

Evaluation of a Lessee's Ability to Carry out Present and Future Obligations

CFR Title 30, Chapter II, Subchapter A, section §556.901(d)(1)

Table of Contents

Executive Summary	3
Background	3
Timing and Priority Guidelines for Additional Security	4
Determination of the Financial Capacity of a Lessee	5
Use of Financial Ratios	7
Financial Capacity	9
Short-Term Financial Capacity – Liquidity and Coverage Ratios	9
Long-Term Financial Capacity – Leverage and Performance Ratios	9
Selected Financial Metrics and Rationale	10
Definitions of Financial Metrics Selected	10
Application of Metrics in Financial Capacity Model	13
Benchmark for Each Ratio	13
Minimum Number of Benchmarks for Self-Insurance	14
Assessment of the Remaining Four Criteria	15
Projected Financial Strength	15
Business stability	18
Reliability	19
Record of Compliance	22
Conclusion	24
Appendix A - Overview of Financial Capacity Analysis	25
Appendix B – Deloitte Credit Model(s)	27
Appendix C – Impact Analysis of Financial Ratios	28
Appendix D – Valuation of Proven Reserves	31
Appendix E – Financial Ratios	33
Appendix F – Scoring Model (Snapshot View)	34
Appendix G – Maximum Self-Insurance of 10% of Tangible Net Worth	35

Executive Summary

This paper provides a summary of the changes proposed by the Notice to Lessees (NTL) on “Requiring Additional Security” and presents the evaluation criteria for a lessee’s ability to carry out present and future obligations. Based on its evaluation, Risk Management will provide a recommendation to the Regional Director(s) on the level of additional security¹ required.

The proposed evaluation criteria and scoring methodology outlined in this paper are consistent with the regulations for assessing a lessee’s ability to meet its current and future obligations and will continue to be based on the five criteria set forth in 30 CFR §556.901 (d).

Background

The proposed “Requiring Additional Security” Notice to Lessees (NTL) will include the following four changes:

- Updates to evaluation processes for the five criteria set forth in 30 CFR § 556.901 (d).
- Lessees will no longer be granted “waivers” for additional security obligations. These “waivers” had the effect of also waiving the additional security obligation for any co-lessees on a property and these co-lessees will also no longer be “waived.” However, co-lessees may be permitted to rely on the self-insurance of another co-lessee who has qualified to use self- insurance, by arranging such reliance among themselves and reporting the arrangements to BOEM.
- Lessees will be evaluated for self-insurance regardless of their net worth, though the current self-insurance upper limit of 50% of a lessee’s net worth will be changed to a maximum of 10% of a lessee’s tangible net worth.²
- A lessee’s liabilities may be categorized by risk exposure and different categories may have different timing requirements to provide financial assurance. For example, only lessees with a specified minimum credit rating may use self-insurance on leases or other properties on which there is only one party who is liable for decommissioning.

While BOEM’s criteria for evaluating a lessee’s ability to meet its current and future obligations will continue to be based on the five criteria set forth in 30 CFR § 556.901 (d), the process to evaluate each of the five criteria will be modified as described within this document.

Another policy change in the proposed NTL is the elimination of “waivers.” Per current practice under the existing NTL (2008-N07), a lessee that passes established financial thresholds may be waived from providing additional security to cover its decommissioning liabilities and no co-

¹ Additional security was also known as supplemental bonding, but the term “supplemental” was removed from 30 CFR § 556.901 when “Leasing of Sulfur or Oil and Gas in the Outer Continental Shelf” was published (Federal Register Vol. 81, No. 61, Wed, March 30, 2016).

² See Appendix G for further discussion and the rationale for selecting 10% as the upper limit.

lessees of a waived lessee would be required to provide additional security for the decommissioning liability for that lease. Moreover, the decommissioning liability on a lease on which there are two waived lessees is not attributed to any lessee; the liability is effectively "zeroed-out" or ignored. Eliminating waivers will eliminate this lack of transparency because BOEM will have a record of all decommissioning liability and the rationale for its determination that adequate security is in place.

Under the proposed NTL, any lessee with liabilities exceeding the value of its general bond³ will be evaluated for the ability to self-insure up to 10% of its tangible net worth based on the merits of its financial capacity. A lessee that is eligible for self-insurance may make explicit arrangements to cover the additional security requirements of its co-lessees, but the decommissioning liability will still be attributed to all co-owners, express agreement to guarantee the liabilities of the weaker co-lessees will be of record, and such reliance cannot exceed the self-insurance capacity of that lessee. Eliminating the waiver may result in BOEM requiring some formerly waived lessees and the associated co-lessees to provide significant additional financial assurance to cover some or all of their liabilities.

Timing and Priority Guidelines for Additional Security

BOEM already processes tailored plans to satisfy lessee additional security requirements, but the NTL provides an example to guide a lessee that wants to phase-in its requirement to provide additional security. The first step in this process is for BOEM to categorize the lessee's liabilities based on risk, with the highest risk being when one lessee is the sole party responsible for decommissioning (a sole-liability property). On a sole-liability property, if the one liable party becomes insolvent or bankrupt, BOEM has no other liable party to turn to for the provision of financial assurance or the performance of decommissioning. With the financial distress of the solely liable party, self-insurance covering a sole-liability property could amount to no financial assurance for that property. Therefore, only those lessees with good credit quality will be permitted to use self-insurance for sole-liability properties.

On the other hand, self-insurance used on a property with prior and/or co-lessees (non-sole-liability) has less risk for BOEM in the event the credit quality of the self-insured party declines. One party's use of self-insurance on a property with co-lessees may allow the co-lessees to avoid posting their own financial assurance for that property while the self-insured party is financially viable, but the co-lessees are still liable for performance and can be ordered to provide additional security if the prior self-insured party no longer qualifies for self-insurance.

³ General bond requirements are specified in 30 CFR §556.900-901 for leases, §550.1011 (a)(1) for ROWs, §550.160 (c) for RUEs, and 30 CFR § 551.7(d)(1) for test drilling test activity

The proposed NTL will specify that, once a lessee that is providing a tailored plan provides financial assurance for its sole-liability properties, the lessee can submit a tailored plan to phase-in its remaining additional security. This policy will ensure that the highest risk properties are covered first while also providing a transition period for lessees and the financial assurance industry to respond to the other policy changes mentioned above (removal of waivers and reduction of the allowable self-insurance percentage).

OCS lessees currently have 60 days to comply with a bond demand letter and this has historically proven to be an adequate timeline for additional security requirements of less than \$40 million. However, when significantly higher bond demands (> \$200 million) have recently been sent to lessees that no longer qualify for waivers, compliance extensions are often requested. Because the proposed NTL will remove waivers for all OCS lessees simultaneously, Risk Management recommends additional time beyond 60 days to comply with the additional security requirements. Risk Management is recommending one year of additional time to allow for negotiations between lessees, co-lessees, the surety bond market, and others while balancing the risk of uncovered liabilities to BOEM. Since extensions from bond demands are traditionally requested in increments of 30, 60, or 90 days, Risk Management has adopted a 360 day compliance timeframe instead of 365 days. The 360 day implementation period is reasonable because it allows a staggered implementation period and “is approximately twice the length of time recently observed as necessary to reach resolution of supplemental bond demand situations,” including those involving tailored plans.⁴ The proposed NTL has a default timeline requiring 1/3 of the total additional security requirement every 120 days from the date of tailored plan approval, but also allows lessees to request a variance to this schedule.

Risk Management expects a common variance request to allow for funding a lease-specific abandonment account, partly since the current NTL provides an example where this type of account could be funded over multiple years. Approval of this variance request will depend on several factors, including, but not limited to, the facilities on the lease, the production rate, and the estimated reserves. The overall BOEM policy for lease-specific abandonment accounts is not changing and Risk Management expects that any proposed lease-specific abandonment accounts that meet the criteria as defined in the current NTL will continue to be approved.

Determination of the Financial Capacity of a Lessee

Evaluation of a company’s financial capacity requires a number of quantitative measures⁵ and qualitative measures that require interpretation by a subject matter expert. Moreover, the

⁴ See Memorandum on *Phased Implementation of the Revised Supplemental Financial Assurance Notice to Lessees and Operators (NTL)*, signed by the Director on June 2, 2015 concurring with this recommendation.

⁵ See Appendix A which presents a more complete description of this assessment process.

existing regulations only broadly define which elements of quantitative and qualitative criteria BOEM must consider.

30 CFR § 556.901 (d), establishes that “The Regional Director may determine that additional security (i.e., security above the amounts prescribed in §§556.900(a) and paragraphs (a) and (b) of this section) is necessary to ensure compliance with the obligations under your lease and the regulations in this chapter.

(1) The Regional Director's determination will be based on his/her evaluation of a company’s ability to carry out present and future financial obligations demonstrated by:”

- (i) Financial capacity
- (ii) Projected financial strength
- (iii) Business stability
- (iv) Reliability in meeting obligations
- (v) Record of compliance with laws, regulations, and lease terms

While each of these 5 criteria are important and this paper will address how each will be considered by Risk Management in making its final recommendation, much of the paper will focus on how “financial capacity” is being assessed.

