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## Reserve based finance

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A TALE OF TWO MARKETS



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A TALE OF TWO MARKETS - PART 1

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**EDITOR'S NOTE:** This is Part 1 of a four-part article examining the evolution, practices and future of the reserve based finance markets in the US and internationally. The series will run in the January, February, March, and April issues of OGFJ.

**THE RESERVE BASED FINANCE (RBF)** market can broadly be divided into two subgroups based on the norms of their respective deal structures as well as the location of the participating lending banks (or, in the case of the global banks, relevant lending offices). First, there is the North American market, which is comprised of the United States and Canadian markets but which excludes Mexico. Secondly, there is the international RBF market which is centered in London and covers most mar-

kets outside the North American market (and which includes the EMEA countries in particular). In discussing the North American market, most of the focus is on the United States; while the Canadian market has its own specifics, it is nonetheless very similar to the larger US market. Similarly, while the Asia Pacific reserve based finance markets have some differences and regional peculiarities, they have their origins in and are broadly based along loan structures originating in London. To date, the limited number of upstream debt financings in Mexico and South America have been largely domestic financings or arranged in the North American market rather than the International RBF market but going forward this may change. This article will discuss the evolution of these two markets, the differences between them, and the reasons why these differences may be reduced or eliminated over time.

The International RBF market has been a thriving and expanding one for almost 40 years. Originating in the UK North Sea it has expanded over subsequent decades across the globe but its center today, in terms of the banking teams active in it, is still predominantly London. The North American RBF market, the world's largest, predates the International RBF market. The bulk of the transactions that comprise this market involve US assets and are originated in, and serviced by, Houston-based banking teams.

Despite the fact that a number of market participants (in particular the global banks) have historically been active in both markets, these two markets have nonetheless travelled separate and different paths, and the resulting financing techniques and structures that have evolved are different. One has to look at the history of how the two markets originated and developed to understand why they are so different. As noted above, however, there are a number of factors pointing to a possible convergence of these two worlds. This article consists of four parts.

#### Parts 1 and 2 examine:

- The background to the development of the two markets
- Facility structures, sources of debt for the upstream sector
- Amortization and reserve tails
- Reserve analysis and bankable reserves
- The Banking Case and assumption determination

#### Parts 3 and 4 examine:

- Debt sizing and cover ratios
- Loan facility covenant packages
- Hedging
- Default
- The future of RBF and possible convergence of markets

## BACKGROUND TO THE DEVELOPMENT OF THE TWO MARKETS

The upstream debt financing market outside of North America began in the 1970s when independent oil and gas companies entered the North Sea arena and the first large North Sea discoveries got to the stage of needing development finance. The catalyst for the entry of new independent oil and gas exploration and production companies into the market was the then UK government initiative of encouraging UK players into North Sea exploration and development. A number of the international oil and gas majors from regions outside of the UK were taking large portions of North Sea acreage, and this was becoming unfavorably viewed by the UK's Department of Trade and Industry who wanted to see "UK PLC" more involved in this new and important UK industry. To address this concern, some of the oil and gas majors began to team up with UK industrials (such as Associated British Foods and the Thompson publishing group), many of which had no previous involvement in the oil and gas sector. As a result, new subsidiaries were formed by those UK industrials to take small stakes in fields alongside the majors.

Once the North Sea fields matured to the stage of needing their development financed, a number of these UK industrials turned to the bank market to project finance the development of individual fields. The trend continued as a number of stand-alone UK independent exploration and production companies were formed by senior executives breaking off from the majors in particular the newly-privatized Britoil (which became part of British Petroleum). Initially, they too were undertaking single-field project financings, but as these fledging businesses grew and matured into companies with portfolios of upstream assets at different stages of the exploration, development and production cycle, the demand arose for a more flexible financing technique which would give debt capacity to both producing and development fields (and allow debt capacity to change as the borrower's assets and their profile changed). Through such a financing technique the projected cash flows from both development projects and producing fields could be used to finance the new development projects (as well as further exploration).

