received by the US Bankruptcy courts. Two notable recent cases that included this method were Penn Virginia<sup>1</sup> and Swift Energy<sup>2</sup>.

When using the Comparable Companies approach, the selection of the comparable companies is critical. Finding companies that are similar or nearly identical would be ideal when applying this approach; however, it is typically very difficult to find such companies. An important consideration when using a comparable company valuation analysis is that a comparable firm need not be identical, in all aspects, to the subject company. Rather, the key requirements are that a comparable firm have similar cash flows, growth potential

### Precedent Transactions Analysis

A Precedent Transactions Analysis looks at companies comparable to the target company that were recently bought or sold and uses a multiple based on the purchase price to estimate the value of the target. This method is also susceptible to subjectivity of how "comparable" is defined, as well as the availability of information regarding recent and relevant transactions. To apply a Precedent Transactions Analysis, a multiple must be defined. Although earnings based multiples such as revenue or EBITDA generally provide the best indication of value, the multiple can be based on any observable, relevant metric. When valuing an oil and gas company, daily production may be a sector-specific metric on which to base a valuation. Regardless of the metric selected, this metric needs to be defined clearly and applied consistently across the transactions.

As critical as company selection is to Comparable Company Analysis, so too is transaction selection in a Precedent Transactions Analysis. The transaction must stand up to the same level of scrutiny as the companies chosen for a Comparable Company Analysis. Recently acquired companies identical to the target would

be ideal, but the data on acquisitions may be limited compared to the abundance of public market data. Because of this, a longer time frame is typically acceptable for Precedent Transactions Analysis. The characteristics of each transaction need to be carefully reviewed and understood to ensure the metrics used and multiples applied are consistent across each transaction. Often times the reported consideration includes contingencies and considerations that can significantly alter the calculated value and this information should be taken into account as part of the Precedent Transactions Analysis.

### Discounted Cash Flow Analysis

The traditional and most widely accepted Income Approach method is a Discounted Cash Flow Analysis. In the oil and gas industry, though, this is largely replaced by a NAV analysis. A DCF typically discounts the future projected annual aggregate free cash flow of the entire company. It requires a detailed understanding of the company and its economics. A Weighted Average Cost of Capital ("WACC") reflective of the risk of the projected cash flows must also be calculated. Because a DCF analysis requires a complete understanding of the underlying assumptions used in the cash flow projections, without full access to company's management, there may be limited opportunity to examine and audit the underlying assumptions. This is the most significant limitation of a traditional DCF analysis.

### Net Asset Value Analysis

A Net Asset Value Analysis determines the value based on the subject company's reserves and is the standard approach for oil and gas assets<sup>5</sup>. This method provides a detailed discounted net cash flow analysis that extends over the life of each property. To apply the NAV Analysis method, cash flow for individual wells or multi-well projects is forecast based on the projected income from the sale of produced oil, natural gas and natural gas liquid. Operating expenses, local production taxes and future capital requirements are included for each well, multi-well project and platform. The projected discounted net cash flow extends over the life of each entity, which may be up to thirty years from the effective date.

Net cash flow projections for the individual entities can be generated using the commercially available ARIES Petroleum Reserves and Economic Software with a provided ARIES Database. Aggregate net cash flow summary forecasts for the various hydrocarbon reserve categories are generated and used as the base for subsequent risk adjustment factor application, resulting in value determination. During the forecasting, minor changes and additions may be required in order to adjust for property reserve categorization or additional costs. In a low price environment, reserves data may not include critical wells or other assets due to economic write-offs, which could be temporary, but profitable if commodity prices increase. Inclusion of additional costs such as Asset Retirement Obligations (ARO), Lease Operating Expenses (LOE), and General and Administrative (G&A) costs is required to account for recognized expenses that are not included in an original ARIES Database. The costs can be incorporated within the primary forecasts or outside of the cash flow projections. Incorporation within the forecasts forces a more accurate economic limit on each projected property, typically resulting in a more correct forecast.

The prices used to project the cash flows are typically based on the West Texas Intermediate crude oil prices and Henry Hub natural gas prices. The applied price projections are based on NYMEX futures and should be selected as close to the valuation date as is reasonable to ensure the forecast takes into account the current market views. Because the valuation is based on current market sentiment, the NAV approach may not be an accurate indicator of Total Enterprise Value when the market prices are set near cyclical peaks or troughs. Additionally, because projected commodity prices are one of the strongest drivers in the computation of a NAV analysis, a sensitivity case should be presented wherein a completely independent crude oil and natural gas price forecast, such as the one available from the U.S. Energy Information Administration (EIA), is applied. Cash flows generated from the reserves and price forecasts are discounted using a WACC and then adjusted using Risk Adjustment Factors ("RAFs"). Adjustment is needed to

account for the uncertainty associated with distinct reserve categories. The adjustment procedure is accomplished by applying an individual RAF to the discounted net present value for each reserve category. This method is well established in the oil and gas industry when performing a NAV approach to valuation. Three different sets of RAFs can be applied to generate low, mid and high market value estimates.