The current regulations state criterion (i) as: “Financial capacity substantially in excess of existing and anticipated lease and other obligations, **as evidenced by audited financial statements...**” Therefore, the regulations call for a “financial measure” test based on the information contained in, and gleaned from, a lessee’s audited financial statements.

The current NTL (2008-N07) requires a lessee to have a minimum Net Worth of \$65 million to be eligible for a waiver. Then, if the lessee does not meet a production threshold of 20,000 barrels of oil equivalent (BOE) per day from its OCS leases, the lessee’s debt-to-equity ratio (D/E) must be as follows:

Net Worth of	If the decommissioning liabilities are less than or equal to 25% of net worth then the debt to equity ratio must be:	If the decommissioning liabilities are greater than 25% but less than or equal to 50% of net worth, the debt to equity ratio must be:
\$65 Million to \$100 Million	Less than or equal to 2.5	Less than or equal to 2.0
Greater Than \$100 Million	Less than or equal to 3.0	Less than or equal to 2.5

If a lessee passes this ratio test today, it is granted a waiver. While a debt-to-equity ratio (D/E) is a meaningful metric, reliance on just a single metric for measuring financial capacity is inadequate and can lead to BOEM taking on unacceptable risk. Moreover, the existing threshold for the D/E suggests a very generous benchmark given that a lessee can take on 67% to 75% debt in its capital structure and still pass the financial capacity assessment.

Pursuant to the revised NTL, the financial capacity assessment will not rely on any single financial metric, but rather on a set of metrics. This paper reviews use of various financial ratios and the various models considered in Risk Management's deliberations and then proposes a set of financial metrics that serve as good indicators of financial capacity (i.e. the first of the five criteria cited in the regulations) and should be used in the new NTL.

Use of Financial Ratios

Ratio analysis is a tool that was developed to perform quantitative analysis on numbers found on financial statements. Ratios help link the three financial statements (income statement, balance sheet and cash flow statement) together and offer figures that are comparable between companies and across industries and sectors. Ratio analysis is a widely used analysis technique and is a common tool of managerial decision making.

A ratio is the comparison of one number to another, and financial ratios involve the comparison of numbers from financial statements in order to gain information about a company's performance. Ratios may serve as indicators, clues, or red flags regarding noteworthy relationships between variables used to measure the firm's performance in terms of profitability, asset utilization, liquidity, leverage, or market valuation.

There are two uses of financial ratio analysis. The first is to track individual firm performance over time, and to make comparative judgments regarding performance. Performance is evaluated by calculating individual ratios on a per-period basis, and tracking those values over multiple time periods to analyze trends. This analysis can be used to spot trends that may be cause for concern, such as an increasing debt load, a decline in the firm's liquidity, or diminished profitability. In this role, ratios can serve as red flags for troublesome issues, or as benchmarks for performance measurement.

The second usage of ratios is to make relative performance comparisons. For example, comparing a firm's profitability to that of a major competitor or observing how the firm stacks up versus industry averages enables the user to form judgments concerning key areas such as profitability or management effectiveness.

Financial ratios are used by parties both internal and external to the firm. External users include security analysts, current and potential investors, creditors, competitors, and other industry observers. Internally, managers use ratio analysis to monitor performance and pinpoint strengths and weaknesses from which specific goals, objectives, and policy initiatives may be derived.

However, financial ratios vary across different industries and sectors and comparisons between completely different types of companies are often not valid. For BOEM’s purposes we have grouped our ratios into the following categories: Liquidity, Coverage, Leverage, and Performance.

For the purposes of developing a financial capacity assessment based on ratio analysis, BOEM engaged Deloitte to develop two models. One model assessed independent exploration and production (E&P) companies and another assessed larger, integrated E&P companies.⁶ However, the models developed by Deloitte were considered to be cumbersome for the specific task at hand and Risk Management was left with two options:

- a) Purchase an off-the-shelf financial capacity assessment model
- b) Develop a BOEM-specific financial capacity assessment model.

While Risk Management may reconsider using a suitable third party financial capacity model in the future, in order to have a tool that would meet BOEM’s specific needs, Risk Management decided to develop an internal financial capacity model that would be applied to both integrated and independent E&P lessees.

Risk Management has reviewed academic and industry literature on financial capacity models from different sources. The intent was to determine those financial ratios that are most appropriate for the oil and gas sector regarding financial capacity. The financial metrics recommended are based on reviewing the following sources:

1. Moody’s Rating Methodology⁷
2. S&P’s Rating Methodology⁸
3. Academic Articles⁹
4. Industry Feedback¹⁰

⁶ Appendix B presents a more complete description of the metrics suggested by Deloitte

⁷ Moody’s Investors Service, “Global Integrated Oil and Gas Industry”, RATING METHODOLOGY, April 30, 2014, and “Global Independent Exploration and Production Industry”, RATING METHODOLOGY, December 16, 2011

⁸ Standard & Poor’s, CORPORATE RATINGS CRITERIA, “Rating Methodology”, 112 pages, 2006

⁹ White, Lawrence J., "Markets: The Credit Rating Agencies." Journal of Economic Perspectives, 2010, 24(2): 211-26. Loffler, Gunter. 2004. “An Anatomy of Ratings” Journal of Banking & Finance, 28(3): 695–720, Jen Hilscher, “Credit Ratings and Credit Risk”, International Business School, Brandeis University, June 2011

¹⁰ Noble Energy, “NBL Proposal for BOEM”, sent via email by Peggy Feeley-Lacy, on November 30, 2015.

Financial Capacity

The financial capacity of a company is its ability to pay both its short- and long-term obligations¹¹; therefore Risk Management will use financial ratios that measure two key elements of a firm's business risk:

- 1) Capacity to meet its obligations in the short-term (Present), and
- 2) Capacity to meet its capital obligations in the long-term (Future)

Short-Term Financial Capacity – Liquidity and Coverage Ratios

Short-term financial capacity measures an entity's liquidity and ability to cover its short-term financial obligations. We can assess this through liquidity ratios and coverage ratios. Liquidity ratios compare a company's most liquid assets (cash or other assets that can be easily converted to cash) to its short-term liabilities in the current time period. Coverage ratios measure a company's ability to pay off its short-term debt obligations from existing earnings or cash flow.

Long-Term Financial Capacity – Leverage and Performance Ratios

Long-term financial capacity examines the company's leverage and performance over multiple time periods. The leverage ratios are used to measure an enterprise's ability to meet its long-term debt and other obligations, and indicate the firm's use of debt or equity financing. Leverage ratios can show if the company has taken on more debt than it can service through its current operating cash flow and still meet its long-term liabilities. Performance ratios measure the company's ability to earn an adequate return and indicate how well a company can maintain or increase its operating cash flow. Two performance ratios that measure the firm's profitability are return on assets and return on equity.

The definitions of the specific terms used in the ratio discussion are provided below:

Liquidity: A measure of the extent to which a person or organization has cash to meet immediate and short-term obligations, or assets that can be quickly converted to do this. Liquidity is a critical rating factor for all integrated and independent oil companies. Liquidity can be particularly important for non-investment grade companies where issuers typically have less operating and financial flexibility. Liquidity is of critical importance to BOEM as a regulatory agency.

Cash Flow: A measure of the ability of a company's operating cash flow to meet its obligations - including its liabilities and ongoing concern costs.

¹¹ European Commission, Directorate General for Education, Accounting and Finance, "METHODOLOGY FOR EVALUATING FINANCIAL CAPACITY," http://ec.europa.eu/programmes/creative-europe/calls/general/2015-eac-08/annex-3-methodology_en.pdf

Leverage: A measure of debt used to finance a firm's assets. A firm with significantly more debt than equity is considered to be highly leveraged. Leverage and cash flow coverages are critical rating factors that provide an indication for financial risk and an issuer's level of financial flexibility, and provide insight into a given management team's financial policy. Leverage and cash flow coverage metrics indicate a company's ability to fund negative free cash flow with debt while it moves through the development cycle to full production and cash flow generation.

Performance: A measure of a company's overall operational performance and management during the period being measured. A company with relatively better performance could be more likely to maintain, or increase, its existing cash flow over time. A higher level of performance also attracts lower-cost debt and equity capital, which provides a greater degree of financial flexibility in a highly capital-intensive industry such as offshore oil and gas production.

Selected Financial Metrics and Rationale

The ratios that measure both the short-term and the long-term capacity of a company to meet its obligations are listed below. The metrics are highly correlated with a company's credit rating, though some are positively correlated and others are negatively correlated.¹²

For short-term capacity to meet obligations:

- (1) Current Ratio,
- (2) Quick Ratio,
- (3) Earnings Before Interest and Taxes (EBIT)/Interest, and
- (4) Cash Flow/Net Debt.

For long-term capacity to meet its capital obligations into the future:

- (1) Debt/Capital,
- (2) Debt/Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA),
- (3) Return on Assets,
- (4) Return on Equity, and
- (5) Debt/Equity.