The technique of lending against producing oil and gas assets was already long established in the U.S. market, and so the scene was set for the development of a new hybrid financing technique in the UK, which became known as "borrowing base" finance. This new lending structure drew together elements of both (a) the early North Sea single field project financings (based on term facilities structured around net present value driven cover ratios of the specific oil and gas reserve

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<sup>1</sup>This article contrasts "U.S. RBL" facilities with "International RBL" facilities but, for the most part, the comments regarding U.S. RBL facilities apply also to Canadian ones.

<sup>2</sup>For the purposes of this article "reserve based finance" or "RBF" is the generic term used for all types of finance based on the value of or cash flows from underlying reserves. "RBL" is used specifically refer to senior bank debt within the wider RBF spectrum.

asset), and (b) the US reserve based lending techniques of providing revolving credit facilities that are sized principally by the net present value of a portfolio of producing assets. This international version of the US borrowing base product was pioneered in London by the US bank Manufacturers Hanover around 1983, and following this, a number of other UK, continental European and US banks began to play in the small niche North Sea bank debt market. The UK RBF market, however, has always been rooted in financing development projects rather than financing proved producing assets, and it is this feature which continues to be a principal difference between international reserve based lending and the North American reserve based finance market.

Since those early days the international RBL market has developed from its North Sea roots to become a market where oil and gas fields across Europe, the Middle East, the Far East and Africa are financed. The market continues to grow and now comprises in excess of 30 active bank participants (although only a small percentage, perhaps between a third and a half, of these will routinely take true material upstream development risk). There are also a small number of non-bank funders recently entering the market consisting of funds from non-bank financial institutions and diversified industrial conglomerates.

As noted above, the US upstream finance market started much earlier than its international counterpart. The market had its origins in early US asset based lending practices and the earliest examples of this type of lending can be traced back to the 1940s when many of the pioneers of the Texas oil indus-

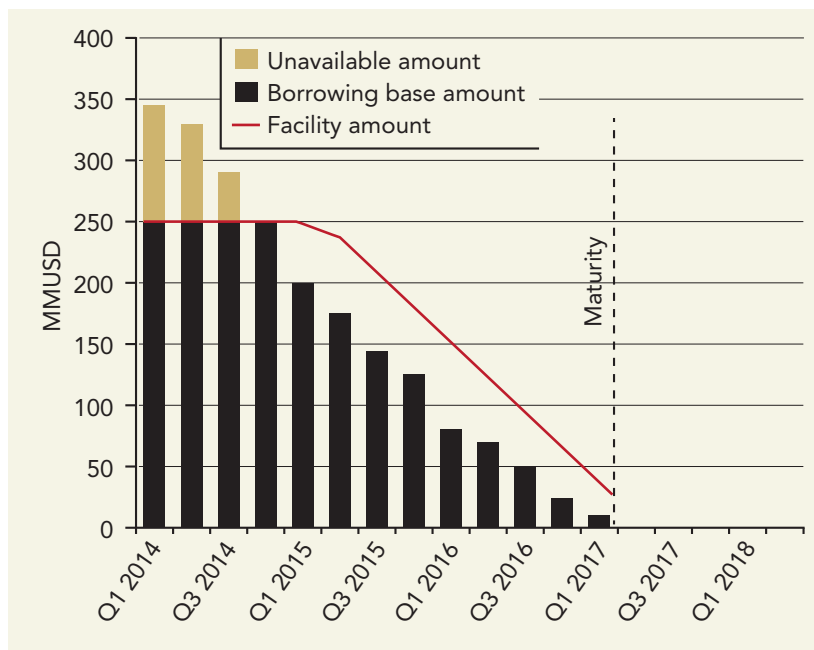
try such as H.L. Hunt and Clint Murchison were building their fortunes. The first institution to adapt asset based lending to the oil industry by securing hydrocarbon reserves seems to be lost in history, but certainly banks in the US were the first to hire petroleum engineers and develop internal expertise at the valuation of reserves. Though the amount of money involved in the petroleum industry was larger than the earliest examples of asset based lending, the business was well suited to fit the framework of the emerging asset based lending market. Oil and gas production was risky, rapidly expanding, and involved thousands of small, unproven, debtors with large needs for working capital. Banks and finance companies, wary of individual debtors who were themselves unproven, were willing to

lend against proved, developed, and producing reserves. Critical to the development of reserve based lending in the US was the ability of banks to have asset-level perfected security through a mortgage on the underlying field because of the unusual circumstance that it is generally possible for the debtor to own the hydrocarbons outright. Moreover, because even small operators usually produced from several wellheads and reservoirs, the ability to place multiple

properties into an asset class, the reserve base, allowed for diversification both internally to the loan itself and across an institution's oil and gas loan portfolio.