Despite its ubiquity in the oil and gas industry, the NAV analysis has limitations that can significantly alter the derived value of oil and gas assets. A NAV is only as accurate as the underlying reserves data and assumptions. An incomplete database or incorrectly applied RAFs can produce unreliable valuation estimates and ultimately have devastating consequences for investors. Additionally, the NAV approach may not be a good indicator of Total Enterprise Value when the "strip price" (pricing derived from the forward NYMEX curve) is set near cyclical peaks or troughs.

Risk Adjustment Factors used in a NAV analysis should also be vetted carefully. Applicable RAFs are dependent on circumstances and quality assessments surrounding a particular oil and natural gas property or portfolio of properties. The application of standardized RAFs, such as those from the Society of Petroleum Evaluation Engineers ("SPEE") Annual Survey of Parameters used in Property Evaluation ignore the intricacies of NAV analysis. Notably, SPEE itself warns that the information in the Survey is limited in scope, possibly lacks real world detail and likely reflects biases based on individual respondent's personal experience<sup>6</sup>.

### Understanding both the Science and the Art of Oil and Gas Valuation

Valuation is an inherently complex and imprecise process. The Market Approach (Comparable Company Analysis or Precedent Transactions Analysis) provides an estimate of value based on external information to arrive at a relative value. The Income Approach (Net Asset Value Analysis or a traditional Discounted Cash Flow Analysis) provides an estimate of value based on internal information from the subject company and attempts to arrive at an intrinsic

value. Ideally, one should perform a thorough analysis using all of the accepted valuation methodologies to arrive at a comprehensive view of value. In practice, however, the quality of data available and the circumstances will dictate which methods to use. Based on the relative merits and limitations of each, not all approaches may be appropriate in each instance. Every effort should be made to combine the estimates of value derived from a Market Approach with the estimates of value derived from an Income Approach in order to estimate the value using both internally (company-specific) generated information and externally (market-specific) generated information. In a November 2012 publication on applying fair value measurement, Ernst & Young noted that

"The fair value of a business is often estimated by giving consideration to multiple valuation approaches; such as an income approach that derives value from the present value of the expected future cash flows specific to the business and a market approach that derives value from market data" (Ernst & Young Publication – November 2012 Fair Value Measurement, IFRS 13 Fair Value Measurement)

We believe this guidance holds true when valuing oil and gas assets, particularly when the valuation analysis is part of an overall restructuring plan. Whether in court or out, stakeholders should strongly consider retaining advisors/professionals who understand the complexities and technical issues unique to the oil and gas industry and relying on their experience and expertise. Hiring valuation professionals well-versed in both the science and the art of valuing oil and gas assets is a critical component of a stakeholder group's ability to achieve a favorable outcome.

## ABOUT THE AUTHORS



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Aaron Kibbey is a Managing Director at Loughlin Management Partners with more than 20 years' management experience in operations, restructuring, corporate finance, sales and marketing, business development, and mergers and acquisitions. Aaron also has significant experience serving in crisis management positions within companies facing operational and financial challenges. Through his education and professional experience, Aaron has developed expertise in valuing businesses in various industries, including oil and gas, media and entertainment, and telecommunications.



### Robert Rasor

Robert Rasor is the Executive Vice President and Manager of Engineering of H. J. Gruy and Associates, Inc. With more than 30 years of experience in oil and natural gas valuation, Robert has performed hundreds of oil and natural gas valuations, and has served as an expert witness in numerous national and international litigation and arbitration proceedings.



### Brian Bostwick

Brian Bostwick is an Associate at Loughlin Management Partners with experience in financial restructuring and process improvement. He graduated with honors from Northeastern University.

<sup>1</sup>Expert Report of Richard Margner, Jefferies LLC, Penn Virginia Case 16-32395-KLP Doc 438 filed July 18, 2016

<sup>2</sup>Swift Energy Company Valuation Analysis, Case 15-12670-MFW Doc 244-5 filed February 5, 2016

<sup>3</sup>Damodaran, Aswath. Damodaran on Valuation, Security Analysis for Investment and Corporate Finance, Second Edition, John Wiley & Sons, Inc., 2006. Print.

<sup>4</sup>Pratt, Shannon. Valuing a Business, The Analysis and Appraisal of Closely Held Companies, Fifth Edition, The McGraw Hill Companies, Inc., 2008. Print.

<sup>5</sup>Sinha, M.K. and Poole, A.V., "Selection of a Discount Rate or Minimum Acceptable IRR", SPE Paper 16843, Proceedings of the 1987 SPE Annual Technical Conference and Exhibition, Print.

<sup>6</sup>SPEE. "Society of Petroleum Evaluation Engineers Thirty-Third Annual Survey of Parameters Used in Property Evaluation," June 2014

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