Definitions of Financial Metrics Selected

Current Ratio

What it is: It divides a firm's current assets by its current liabilities.

Why it is important: The current ratio measures a firm's ability to pay its debts over the next 12 months. The higher the ratio, the more easily the company can pay its obligations.

¹² "Moody's Financial Metrics, Key Ratios by Rating and Industry for Global Non-Financial Corporations: December 2007", page 3.

Quick Ratio

What it is: It divides the total amount of cash, marketable securities, and accounts receivable by the amount of current liabilities.

Why it is important: The quick ratio also measures a company's liquidity, though is more conservative than the current ratio (see above) as it excludes inventories from current assets.

EBIT/Interest

What it is: A company's earnings before interest and taxes (operating income) divided by interest expense during a given period.

Why it is important: EBIT/Interest, also known as the interest coverage ratio, measures a company's ability to pay interest on outstanding debt, in other words, how burdened a company is by the costs of borrowing. A higher ratio indicates a greater ability to pay the interest on its debt.

Cash Flow/Net Debt

What it is: A company's operating cash flow divided by its total debt (the sum of short-term borrowings, the current portion of long-term debt, and long-term debt).

Why it is important: This ratio measures a company's ability to cover total debt with its yearly cash flow from operations. This ratio shows how much money the company generated in the reporting period as a result of running its business, rather than just obtaining money through financing their operations with investor money or loans. A higher ratio indicates a better ability to carry its total debt.

Debt/Capital

What it is: A measurement of a company's financial leverage, calculated as the company's debt divided by its total capital. Debt includes all short-term and long-term obligations. Capital includes the company's debt and shareholders' equity, which includes common stock, preferred stock, minority interest and net debt.

Why it is important: Debt/Capital is a measure of a company's leverage, in other words, it shows how much of the company's financing is from debt as opposed to equity. Generally speaking, higher ratios indicate a higher risk of default than lower ratios.

Debt/EBITDA

What it is: Debt divided by EBITDA. Debt is the total of a company's long- and short-term debts. EBITDA is the company's total earnings before excluding interest, taxes, depreciation and amortization.

Why it is important: EBITDA evaluates a company's profitability, focusing on operations and minimizing financing decisions and accounting practices. In general, a high ratio of debt to EBITDA reveals a company that is deeply in debt.

Debt/Equity

What it is: Another measure of a company's financial leverage, calculated as the company's total liabilities divided by its stockholders' equity.

Why it is important: The Debt/Equity ratio indicates how much debt a company is using to finance its assets relative to the amount of value represented in shareholders' equity, in other words, how much of the company's financing comes from debt rather than from shareholders. The higher the ratio, the more the company relies on debt to finance its operations. In general, a higher ratio is less of a concern for a large and well-established company than it is for a small or new company.

Return on Assets

What it is: Calculated by dividing a company's net income (annual earnings) by its total assets, return on assets (ROA) is displayed as a percentage.

Why it is important: ROA indicates how profitable a company is relative to its total assets and indicates how efficient company management is using its assets to generate earnings.

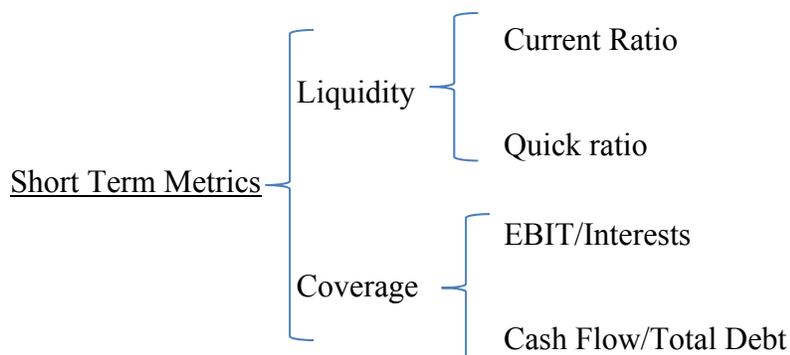
Return on Equity

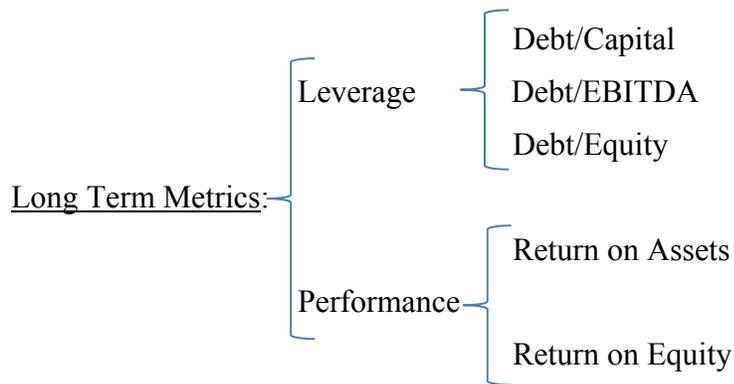
What it is: Return on equity (ROE) is the amount of net income returned as a percentage of shareholder's equity.

Why it is important: ROE measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

NOTE: The big factor that separates ROE and ROA is financial leverage, or debt. If a company carries no debt, its shareholders' equity and its total assets will be the same. It follows then that the ROE and ROA would also be the same, but if that company takes on financial leverage, ROE would rise above ROA. Therefore, a highly leveraged company may have a strong ROE but a very weak ROA, a sign that management is not as effective in deploying assets and generally signaling poor long term performance if low ROA continues.

The selected financial metrics and their application are presented graphically below:





Application of Metrics in Financial Capacity Model

As noted elsewhere in this paper, financial metrics are used either to track individual firm performance over time and to make comparative judgments regarding performance over this period or to make relative performance comparisons of major competitors or industry averages at a point in time. There is a limit on the amount and type of analysis that BOEM Risk Management is able to perform for each lessee, and developing a model that tracks individual firm performance over time is currently not practical given human and material resource limitations. Moreover, the time necessary to perform the additional analyses would delay providing solutions beyond what would be acceptable to BOEM and industry. Therefore, Risk Management proposes to assess financial capacity using ratio analysis, with comparisons to industry benchmarks established from publicly available data of exploration and production (E&P) companies.

Benchmark for Each Ratio

There are two considerations with developing industry benchmarks: first, which companies are considered in the set of comparable industry competitors, and second, what time horizon should be considered for evaluation.

With respect to the first issue, since the bulk of BOEM’s OCS lessees are E&P companies, we need to include those E&P companies that are either currently operating, or are likely to operate, on the OCS. This includes both major integrated players as well as independent players. Many of the companies currently operating on the OCS, however, are privately held and their financial data is not publicly available; developing a benchmark representing the entire industry would be very difficult. However, a proxy benchmark could be established from 154 E&P companies, many of which currently operate on the OCS, with financial data in the S&P Capital IQ database.

With respect to the second issue of selecting a time horizon for the industry analysis, generally a longer time horizon is preferable to a shorter time horizon because it provides more data points for trend analysis and interpretation and will reduce the effect of up- or down-cycles in the industry. Risk Management is proposing to use a 5-year time horizon which will balance Risk

Management's human and material resource limitations while providing enough data points for analysis.

In each of the 5 previous years, the threshold for the nine financial ratios may be based on a simple mean, an interquartile mean, or an adjusted mean. The use of a simple mean could skew the threshold up or down if there are a large number of outliers with either much better or much worse financial capacity in the set of 154 companies. Using an interquartile mean would remove the impact of these outliers by using only the 2nd and 3rd quartiles (the middle 50%) of the values for any ratio and the result would be very close to the median value. Using an adjusted mean would skew the threshold significantly above the median value by eliminating the entire 1st quartile (lowest 25%) but only the top 2.5% of companies.¹³ The adjusted mean would be a more risk-averse approach as the calculated benchmark would be significantly higher than the interquartile mean and would eliminate several lessees from passing a specific ratio.

Minimum Number of Benchmarks for Self-Insurance

Does a company need to pass only some or all the benchmark metrics? Are there some benchmarks that are more important than others?

The ability to self-insure is a benefit to a lessee and it can transfer significant risk to BOEM. For BOEM to manage this risk, the benefit should be limited only to the lessees that meet specific benchmarks in their financial and operational performance. The nine financial ratios listed above indicate noteworthy relationships between variables used to measure a lessee's performance such as profitability, asset utilization, liquidity, or leverage, but it is unreasonable to require lessees to exceed the benchmarks for all nine ratios.

Recall that financial ratios involve the comparison of various figures from financial statements in order to gain information about a company's performance.

As a lessee exceeds a greater number of benchmarks (i.e. performs better than the market average), there is more likelihood that the lessee is at the higher end of the desirable credit spectrum. For self-insurance purposes, Risk Management proposes setting a minimum number of benchmarks that a company must exceed (with an equal weighting for each ratio) in order to be considered eligible for some measure of self-insurance, specifically up to 5% of its tangible net worth. If the company fails to meet this minimum number of ratios, it will not qualify for any self-insurance because of inadequate financial capacity. Based on the analysis presented in Appendix C, Risk Management suggests that the minimum number of financial ratios for which a company needs to exceed the benchmark be set at 5 out of 9. This number can be adjusted in future years based on BOEM's experience.