The US market expanded significantly in the 1970s as oil prices increased. Because income tax rates in the US were relatively high, companies used different structures to try to minimize these higher taxes. Lenders on the other hand were concerned about getting control of the cash associated with

**Fig. 1: INTER-PLAY BETWEEN FACILITY AGREEMENT AND BORROWING BASE AMOUNT, SIMPLE CASE**



<sup>3</sup>The first significant discovery of oil within the United Kingdom continental shelf was in 1966 but it is generally accepted that the first major North Sea project financing was not until 1972 when BP financed their interest in the Forties Field. In fact this financing was structured as a forward sale (with the lenders paying up front the purchase price of oil to be delivered following project completion). The first financing took this form in part because of doubts at the time over whether under English law you could have a loan where the obligation to repay was not absolute but these doubts were overcome and the Forties field financing was followed in 1974 by two financings for the Piper Field. The first by Thompson which was a limited recourse loan (where the actual obligation to repay was contingent on cash flow from oil being available to make repayment) and the other, by Occidental, which was structured as a loan convertible into a production payment on completion of the field development.

production proceeds. The result was a type of project financing that whereby the lenders would loan to an entity that had a specific set of producing assets that generated cash flow that would be paid directly to the lender. In the early 1980s, however, lenders became more competitive and the modern day borrowing base structure emerged. Borrowers were now allowed to receive their production proceeds directly and revolving lines of credit became the norm.

### FACILITY STRUCTURES, DEBT SOURCES FOR THE INDEPENDENT SECTOR

#### Description of the International RBF market

With some limited exceptions in specific local markets, RBL facilities have become the financing technique of choice for international (i.e. non-North American) independents raising debt. With the exception of single field project financings (structured as amortizing term loans), facilities are almost always structured as amortizing revolving credit facilities. There are also a small, but increasing, number of corporate loan credits in the upstream sector. With the exception of the Norwegian Bond market and Sweden, there have to date been very few bonds issued for the international upstream independent sector since, as explained below, the High Yield debt markets are smaller and less developed outside North America.

#### RBL facilities

The vast majority of sub investment grade independents outside of North America use RBL facilities as their prime or, more

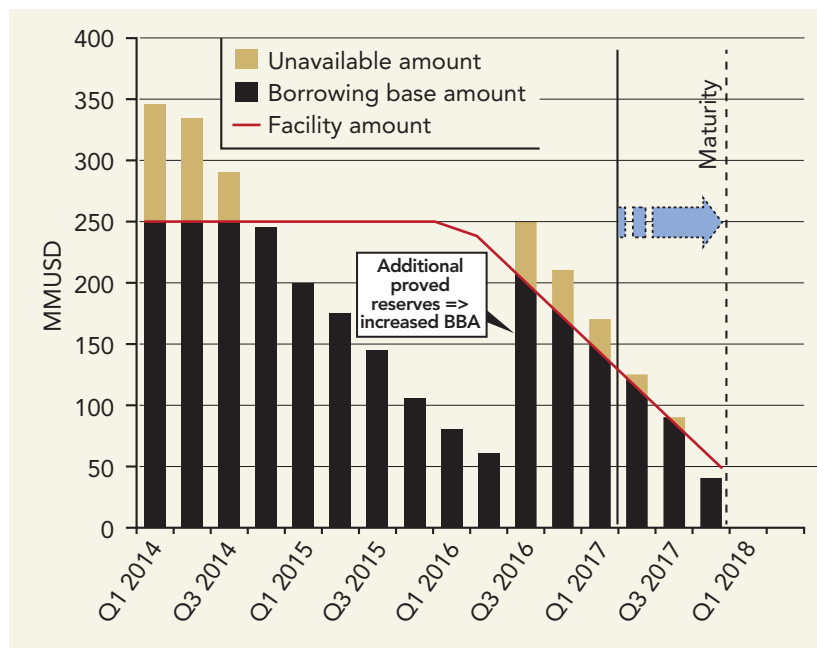
often than not, only source of debt finance. Facilities are almost always revolving and fully amortizing over their term. The borrower is able to borrow the lower of the “Borrowing Base Amount” and the amortizing “Facility Amount”. The superimposition of a fixed amortization schedule over the fluctuating Borrowing Base Amount is in marked contrast to US RBL facilities, which typically have bullet repayments (subject to certain mandatory prepayment events) where the bank market takes a refinancing risk. This amortization feature of the International RBL market is an overhang of the early “project loan” history of the market. Facilities usually have a term of around five years, though on occasion the tenor may be up to seven years (and in some markets such as the Middle East, even longer). The