¹³ The top 2.5% are companies with results greater than two standard deviations above the mean and are considered outliers.

The 5% self-insurance for which a lessee may be eligible may be increased (up to 10%) or decreased based upon BOEM’s assessment of the remaining four criteria stated in the regulation.

Further, with some restrictions¹⁴, a lessee permitted to use self-insurance will allocate it to specific leases and grants. Co-lessees of the self-insured lessee can make arrangements with the self-insured party to rely on its self-insurance in order to avoid providing their own additional security for a particular lease. Since all co-lessees are jointly and severally liable, BOEM arguably would not be able to make the required finding that additional security is necessary from each co-lessee when BOEM can rely on the financial strength of the self-insured party. There is, however, a limit to the financial strength of even the strongest lessee.

Therefore, pursuant to the revised NTL, a lessee will inform BOEM as to which leases and grants it is allocating its self-insurance, as well as which, if any, co-lessees’ additional security requirements are being satisfied by its self-insurance. Correlatively, a less financially strong lessee who is relying on the self-insurance of its co-lessee will inform BOEM of this reliance. Providing this information to BOEM will allow BOEM and the lessees to have a clear and express understanding of the manner in which leases and grants are secured.

Assessment of the Remaining Four Criteria

While much of this paper has focused on developing a methodology to assess financial capacity, the first of the five criteria stipulated in the regulation, this section will now discuss how the remaining four criteria may be assessed:

- (ii) Projected financial strength
- (iii) Business stability
- (iv) Reliability in meeting obligations
- (v) Record of compliance with laws, regulations, and lease terms.

Projected Financial Strength

Projected financial strength criteria is defined in the regulations as: “Projected financial strength significantly in excess of existing and future lease and other obligations, based on the **estimated value of your existing OCS lease production and proven reserves of future production**”.

Therefore, it is clear that the regulations call for a “projected financial strength” that measures production and proven¹⁵ reserves of future production.

NTL No. 2008-N07 incorporated the projected financial strength by requiring a lessee to either meet a production threshold of 20,000 barrels of oil equivalent (BOE) per day, or meet specific

¹⁴ These restrictions include the use of self-insurance on sole-liability properties to lessees that have a minimum credit rating (see the section on Reliability below).

¹⁵ Proven reserves are defined according to the SEC definition of “proved oil and gas reserves” at 17 CFR § 210.4-10 (22)

debt-to-equity ratios¹⁶ (D/E) that consider the lessee's future net revenue associated with the value of proved producing reserves.¹⁷ NTL No. 2008-N07 did not stipulate that the production rate must be adjusted for the lessee's percentage of interest in a lease, nor did it address proven reserves other than to say that a lessee may request that future net revenue associated with the value of "proved producing reserves" be considered in the calculation of the lessee's net worth. There was also no basis provided for selecting a production rate of 20,000 BOE per day.

While a minimum production rate threshold may not provide any significant information, consideration of proven reserves can augment the lessee's tangible net worth, assuming those reserves could be sold to a third-party buyer in case of a bankruptcy or default. Risk Management proposes that the values of proven reserves continue to augment the lessee's tangible net worth. When assessing the value of proven oil and gas reserves, several different methodologies can be employed. Two methodologies of note are: (i) the Fair Market Value (FMV)¹⁸ approach and (ii) the Securities and Exchange Commission (SEC) PV-10 approach, which is the reported value within the notes of a publicly traded company's Form 10-K. A more detailed explanation of the two approaches is summarized in Appendix D.

There are pros and cons to using each of these approaches. When compared to the SEC's PV-10 reporting requirements, FMV assumptions result in different projected quantities of economically recoverable reserves, after-tax cash flows, and net present values. Depending upon market expectations, these assumptions may have a profound impact on the FMV of proven

¹⁶ The D/E ratios are described in more detail in the "Determination of the Financial Capacity of a Lessee" section.

¹⁷ Article III of NTL 2008-N07 (page 4) states : "...the lessee may request MMS to consider future net revenue associated with the value of proved producing reserves in the calculation of net worth. The lessee must choose either scenario A or B below in which MMS will evaluate all of the lessee's properties.

A. The lessee may request that MMS consider the lessee's future net revenue associated with the lessee's value of proved producing reserves in the calculation of the lessee's net worth, for all OCS leases in which the lessee owns a record title interest equal to the percentage of their interest Based on potential risk associated with the reserves, MMS may include up to 25 percent of the reserve value in its calculation of the lessee's net worth.

B. The lessee may request that MMS consider the lessee's future net revenue associated with the lessee's value of proved producing reserves in the calculation of the lessee's net worth by providing to MMS for all OCS leases in which the lessee has a net revenue interest as verified by an independent third-party estimate of the total proved producing reserves. This third-party reserve report shall break down proved producing reserves on a lease, reservoir and well completion basis. It shall also include a cash flow spreadsheet to show anticipated production, expenses, and cash flow. All net revenue and operating expense interests must be provided and certified by a third party. Upon receipt of this information, MMS will determine the value of the proved producing reserves to be included in the lessee's net worth. If the lessee requests an analysis based upon record title and operating rights interest, the decommissioning liability applied in paragraph III.2 of this NTL will also account for the decommissioning liability for each OCS lease, for which the lessee owns operating rights interest. Based on potential risk associated with the reserves, MMS may include up to 50 percent of the reserve value in its calculation of the lessee's net worth."

¹⁸ Note that the Fair Market Value (FMV) referenced here is similar **but not the same** as the FMV per OCSLA that BOEM's Economic Division uses for lease sales. The Economic Division's assessment of the FMV is based on the total investment cost of developing an undeveloped property. The FMV referenced in this paper ignores exploration and development costs as "sunk" costs and assesses the value of the PDP reserves based their gross margin ("Commodity Price" less "Operating & Maintenance Costs") times "working interest of production."

reserves. While the SEC's overall goal for this standardized metric was to make amounts reported by companies comparable, it can be misinterpreted as a measure of the FMV of E&P companies' proved oil and gas reserves. Valuations conducted using the PV-10 method can be higher than those determined using the FMV method due to higher taxes and discount rates which are factored in when the FMV method is used.

BOEM, specifically the Reservoir Analysis Unit (RAU) and Resource Economic Analysis Unit (REAU) within the Gulf of Mexico Regional Office (GOMR), can use the internal database of proven reserves to develop forecasts of production from each field (adjusted by working interest). This production forecast can be multiplied by a series of discounted annual gross margin cash flows¹⁹ by BOEM's Economics Division to arrive at a pre-tax value of the proven reserves.

While BOEM has the in-house capability (data and expertise) to perform this evaluation, the use of BOEM's proprietary forecasts (production, price and operating costs) would need to be applied to all applicants, both publicly held companies, which disclose the size and value of their proven reserves, and privately held companies, which do not. Applying BOEM's forecasts for each lessee would not only increase RAU's and REAU's workload, it also has the potential for making BOEM's proprietary price and cost curves public.

An alternative to this would be to use the SEC's standardized PV-10 approach of discounted future net cash flows from the production of proven reserves for all companies. In determining the value of reserves under PV-10, standard discount rates and prices are used for future oil and natural gas sales. The prices for oil and gas are set annually at the "unweighted arithmetic average of the first day of the month price for the previous year" and are assumed constant for all future years (17 CFR § 210.4-10 (22)). Similarly, projected operating costs are also held constant based on expenses observed during the previous year regardless of future expectations or recent changes. The purpose of such disclosure is to assist users of oil and gas companies' financial statements in determining the overall financial position of the companies as well as to assess the risks that may affect the companies' future financial positions.

For publicly held companies, the PV-10 is available from financial disclosure filings (10-K report). Privately held companies can also choose to present BOEM with a copy of their audited reserves valuation based on the PV-10 approach, if they wish BOEM to include their proven reserves in the determination of their tangible net worth.

One alternative to a privately held company submitting its own audited assessment of its proven reserves using SEC's PV-10 approach is for RAU to estimate a value using BOEM's reserve and

¹⁹ These annual cash flows are based on the proprietary forecast for oil and gas prices (i.e. forward curve) and the estimated production operating and maintenance (lifting) costs extracted from BOEM's proprietary discounted cash flow analysis model (MONTCAR)

production forecast (net of working interest) and the standardized price forecast discussed in Appendix D. Finally, RAU can use Operating and Maintenance (O&M) cost data from the 3rd party software QueStor and compare it to MONTCAR, to ensure that BOEM uses public, rather than its proprietary, O&M data.

A second alternative to either having the privately held company submit its PV-10 assessment of proven reserves or BOEM's RAU doing its own PV-10 evaluation is for BOEM to develop a rough unit value (\$/BOE) for the proven reserves by taking the weighted average of the proven reserves and their dollar values from publicly available data to calculate a proxy "margin" on a \$/BOE basis.