Borrowing Base Amount will typically be determined twice a year using an agreed “Projection” or “Banking Case”(to be discussed further in Part 2), and will be determined by applying the lower of a Loan Life Cover Ratio and a Project Life Cover ratio to the discounted cash flows of the Borrowing Base Assets. Sometimes Debt Service Cover Ratios also apply.

The Borrowing Base Assets will typically be a combination of devel-

opment and producing assets (with the ability to add or remove assets subject to controls and, typically, an approval of 2/3 of the bank group (by Commitments). Sometimes there is a limit to the portion of the discounted cash flows that can be derived from development assets. Where the Borrowing Base Assets include significant undeveloped components, then structural features of development or project loans will increasingly apply. No two deals are identical and there is a continuum between,

Fig. 2: INTER-PLAY BETWEEN FACILITY AGREEMENT AND BORROWING BASE AMOUNT, COMPLEX CASE



“Large well known “branded” corporate names with established management teams and long track records have in recent years succeeded in getting large (several billion dollar) borrowing base loans syndicated to large (>20) bank groups where the profile of the included assets was dominated by undeveloped fields. However, these are still exceptions where the included undeveloped fields are or were “world class” in terms of their size and in some cases where peculiarities of the fiscal regime (e.g. tax allowances) mitigated some aspects of development risk. Many of the institutions backing these companies would be unlikely to back less established companies on a smaller single field development.

at one end, a development loan for a single undeveloped field which may have additional features to ensure sufficient liquidity of the borrower and protections to ensure the borrower has sufficient funds to complete the project and, at the other end of the spectrum, a borrowing base of a well-diversified portfolio of producing fields and a more flexible covenant structure. Pure development financings (provided on a term rather than a revolving basis) to companies with no producing assets at all are still common. Wider portfolio borrowing base facilities, however, far outnumber such traditional development loans as most companies taking a development loan eventually graduate to a wider borrowing base as they go through their life cycle.

It is common to prescribe in the loan documentation a convention and pre-agree which reserves categories are taken into account in the Banking Case. It is also typical to provide that only proven reserves are taken into account until a field has a satisfactory production history (though there have been cases where probable reserves are used even for development projects) and for proven and probable reserves to be taken into account for producing fields. Possible reserves and contingent resources have played no part in RBL financings (though may occasionally form the basis for other types of bank facilities).

Figure 1 illustrates the inter-play between the Facility Agreement and Borrowing Base Amount in a simple case where no assets are added or removed to the borrowing base. The amount actually available for drawing is illustrated by the black portions of the vertical bars.

Figure 2 illustrates a more complex case where, in Q3 2016, a new asset is added to the borrowing base. This increases the Borrowing Base Amount. It also has the effect of pushing back the Reserve Tail Date and consequently the Final Maturity Date of the facility. The Reserve Tail Date concept will be further explained in Part 2.

### Corporate loan facilities

There are cases where exploration and production companies reach a particular size and their producing fields become more significant to their valuation than their development assets. When this occurs, companies often move from RBL facilities (where the facility size is based largely on projected future net cash flows) to more traditional corporate facilities where facility size is determined by reference to (backward looking) financial covenants such as debt to EBITDA or debt to EBITDAX (i.e. EBITDA minus exploration expenditure). There are, however, only a small number of such facilities on a relative basis when compared to the number of RBL facilities. Sometimes corporate facilities are sized against reserves (so the debt must not exceed the reserves on the basis of an agreed “dollars per barrel” formula) or, occasionally, even contingent resources. The advantage of these loans for the borrower is they look back at last year’s earnings when determining repayment and availability and thus, don’t immediately constrain the debt available in case of a commodity price drop (as a forward looking NPV

based loan would). The disadvantage from a banker’s perspective is just that - the repayment covenant bites some time after the cash position of the company has worsened. For this reason such facilities are normally available only to larger companies with significant production bases either as the sole bank debt in the capital structure or, occasionally, as a small incremental corporate liquidity line (subordinated to the borrowing base) for companies whose main line of credit is provided by an RBL facility.