Such a proxy value could be applied to the proven reserves estimate determined by BOEM's Resource Evaluation group. However, due to the uncertainties inherent in employing such an approach to estimating the unit "margin" value (the true production costs of smaller and/or private companies can be substantially different), Risk Management would recommend discounting the unit margin determined by this method before applying the rate to the proven reserves.

Use of any of these three methods: (i) BOEM conducting its own PV-10 valuation per SEC guidelines; (ii) having the applicant provide an audited version of the PV-10 valuation conducted per SEC guidelines; or (iii) using a proxy unit "margin" based on a weighted average of publicly available SEC-based reserve valuations will provide BOEM consistent proven reserve assessments. However, Risk Management proposes that BOEM may want to encourage applicants to provide an audited version of their PV-10 valuation.

Risk Management will add the value of a lessee's proven reserves (up to 25% of their worth as described in Appendix D), determined by any method discussed above, to the lessee's tangible net worth. Because a lessee's level of self-insurance will be expressed as a percentage of tangible net worth, a lessee's overall amount of self-insurance will increase when the applicable portion of proven reserves is added to the tangible net worth.

Business stability

The regulation states that business stability is "...based on 5-years of **continuous operation and production** of oil and gas or sulfur in the OCS or in the onshore oil and gas industry".

This criterion measures a company's operational experience and, by proxy, predicts its stability. While it could be argued that engaging in oil and gas operations (either onshore or offshore) for less than five years increases the financial risk for an entrant to the OCS, there may be exceptions to this (i.e. a large well capitalized entity that may have recently entered the oil and gas sector or acquired assets through an acquisition). Conversely, five or more years of oil and gas operations does not guarantee business stability (particularly if the operations were only in the onshore sector, as the regulation does not discriminate). Therefore, while the five year

could be negatively impacted by BOEM's assessment. Therefore, a positive reference may not necessarily be indicative of the lessee's actual reliability.

For lessees that do not have a credit rating and provide only trade references, Risk Management will make an adjustment, subject to the analyst's discretion, of only -2% to +2% of the allowance determined by criterion (i). As a result, a lessee that scores well on the other criteria (i-iii, and v), but only provides trade references to determine its reliability, would be eligible for a maximum self-insurance of only 7% of its tangible net worth.

The second proposal is to use a lessee's reliability, as demonstrated by its credit rating, to limit the use of self-insurance on properties where the lessee is the sole party responsible for decommissioning. If a self-insured party is providing all the financial assurance required for a lease that has co-lessees, and the self-insured party's credit quality declines or it becomes insolvent, BOEM can turn to the co-lessees to provide financial assurance and/or to perform decommissioning. In a similar situation with prior lessees, BOEM can turn to these prior lessees for performance.

Risk Management will only allow lessees with an A-/A3 or better credit rating to use self-insurance to cover sole liabilities. This credit rating threshold will provide time for BOEM to react in a situation where the lessee's credit rating drops. It becomes increasingly difficult for such a company to obtain bonding because premiums increase and higher collateral requirements are imposed. A lessee's poor financial condition can become dire within a matter of weeks, putting BOEM at serious risk if this lessee is the only lessee liable for a particular lease(s).

Table of Adjustments to Self-Insurance Based on Credit Rating(s)

Moody's	S&P	Rating Description	Adjustment to Allowance of Self-Insurance
Long-term	Long-term		
Aaa	AAA	Prime	+5%
Aa1	AA+	High Grade	
Aa2	AA		
Aa3	AA-		
A1	A+	Upper Medium Grade	
A2	A		
A3	A-		
Baa1	BBB+	Lower Medium Grade	+2%
Baa2	BBB		
Baa3	BBB-		+0%
BELOW INVESTMENT GRADE			
Ba1	BB+	Non-investment Grade Speculative	+0%
Ba2	BB		
Ba3	BB-		-2%
B1	B+	Highly speculative	-3%
B2	B		
B3	B-		-5%
Caa1	CCC+	Substantial risks	-5%
Caa2	CCC	Extremely speculative	
Caa3	CCC-	Default Imminent with Little Prospect for Recovery	
Ca	CC		
	C		
C	D	In default	

Record of Compliance

The regulation stipulates the fifth criterion to be “**Record of compliance with laws, regulations and lease terms.**” The term “record of compliance” can have a very broad interpretation.

Incidents of Non-Compliance (INCs) are issued for a variety of infractions, some minor, such as for “paint chips,” and others are more serious, such as operating and safety violations. The intent of this criterion is to review the operating history of a lessee to understand whether there are serious compliance issues pending or if it has a record of non-compliance incidents. Therefore, the analyst will concentrate on more serious infractions, using his/her best judgment.

The table shown below is designed to assist the analyst in making his/her determination of record of compliance based on the available information. Using the infractions that are reported by BOEM, BSEE and ONRR, a numeric score will be given based on the criteria below.

Based on the analysis of the compliance factors in the table below, the analyst will take the worst infraction from the table below and adjust the overall self-insurance percentage by:

-3% for Debarment, Performance Improvement Plans, Cancellation of Leases, or Suspension of Operations.

-1% for INC/Inspection Ratio > industry average, INC/Component Ratio > industry average, Shut-in Enforcement INCs, Civil Penalties, or nonpayment of rents and/or royalties.

Additionally, the analyst may adjust the final percentage further based upon his/her overall review of the company’s compliance record. Any additional change by the analyst will be based upon his/her review of the company as a whole, noting compliance trends or observances that are not captured within the defined paramaters listed below. Analyst discretion will be utilized on a case-by-case basis.

Compliance Matrix		
Action	% Reduction	Rationale for % Reduction
Suspension or Debarment, pursuant to 2 CFR parts 180 and 1400 Disqualification to hold leases, pursuant to 30 CFR § 556.403	3%	Section 180.800 of 2 CFR lists the reasons why a party can be debarred from entering into federal contracts. All the causes of debarment are serious offenses, such as criminal convictions, certain types of civil judgments, or violation of the terms of a public agreement or transaction so egregious that it affects the integrity of an agency program. Pursuant to 2 CFR § 180.700, a party may be suspended from entering into certain federal contracts when an indictment or other adequate evidence of actions that could lead to debarment exists. Suspension is a serious action and can lead to debarment. Pursuant to 30 CFR § 556.403(a), a party is disqualified from holding a lease if the party, or its principals, have been debarred. Disqualification under § 556.403(b) is based on a failure to meet due diligence requirements, and disqualification under § 556.403(c) is based on a finding of unacceptable operating performance. Suspension, debarment, and disqualification are imposed only in cases of the very worst performance or behavior and are imposed only after the debarred or disqualified party has been afforded an opportunity to cure the issues leading to the debarment or disqualification. A debarred or disqualified lessee or operator has demonstrated poor judgment and/or conduct, which could result in the need to take remedial action and/or make remedial payments, and thus poses a significantly increased financial risk for BOEM, justifying a concomitant significant reduction in the permitted level of self-insurance.

Performance Improvement Plan (PIP)	3%	If the Bureau of Safety and Environmental Enforcement (BSEE) determines that the performance of an operator is tending toward unacceptable, per 30 CFR § 250.136, it may put the operator on a "Performance Improvement Plan" (PIP). The fact that an operator is put on a PIP would reflect poor judgment and/or conduct on the part of the operator, which could result in the need to take remedial action and/or make remedial payments. If this operator is, or becomes, a lessee, it could pose a significantly increased financial risk for BOEM, justifying a concomitant significant reduction in the permitted level of self-insurance.
Cancellation of leases, pursuant to 30 CFR §§ 556.1102 (a), (b), (c), and (f)	3%	BOEM may cancel a lease due to a lessee's failure to comply with the lease, OCSLA, or the regulations. 30 CFR §§ 1102 (a) and (b). BOEM may also cancel a lease if the lessee fails to provide required financial assurance or if BOEM finds that the lessee acquired the lease through fraud or misrepresentation. 30 CFR §§ 556.1102(f) and (c), respectively. Lease cancellation is an action of last resort, and BOEM would cancel a lease only for the most serious poor performance, regulatory, or statutory violations. If BOEM cancelled a lease for any of the reasons cited here, such cancellation would reflect poor judgment and/or conduct on the part of the former lessee, which could result in the need to take remedial action and/or make remedial payments, thus posing significantly increased financial risk for BOEM, and justifying a concomitant significant reduction in the permitted level of self-insurance.
Suspension of Operations (SOO) and Suspension of Production (SOP), pursuant to 30 CFR 250.173(a)	3%	BSEE can direct an SOO or an SOP when a lessee or designated operator fails to comply with a lease or permit, an order, or regulations or applicable law. 30 CFR § 250.173(a). BSEE would only do so, however, if less severe measures to secure compliance had failed. Therefore, if BSEE directs an SOO or an SOP for any of the reasons cited here, such suspension would reflect poor judgment and/or conduct on the part of the lessee or its designated operator, which could result in the need to take remedial action and/or make remedial payments, thus posing significantly increased financial risk for BOEM, and justifying a concomitant significant reduction in the permitted level of self-insurance.
INC/Inspection ratio (well operations / drilling) > industry AVG	1%	BSEE uses a ratio of number of Incidents of Non-compliance (INC) to number of inspections (INC/inspection ratio) to evaluate operator performance on OCS leases. BSEE calculates the industry average INC/inspection ratio and compares each operator's ratio to this average. If an operator's ratio is above the industry average, it indicates poor judgment and/or conduct on the part of the operator, which could result in the need to take remedial action and/or make remedial payments. Therefore, if this operator is, or becomes, a lessee, it could pose an increased financial risk for BOEM, justifying a reduction in the permitted level of self-insurance.
INC/Component ratio (production operations / facilities) > industry AVG	1%	BSEE uses a ratio of number of INCs to number of facility components (INC/component ratio) to evaluate operator performance on OCS leases. BSEE calculates the industry average INC/component ratio and compares each operator's ratio to this average. If an operator's ratio is above the industry average, it indicates poor judgment and/or conduct on the part of the operator, which could result in the need to take remedial action and/or make remedial payments. Therefore, if this operator is, or becomes, a lessee, it could pose an increased financial risk for BOEM, justifying a reduction in the permitted level of self-insurance.
Shut-in Enforcement INCs	1%	BSEE issues a shut-in INC only in the case of a finding of a critical safety violation, for example, operations bypass safety systems or a safety system is not functional. BSEE would not issue a shut-in INC lightly because shut-in creates a severe economic hardship for the lessee. The issuance of a shut-in INC therefore indicates a serious violation, causing safety risks, which could result in the need to take remedial action and/or make remedial payments. If this operator is, or becomes a lessee, it could pose an increased financial risk for BOEM, justifying a reduction in the permitted level of self-insurance.
Civil penalties for submissions of false/misleading information when the company was aware of the false information, pursuant to 30 CFR Part 250, subpart N and/or Part 550, subpart N	1%	BSEE and BOEM are authorized to issue civil penalties, including for the knowing submission of false information. 30 CFR Part 250, subpart N, and Part 550, subpart N, respectively. A lessee or operator who knowingly submits false information acts in an untrustworthy manner, which warrants the issuance of a civil penalty. The issuance of

		such a civil penalty indicates poor judgment and/or conduct on the part of the lessee or operator, which could result in the need to take remedial action and/or make remedial payments, thus posing an increased financial risk for BOEM, and justifying a reduction in the permitted level of self-insurance.
Cited for non- or under-payments of rentals, royalties, interest bills, civil penalties, or inspection fees, with such non- or under-payment having been referred to the U.S. Treasury in the last five years, pursuant to NTL 2016- N01	1%	The Outer Continental Shelf Lands Act, BOEM's and BSEE's regulations, and the regulations of the Office of Natural Resources Revenue (ONRR), authorize ONRR to collect monies that record title owners and/or operating rights owners (<i>i.e.</i> , lessees) are required to pay. After ONRR makes repeated attempts to collect monies due, it may resort to referral to the U.S. Treasury. Such referral to the U.S. Treasury indicates a lessee's unwillingness to honor its lease obligations, which could result in the need to take remedial action and/or make remedial payments, posing an increased financial risk for BOEM, and justifying a concomitant reduction in the permitted level of self-insurance.
Analyst Review	Amount up to analyst's judgment	BOEM recognizes there may be circumstances that may need to be taken into account when a reduction in self-insurance is warranted due to especially egregious compliance issues. Therefore, on a case-by-case basis, the analyst may adjust, upward or downward, the reduction in the amount of self-insurance. BOEM may adjust the percentage of self-insurance reduction based upon the analyst review of items including, but not limited to: failure to timely correct INCs, INCs flagged related for repeated and habitual civil penalties and other violations imposed by other agencies.

Conclusion

Under the NTL on “Requiring Additional Security” lessees will no longer be eligible for a “waiver” of additional security requirements but may apply for self-insurance regardless of net worth. Self-insurance, which under the previous NTL was limited to 50% of a lessee’s net worth, is now limited to a maximum of 10% of a lessee’s tangible net worth.

The evaluation criteria and scoring methodology outlined in this paper are consistent with the existing regulations for evaluating a lessee’s ability to meet its current and future obligations and will continue to be based on the five criteria set forth in 30 CFR §556.901 (d).

- (i) Financial capacity
- (ii) Projected financial strength
- (iii) Business stability
- (iv) Reliability in meeting obligations
- (v) Record of compliance with laws, regulations, and lease terms

A positive score toward an allowance of self-insurance will be based on criteria (i) and (iv) only, “Financial Capacity” and “Reliability.” Criteria (iii) “Business Stability” and (v) “Record of Compliance” may not add to the total score but could lower the score based on the financial analyst’s judgment. Lastly, criteria (ii) “Projected Financial Strength,” while not directly contributing to the percentage of tangible net worth a lessee is allowed to apply toward self-insurance, could increase the lessee’s tangible net worth, and hence, the total nominal dollar amount that a lessee is able to self-insure.

Appendix A - Overview of Financial Capacity Analysis

Because a company's financial capacity is basically determined by the company's ability to generate sufficient cash, pay down a loan, or to draw on existing resources, a financial capacity analysis examines the income statement, the balance sheet, and the cash flow statement to evaluate a company's creditworthiness, focusing on profitability, efficiency, liquidity, and leverage.

A complete financial analysis would focus on several areas:²⁰

- 1) Business risk
- 2) Financial structure
- 3) Security structure

For business risk, the analysis would assess both the industry characteristics and the company position within that industry. The assessment of the industry should include a consideration of the growth rates, profit margins, capital requirements and volatility of returns as well as the industry's barriers to entry. The company's competitive position is assessed through its financial performance (both past and future estimations), the sources of its competitive advantage (for example, operating efficiency, scale, patents and entry barriers) and its longer-term strategy. In addition, the analysis would look to assess the governance of the organization (including the quality and integrity of management and the company accounts) and risks from off-balance-sheet areas such as environmental liabilities and social costs (e.g., restructuring costs)²¹.

For financial structure, the analysis covers a range of ratios specific to each industry, such as leverage, interest coverage, liquidity and off-balance-sheet debt. It is also common practice to include in the analysis a global and regional macro view to be able to create stress tests and compile financial projections.

For the security structure, the analyst will usually assess the position of each investment within the capital structure and the covenants that protect the lenders' positions in default scenarios. This analysis leads to a credit rating. This rating in turn allows the analyst to identify relative value.

Ideally, the first step in the credit analysis process is to gather the past 3-5 years of financial statements for the company under review. Then the analyst creates financial ratio spreads by "spreading" the financial statements. This involves manually inputting each line item on the financial statements into Excel or specialized credit spreading software.

²⁰ Bloomberg, Barclays Research, "The Credit Analysis Process", CREDIT ANALYSIS, page 3, October 2014

²¹ Ibid, page 5

This provides the analyst with a side-by-side comparison of financials over several time periods. This allows the analyst to spot trends in certain line items on the income statements and balance sheets, as well as calculate common credit analysis ratios.

After the credit analyst spreads the financial statements for the company under review, questions are usually asked of the senior financial and operational management of the company being evaluated. Then a full written financial analysis is performed. This written analysis will involve general commentary and trends affecting the company, and an explanation of both positive and negative trends in the financial statements, as well as a discussion of key credit analysis ratios.

Appendix B – Deloitte Credit Model(s)

BOEM initially engaged Deloitte to assist in developing a financial capacity model (see below) but Risk Management ended up developing its own. Deloitte had developed two models, one for independent exploration and production (E&P) companies and one for integrated E&P companies. The following table lists the metrics suggested by Deloitte for each model. The models were calibrated (i.e. the weighting given to each metric) to be directionally consistent with ratings provided by S&P or Moody's. The output of the model would be a numerical score from 1 through 6, with lower scores reflecting better credit quality companies and higher scores reflecting lower rated companies.

Deloitte Model

Financial Ratios for Independent Companies

1. Performance
EBITDA Margin (EBITDA/Revenue)
Return on Assets (Net Income/Total Assets)
CFO/CAPEX

2. Liquidity
Current Ratio (Curr. Assets/Curr. Liabilities)
CFO/Current Liabilities

3. Leverage
Total Debt/Capitalization
Times Interest Earned (EBIT/Interest)
Total Debt/Avg Daily Production
Total Debt/Proven Reserves
Proved Reserves/Asset Retirement Obligations

Financial Ratios for Integrated Companies

1. Performance
Total Revenue
Total Equity
Return on Capital
Intangible Assets/Revenue
Gross Margin (Gross Profit/Revenue)

2. Liquidity
Basic Defense Interval
Asset Turnover
Payable/Receivable

3. Leverage
EBITDA Interest Coverage
Net Debt to EBITDA

Each company was rated using financial ratios and scored through the Deloitte Model, which was correlated to match the results of credit rating agencies. The problem with the Deloitte Model is the underlying data is hard to obtain and the data is not available for all companies, thus making comparisons difficult.