### Second lien or junior loan facilities

Whereas “second lien” plays a significant role in the US upstream market, it is rarely seen in the international markets. Such facilities (referred to in the international market as “junior facilities” rather than “second lien”) have become even more rare in recent years. Unlike the US where the second lien facility will typically be fully drawn at closing (often in connection with an acquisition), the international market version instead typically takes the form of corporate liquidity lines provided to give additional liquidity on top of the borrowing base. Sometimes these contingent liquidity lines are stapled to a development loan to ensure sufficient liquidity to complete the project in the event of an unexpected cost overrun on the project. In the international market, the same banks as the senior bank group (or a subset of them) will provide this additional debt capacity (usually based on lower cover ratios but otherwise much the same structure and covenant package as the senior facility). Occasionally, they are provided on a corporate loan (EBITDA) basis for a higher margin. The product is usually very different from the US second lien loan structure which, as will be further described in Part II, is usually structured as a non-amortizing second lien secured term loan with more aggressive lending against the borrower’s proved reserves (i.e. less “risking of reserves” than first lien senior debt).

### Mezzanine loans, bridge loans, pre-development sanction loans

Unlike in the US where there is a vibrant mezzanine market (in part filling the gap created by the absence of a senior bank debt market for development projects) there has until recently been an extremely limited mezzanine market for exploration and production companies outside of the North America market. Facilities tend to be bilateral and, sometimes, provided as pre-IPO finance by investment banks who link the debt to an IPO mandate. The absence of a healthy mezzanine debt finance market has proved problematic for the smaller start-ups which have not yet achieved the track record or reserves necessary to meet the requirements of RBL lenders. There are some signs however of North American financial institutions and other funds who are active in this market identifying this as a gap, and the international market seems set to see greater liquidity here. This is one example of the differences between the North American and international markets shrinking. Further examples are provided below.

Short term bridge facilities are quite frequently made available to independents in the context of financing an acquisition of assets. They typically have a duration of approximately one year and a bullet repayment at maturity. Usually the intention is that they will be repaid from a longer term RBL facility (but the short time frame for the acquisition and demands for certainty of funding sometimes dictate that an RBL facility is not suitable as the source of funds for the acquisition).

Pre-Development Sanction loans against contingent resources, another form of bridge financing, are a specialized sub sector of the international market where a few major banks will provide loans to companies against the “value” of a discovered and appraised field not yet sanctioned for development. Such loans are usually made with the expectation that the subsequent development sanction will be forthcoming from the host government and that the bridge will be repaid from the proceeds of a development loan. These bridges, which are essentially “pawn brokering” against the value of the asset, are small compared to the asset value and are normally restricted to very large strategic discoveries where the likelihood of the discovery not moving forward to development is very low. These deals are also mainly “club” deals as the expertise, comfort, and knowledge to do them is restricted to a subset of the wider reserve based finance market.

## Bonds

With the exception of Norway and Sweden, bonds currently play only a small (but increasing) role in the artillery of debt products for independents outside the US. Institutional High Yield debt market for smaller European (sub investment grade) oil companies is newer, less deep and less developed than its US counterpart. Historically, this is partially due to structural differences and differences in the classification of reserves across the markets as SEC registered HY securities (“Registered” or 144A with “registration rights” under the US Securities Act section of the US High Yield market accepts only SEC “proved” reserves - a classification that has little use to non-North American listed / domiciled companies). Increasingly, however, companies are accessing the non-Registered USD HY markets which do not restrict companies to SEC criteria.