Appendix C – Impact Analysis of Financial Ratios

Impact Analysis

An impact analysis of the financial ratios for assessing financial capacity was conducted to assess the impact on the number of companies that will be allowed some amount of self-insurance and hence provide insight in terms of the amount of additional security that will be required of companies since waivers will be eliminated.

The 149 companies reviewed were grouped for analysis as follows: (i) the full set of 149 companies; (ii) the subset of the 149 companies that are currently on BOEM’s list of waived lessees (22 companies); and (iii) the remaining 127 companies.

For each analysis group described above, the impact of setting a passing threshold for number of financial ratios was conducted and is summarized in Table C1 below.

Table C1: Number and Percentage of Lessees Eligible for 5% Based on Pass Rate

Passing Criteria (# Passing Benchmarks / Total Benchmarks)	4/9	5/9	6/9	7/9
Full Group (149 Companies)	Count Percentage	Count Percentage	Count Percentage	Count Percentage
	41 28%	28 19%	18 12%	9 6%
Passing Criteria (# Passing Benchmarks / Total Benchmarks)	4/9	5/9	6/9	7/9
Currently Waived (22 Companies)	Count Percentage	Count Percentage	Count Percentage	Count Percentage
	13 59%	9 41%	5 23%	2 9%
Passing Criteria (# Passing Benchmarks / Total Benchmarks)	4/9	5/9	6/9	7/9
Currently Non-Waived (127 Companies)	Count Percentage	Count Percentage	Count Percentage	Count Percentage
	28 22%	19 15%	13 10%	7 6%

For example, assuming a minimum pass rate of 5 out of 9 ratios, Table C1 indicates that 28 out of the 149 (or 19%) of the companies evaluated would pass and be eligible for self-insurance up to 5% of tangible net worth based solely on this criteria. Similarly, 9 out of the 22 (or 41%) of the waived lessees would be eligible for self-insurance based solely on this criteria.

Table C2 below contains a visual presentation of the number of currently waived lessees that would be eligible for self-insurance equal to 5% of tangible net worth based on the number of thresholds exceeded.

Table C2: Currently Waived Companies - #Passing Benchmarks / Total Benchmarks

Passes 4 of 9	Passes 5 of 9	Passes 6 of 9	Passes 7 of 9	Lessee	S&P Credit Rating
6	6	6	6	Company 1	AAA
6	6	6	6	Company 2	AAA
4	4	4	4	Company 3	AA-
5	5	5	5	Company 4	AA-
5	5	5	5	Company 5	A
0	0	0	0	Company 6	A-
5	5	5	5	Company 7	BBB+
1	1	1	1	Company 8	BBB+
1	1	1	1	Company 9	BBB
6	6	6	6	Company 10	BBB
2	2	2	2	Company 11	BBB
5	5	5	5	Company 12	BBB-
7	7	7	7	Company 13	BBB-
4	4	4	4	Company 14	BBB-
4	4	4	4	Company 15	BBB-
4	4	4	4	Company 16	BBB-
2	2	2	2	Company 17	CCC+
0	0	0	0	Company 18	NR
1	1	1	1	Company 19	NR
0	0	0	0	Company 20	NR
7	7	7	7	Company 21	NR
0	0	0	0	Company 22	NR
13	9	5	2	TOTAL # of Companies	22

While fewer currently waived lessees would be eligible for self-insurance, most of the lessees would still be able to fully self-insure as their additional security requirement is less than 5% of their tangible net worth. This is shown in Table C3 below which illustrates the impact of applying all the criteria (absent proven reserves). As one example, Company 12 is eligible for self-insurance up to 5% of its tangible net worth, and that is adequate to cover its entire additional security requirement. Of the 21 currently waived lessees that would be eligible for self-insurance based on financial capacity, only five would have to provide additional security.

Table C3: Total Allowance for Waived Companies Based on Passing 5 of 9 Ratios

Name	Financial Capacity		Financial Strength		Business Stability		Reilability			Record of Compliance	%	TNW*	Total Self-Insurance	Decom Liability (GOMR Only)*	Financial Assurance Required	Amount Owed	% Covered	
	5/9		PPR	Value	>5 yrs	+ / -	Rating	Credit	Trade	INCs / Shut Ins	Total	,000	,000	,000		,000		
Company 1	6	5			yes	0	AAA	5		0	10	174,399,000	17,439,900	278,708	No	0	100%	
Company 2	6	5			yes	0	AAA	5		0	10	51,911,000	5,191,100	237,915	No	0	100%	
Company 3	4	0			yes	0	AA-	5		(2)	3	76,300,000	2,289,000	220,155	No	0	100%	
Company 4	5	5			yes	0	AA-	5		0	10	36,784,000	3,678,400	1,174,700	No	0	100%	
Company 5	5	5			yes	0	A	5		(2)	8	150,435,000	12,034,800	1,970,826	No	0	100%	
Company 6	0	0			yes	0	A-	2		0	2	1,262,000	25,240	1,960	No	0	100%	
Company 7	1	0			yes	0	BBB+	2		0	2	9,661,000	193,220	26,660	No	0	100%	
Company 8	1	0			yes	0	BBB	2		0	2	13,156,000	263,120	708,946	Yes	\$445,826	37%	
Company 9	6	5			yes	0	BBB	2		(2)	5	25,850,000	1,292,500	703,989	No	0	100%	
Company 10	2	0			yes	0	BBB	2		0	2	9,705,000	194,100	812,125	Yes	\$618,025	24%	
Company 11	5	5			yes	0	BBB-	0		0	5	1,307,300	65,365	549,589	Yes	\$484,224	12%	
Company 12	7	5			yes	0	BBB-	0		0	5	3,880,000	194,000	16,805	No	0	100%	
Company 13	4	0			yes	0	BBB-	0		0	0	20,347,000	0	25,380	Yes	\$25,380	0%	
Company 14	4	0			yes	0	BBB-	0		0	0	20,561,000	0	62,415	Yes	\$62,415	0%	
Company 15	4	0			yes	0	BBB-	0		0	0	8,492,300	0	190,216	Yes	\$190,216	0%	
Company 16	2	0			yes	0	CCC+	0		0	0	2,114,300	0	0	No	0	N/M	
Company 17	0	0			yes	0	NR		2	0	2	4,348,000	86,960	0	No	0	N/M	
Company 18	1	0			yes	0	NR		2	0	2	433,700	8,674	5,585	No	0	100%	
Company 19	0	0			yes	0	NR		2	0	2	567,000	11,340	2,619	No	0	100%	
Company 20	7	5			yes	0	NR		2	0	7	234,000	16,380	94,135	Yes	\$77,755	17%	
Company 21	0	0			yes	0	NR		2	0	2	7,863,000	157,260	185,030	Yes	\$27,770	85%	
TOTAL # of Companies	8																	16 out of 21 could rely on self insurance

*Record of compliance was not calculated and is used in this example for illustrative purposes only.

Appendix D – Valuation of Proven Reserves

Typically, a purchase of an E&P company by a third-party buyer in case of a bankruptcy or default will be an arms-length transaction based on a determination of the Fair Market Value (FMV) of an E&P company's oil and gas reserves, and its other assets. A valuation performed in support of a sale, depending on its purpose, could assume a unique buyer with a specific capital structure, tax rate, and synergies. Since for BOEM's purposes we are only considering the value of proven reserves, the valuation process should only consider the net present value of the expected future cash flows from the production of proven reserves. These cash flows would then be based on the projection of future net production rates times expected commodity prices offset by estimates of future production costs such as lease operating expenses, and maintenance capital expense. Most importantly, the discount rate for FMV will employ a risk based discount rate that reflects the rate of return investors require in order to compensate them for the risk of actually receiving future cash flows.

Reserve Report Requirements

The SEC requires that companies report their assets and cash flows and their possible, probable, and proved reserves. Reserves volumes and values for publicly traded US companies are attached to financial statements and disclosed annually on Form 10-K. Privately held companies have no reserves disclosure requirements.

The SEC reported value is known as "PV-10" value, an acronym for "present value at 10%." Under PV-10, the value of proven reserves is defined as the present value of the estimated future oil and gas revenues, reduced by direct expenses and discounted at an annual rate of 10%. These amounts are calculated net of estimated production costs, future development costs and future income taxes, using prices and costs in effect as of a certain date, without escalation and without giving effect to non-property-related expenses, such as general and administrative costs, debt service, and depreciation, depletion, and amortization.

Reserve-Based Lending

Oil & gas companies often rely on reserve-based lending, in which they utilize their proven reserves as an asset to back a loan from a financial institution. This is often done when a company has established reserves and begun production on a lease and is looking for additional capital to continue exploring or begin production on other leases. The traditional reserve-based loan is secured by oilfield reserves, similar to other asset-based loans, like home mortgages. With respect to determining a lessee's financial strength, it is important to note that, in the case of default by the oil and gas company, the reserves (and the future potential revenue associated with the reserves), become controlled by the financial institution that provided the loan. It is also important to note that, unless a company has hedged its production through futures, forwards, or swaps, the company assumes the risk of crude price volatility on its reserve-based loans.