Significantly, Tullow Oil, a large European-based independent oil company, recently successfully launched a USD HY

Bond into the non-Registered 144A market. This followed on from two issues by Afren plc, a London-listed independent focused on Africa. This trend is something the authors expect to see more of from independent exploration and production companies with assets and operations predominantly located outside North America.

Over the last decade and particularly during 2013, there has been an increase in the development of the “Norwegian” bond market. The market, originally denominated in kroner and used to finance Norwegian rig and oil field service companies from Scandinavian domiciled investors, has expanded considerably, funding international upstream oil and gas companies from a wider investor base with USD. This expanding market currently provides the main (but still much smaller) alternative to RBF facilities for international sub-investment grade independents. Service companies, however, still represent the majority of issuers into this market currently.

Bond markets and their investor base aside, other intangible factors have also played a part in limiting the incidence of bond debt for exploration and production companies in the international market.

Security on enforcement outside of North America is often less certain and normally dependent on State approval. International lenders are therefore far more sensitive to cross default risk than their North American counterparts. In the international bank market, lenders have traditionally taken the view that if they are providing a reserve based facility to a company, then they are the company’s funders and they do not want the additional risk and loss of control that would arise if the company had a complex capital structure with many other classes of debt.

Having said this, High Yield issues by non-US independents are on the increase—a feature of the international market that appears set to move closer to its US counterpart as international exploration and production companies, with the help of bank rating advisory teams, educate investors and rating agencies on the differences (reserve classification/legal jurisdiction/country risk) relating to the business of international oil companies.

In Part 2 of this series, the authors will examine facility structures and sources of debt for the upstream sector in the North American market, amortization and reserve tails, reserve analysis and bankable reserves, as well as The Banking Case and assumption determination. **OGFJ**



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## A TALE OF TWO MARKETS - PART 2

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This is the second part of a four part article examining the evolution, practices and future of the reserve based finance markets in the US and internationally. Part 1 appeared in the January 2014 issue of OGFJ. In this, Part 2, the authors examine facility structures and sources of debt for the upstream sector in the North American market (these areas in the international market were reviewed in Part 1), amortization and reserve tails, reserve analysis and bankable reserves, as well as The Banking Case and assumption determination.

### DESCRIPTION OF US RBF MARKET

US producers of oil and gas have a variety of financing options depending on certain factors. The variables include: type and location of the company's assets, overall creditworthiness of the producer, existence or absence of an equity sponsor, operating history, and experience of the management team. Companies that have producing assets (and hence, usually have good cash flow) will often access the commercial bank markets and establish a traditional borrowing base revolving line of credit. Other producers may have little or no producing assets and must look to the mezzanine and Term Loan B market (institutional debt funds) for more expensive term loans. Finally,



many publicly listed companies access the public markets and issue high yield bonds on either a secured or unsecured basis. Below is a brief description of some of the more common types of upstream financing alternatives available to independent exploration and production companies in the US.

#### **Bank revolving lines of credit**

Commercial banks typically offer two types of revolving lines of credit to upstream oil and gas producers. First, an asset based line governed by a borrowing base tied to the present value of the company's proved oil and gas reserves, and second, a more traditional corporate credit facility which is not governed by a borrowing base but by backward looking EBITDA covenants. The borrowing base product is much more prevalent as most companies don't have the creditworthiness required to have a simple EBITDA (earnings) based loan. The borrowing base is redetermined two times a year (although sometimes quarterly if rapid changes to the reserves are expected) using a reserve report. These loans are secured by the reserves as well as by substantially all of the personal property assets of the borrower and its subsidiaries. Financial ratios typically include a leverage test (debt to EBITDA) and a current ratio (current assets to current liabilities). Banks providing these loans typically lend against SEC Proved Developed Producing (PDP) and Proved Developed Non-Producing (PDNP) classified reserves. Additionally, they may give a small percentage of value to Proved Undeveloped Reserves (PUDs). Cash flow (EBITDA based) revolvers are usually available to investment grade or sometimes "cross-over" companies (i.e. those close to IG grade or large non publically rated companies where banks own internal ratings place them at the IG end of the credit scale). These loans are often unsecured and are not governed by a borrowing base.