Many lessees have reserve-based loans which are not reported on the SEC Form 10-K and it is difficult for BOEM to determine what percentage of the reserves are unencumbered and would be available to cover the lessee's liabilities. In addition, there are several other risk factors that create uncertainty associated with valuing reserves, such as exploration risk, mechanical/operating risk, and timing issues.²² Because of the possibility that reserves might already be encumbered, the risk crude oil price volatility poses to the ability to pay back the loan, and the uncertainties in future production operations, Risk Management does not recommend adding the full value of proven reserves to a lessee's tangible net worth.

The existing NTL allows a lessee to request that "future net revenue associated with the value of proved producing reserves" be included in determination of its net worth. For record title interest holders, the existing NTL limits inclusion to 25% of the reserve value, while net revenue interest holders can include of up to 50% of the reserve value. To allow a lessee to get credit for its projected financial strength in its reserves, while reducing the risk to BOEM, Risk Management proposes using the lower, historically-based, threshold of 25% for proven reserves.

For reference, the **17 CFR § 210.4-10** definitions of oil and gas reserves are included below:

(22) Proved oil and gas reserves. Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible—from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations—prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time.

(17) Possible reserves. Possible reserves are those additional reserves that are less certain to be recovered than probable reserves.

(18) Probable reserves. Probable reserves are those additional reserves that are less certain to be recovered than proved reserves but which, together with proved reserves, are as likely as not to be recovered.

²² Chapman, Bryan. Energy Lending Presentation to IPAA Private Capital Conference, January 21, 2013 (<http://www.ipaa.org/meetings/ppt/2013PCC/BryanChapman.pdf>)

Appendix E – Financial Ratios

In the Credit Scoring Model, there are nine (9) financial ratios used. This appendix sets forth how to calculate each ratio along with the individual variables that make up the ratios.

$$1) \text{ Quick Ratio} = \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}}$$

$$2) \text{ Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$3) \text{ Total Debt / Equity} = \frac{\text{Total Debt}}{\text{Equity}}$$

$$4) \text{ Total Debt / Capital} = \frac{\text{Total Debt}}{\text{Capital}}$$

$$5) \text{ Total Debt / EBITDA} = \frac{\text{Total Debt}}{\text{EBITDA}}$$

$$6) \text{ EBIT / Interest Expense} = \frac{\text{EBIT}}{\text{Interest Expense}}$$

$$7) \text{ Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}}$$

$$8) \text{ Return on Equity} = \frac{\text{Net Income}}{\text{Interest Expense}}$$

$$9) \text{ Cash Flow from Operations / Total Debt} = \frac{\text{Cash Flow from Operations}}{\text{Total Debt}}$$

Variables used to Calculate Financial Ratios:
Total Debt
Cash from Operations
Current Assets
Current Liabilities
Net Income
Total Assets
Capital
Interest Expense
Income Tax Expense
Depreciation and Amortization
Inventory
Equity
Shareholder Equity

EBIT (**E**arnings **B**efore **I**nterest and **T**axes) = (Net Income + Interest Expense + Income Tax Expense)

EBITDA (**E**arnings **B**efore **I**nterest, **T**axes, **D**epreciation and **A**mortization) = (Net Income + Interest Expense + Income Tax Expense + Depreciation and Amortization)

Cash Flow from Operations = (EBIT + Depreciation and Amortization +/- Working Capital)

Tangible Net Worth (TNW) = Total Assets – Total Liabilities – Intangible Assets²³

²³ Intangible assets include: patent rights, intellectual property rights and any goodwill being kept in the balance sheet. The idea is to measure only assets that are fungible that can be liquidated easily to pay off creditors in the case of insolvency

Appendix F – Scoring Model (Snapshot View)

The accompanying Excel file (“RMP Credit Scoring Model (04-19-2016.xls”) contains a simplified scoring model that includes the credit assessment and scoring methodology outlined in this paper. The financial analyst would input the data from the lessee’s financial statements and other sources into the model within the yellow highlighted cells and the model displays the impact of each criteria and the final amount, if any, of the total self-insurance percentage and nominal dollars in the output cells.

Output Cells

Name of Company		Financial Capacity		Financial Strength		Business Stability		Reliability			Record of Compliance		% Total
Generic Oil Company		5/9	+ / -	Proved Reserves	Value (\$000)	>5 yrs	+ / -	Rating	Credit	Trade	INCs / Shut Ins		7
		9	5	119,000,000	\$104,125	Yes	0	BBB+	2		0		
Tangible Net Worth (\$000)		Tangible Net Worth plus Proved Reserves (\$000)		Total Self-Insurance (\$000)		Decommissioning Liability		Financial Assurance Required			Amount of Required Financial		% Covered
\$17,880		\$122,005		\$8,540		\$13,805		Yes			\$5,265		62%

Company Name		Financial Capacity		Financial Strength		Business Stability		Reliability			Record of Compliance	
Generic Oil Company												
		(\$000)		BOE		5yrs Operation		Credit Rating			Credit	
Tangible Net Worth (\$000)	\$17,880	Total Debt	\$1,853.2	Proved Reserves	119,000,000	Yes	Yes	BBB+			0	
		Cash from Operations	\$1,619.4	Unit Value (\$/BOE)	\$7.00		0				Explanation:	
		Current Assets	\$931.8	Proved Reserves Val	\$833,000,000			Trade References				
Decommissioning Liability (\$000)	\$16,805	Current Liabilities	\$776.3	Method Used	3) BOEM Proxy PV10	Explanation:		Explanation:				
		Net Income	\$507.0	Explanation:								
Existing Financial Assurance (\$000)	\$3,000	Total Assets	\$8,725.3									
		Capital	\$59.3									
		Interest Expense	(\$36.9)									
		Income Tax Expense	\$298.7									
		Depreciation and Amortization	\$806.0									
		Inventory	\$40.0									
		Equity	\$4,500.6									
		Shareholder Equity	\$4,262.2									

Input Cells

Appendix G – Maximum Self-Insurance of 10% of Tangible Net Worth

A lessee's self-insurance is effectively an unsecured line of credit that transfers the risk of non-performance from the lessee to BOEM. To determine the appropriate maximum allowable amount of self-insurance, BOEM hired the independent consulting company Deloitte. Based on Deloitte's research and experience with unsecured credit lines in the energy industry, Deloitte recommended, for companies with an AAA credit rating, a maximum level of self-insurance to be 10% of a company's Tangible Net Worth (TNW).²⁴

The practice of providing unsecured credit lines of 10% or less of TNW is common among oil and gas traders, and is corroborated by other organizations within the energy sector that provide credit to counterparties. At least six Regional Transmission Organizations (RTO)/Independent System Operators (ISO) that serve the electric power industry (Midcontinent Independent System Operator, PJM²⁵, MISO Energy, California ISO, Electric Reliability Council of Texas, and Ohio Valley Electric Corporation²⁶) currently use 10%, or less, of TNW as the maximum credit limit.

Further evidence of this limit is found in the Federal Reserve Guidelines for loans, where it is stated that a "rule of thumb limits unsecured debt to the lesser of 10 percent of a borrower's net worth or 50 percent of the borrower's unencumbered liquid assets."²⁷ Determining a borrower's unencumbered liquid assets requires substantial specialized analysis, therefore Risk Management recommends relying on the 10 percent of a borrower's net worth figure.²⁸ The topic is also discussed in the Credit Management Handbook²⁹ with respect to extending credit to one's customers: "a typical approach is to take a proportion of the customer's known financial worth, such as the lesser of 10% of net worth."³⁰

²⁴ The International Energy Credit Association's survey on Leading Credit Practices indicated that Tangible Net Worth is the most common measure used by industry. TNW provides a more accurate assessment of an entity's liquidity as it does not include intangible assets such as goodwill.

²⁵ Limit of 2.5% of TNW, <https://www.pjm.com/~media/documents/agreements/pjm-credit-overview.ashx>

²⁶ Ohio Valley Electric Corporation (OVEC), Scoring Model for Credit

²⁷ Federal Reserve, Federal Reserve Bank of Atlanta, The Supervision and Regulation Division, Banking Information. <https://www.frbatlanta.org/~media/Documents/banking/publications/guide-for-specialized-credit-activities.pdf>

²⁸ In this case the net worth would be adjusted to the tangible net worth based on Deloitte's experience in the energy industry noted above.

²⁹ The author, Burt Edwards is a Professor of Accounting and Finance; he retired in 2000 after 40 years in credit and treasury management, the last eight as consultant to major international companies. The Credit Management Handbook is a standard text used by the Chartered Institute of Credit Management (CICM). The CICM is Europe's largest professional association for the credit community.

³⁰ Edwards, Burt. Credit Management Handbook, 5th Edition 2004, pg. 123