Unlike the international market, in US borrowing base loans there are no cover ratios in the loan documentation because they are considered superfluous; the ability to reset the borrowing base if loan to value metrics shift is considered more than sufficient to protect the lenders. In determining the borrowing base, each bank does its own analysis, compares the results to its own internal guidelines and then agrees or does not agree with the borrowing base amount requested by the borrower or proposed by the bank serving as the administrative agent for the loan facility (see the section below on the Banking Case).

#### **Second lien**

Some commercial banks and other financial institutions will make available to producers second lien secured term loan financings. These term loans often have a bullet repayment and carry a higher interest rate than the first priority secured revolving lines. Certain banks offer this product in conjunction with their provision of the first lien revolver and it is utilized in situations where the first lien lenders are unable to "stretch" the borrowing base to a level that affords the borrower the requisite amount of debt it is seeking. Because of the higher interest

rate, many borrowers will repay this debt when either a liquidity event occurs or alternatively from increases in borrowing base availability when they occur. Senior first lien borrowing base lenders will, however, usually restrict repayments and prepayments of the second lien and consent from such lenders is often necessary before the borrower can retire such debt.

#### **Mezzanine loans**

Companies that do not have significant producing reserves (and in some cases, they may not have significant proved reserves) often turn to the mezzanine loan market to obtain development debt capital. These are typically higher interest term loans with tight covenants and extensive controls on funding. In the absence of a regulator imposed development plan, as seen in offshore fields in the international market, the borrower and the lender usually rely on an "approved plan of development" or "APOD" agreed in the financing documentation as the guiding plan on how the loan proceeds are to be used to pay the costs of development. In this way the facilities seek to mitigate the "development certainty" risk covered by heavy government regulation of offshore developments in other parts of the world. These loans are secured by substantially all of the assets of the borrower and, because there is no borrowing base to regulate the loan to value metrics, a collateral coverage ratio is typically included in the list of financial ratios. These loans are provided by financial institutions that specialize in mezzanine lending. Energy Infrastructure Group (EIG), Carlyle Group, Apollo and Highbridge are all examples of institutions that have raised large funds to make these types of investments. These loans are often repaid through a sale of assets or a takeout financing provided by senior banks once the fields start to produce.

#### **High yield bonds**

Companies that have access to the public markets have been very successful in the past few years issuing high yield bonds. Most of these transactions are at least \$100,000,000 in size and many are much larger (at least \$300m particularly at first issuance as most investors want to see a minimum liquidity in the bond and below this there may be a liquidity premium). They are typically done on an unsecured basis but secured high yield transactions are not uncommon. If secured, the bonds rank second in priority to the borrower's traditional senior bank facility. Some borrowers build in the flexibility under their senior bank facility to issue these bonds so long as such bonds meet certain parameters (maturity date later than senior bank maturity date, covenants not more restrictive than senior bank covenants, etc.) In many cases banks might also require also that the borrowing base reduces by a percentage (typically 25% or 30%) of the principal amount of the bonds issued (this feature compensates for the increased interest burden of the high yield notes). Institutional investors such as insurance companies are the primary holders of such bonds. The combination of subordinated or unsecured bonds and a secured corporate

revolver or borrowing base facility represents the classic debt capital structure of the US independent exploration and production company.

### Volumetric production payments

Another financing alternative for US producers of oil and gas is a volumetric production payment (VPP). A VPP is a limited term, non-operated property interest, typically created by means of a conveyance, that entitles the VPP holder to receive a specified share of the hydrocarbons produced from the underlying property or properties of the VPP seller (the producer) during each specified period (daily or monthly), free of any taxes or costs of production, in exchange for an upfront payment from the VPP holder.

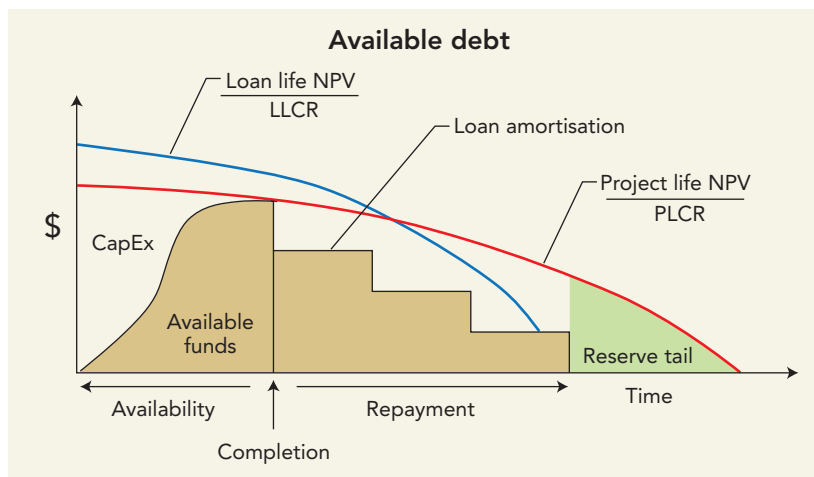
A VPP expires when a producer has delivered a specified quantity of hydrocarbons to the holder. The scheduled volumes that a holder is entitled to receive under a VPP are typically determined based on a portion (usually 60% to 80%) of the Proved Developed Producing (PDP) reserves. If the holder does not receive its specified volume of hydrocarbons during any specified period, it is entitled to receive additional volumes in future periods. The quantity of additional volumes is determined using a formula that converts the value of the hydrocarbons the holder failed to receive into an equivalent value of hydrocarbons in a future period. The formula also includes an interest component to compensate the holder for the delay in delivery.

VPPs are often used by producers with suboptimal creditworthiness as a financing alternative during periods of high commodity prices and low interest rates when such producers are motivated to obtain favorable hedging and lending terms. Perceived advantages of a VPP for a producer include: (i) maintaining operational control over the burdened properties while shifting reserve risk from the producer to the VPP holder – a producer’s obligation to deliver hydrocarbons under a VPP only arises, as and when the producer produces hydrocarbons from the properties burdened by the VPP, (ii) limited recourse to the fields – VPPs are typically only secured by the properties burdened by the VPP and (iii) the ability to obtain a commodity and interest rate hedge without ongoing margining requirements.

The primary benefit of a VPP to a holder is that, unlike a secured loan, a VPP provides the holder with a direct ownership interest in the underlying properties. In many states, including Texas, this interest is characterized as a real property interest and therefore would not be included in the producer’s estate if the producer is subject to a bankruptcy proceeding. Consequently, to the extent the producer continues to produce hydrocarbons after it files for bankruptcy, the holder should continue to receive its share of production without being impeded by the automatic stay.

In many cases historically a VPP structure may have allowed a higher leverage for a given amount of reserves or production to be raised than an equivalent RBL loan with hedging. However, with the rise of the non-conventional resource plays in the US and the ability to get the bank market to accept more aggressive hedging covenants associated with them, VPP’s are less common in the US market than they have been in the past partly because they do not offer the same leverage advantage over conventional RBL’s (with hedging) for these kinds of resources.

**Fig. 1: INTERRELATION BETWEEN COVER RATIOS, RESERVE TAIL, AND FINAL MATURITY DATE**



### AMORTIZATION AND RESERVE TAILS

There are some fundamental differences in approach between the international and US markets in the area of tenors and amortization and in relation to the issue of a “reserve tail”.

The international markets, facilities are sized and their tenors are set to ensure that they fully amortize through cash flow, usually in a fairly straight line basis after an initial grace period, by the “Final Maturity Date”. Following the traditional project financing model, lenders are generally not willing to take a refinancing risk so it is axiomatic that net cash flows from the fields should be sufficient to repay all debt by the Final Maturity Date. Final Maturity Dates are in part driven by the market and how long the market is willing to go out to (currently a maximum of seven years)<sup>1</sup> but they are also driven by the concept that field net cash flows must be sufficient to fully amortize all debt by the Final Maturity Date. The Final Maturity Date will be the earlier of a preset long stop date and the “Reserve Tail Date”. The Reserve Tail Date is the date by which

There are some fundamental differences in approach between the international and US markets in the area of tenors and amortization and in relation to the issue of a “reserve tail”.

a pre-set portion (usually 25%) of the initial approved reserves taken into account in the first Banking Case remain to be recovered. The reserve tail will be reviewed and, potentially re-set, at the time of each Banking Case and therefore the Final Maturity Date of the debt may move in or out at the time of each Banking Case redetermination (but subject of course to a maximum possible Final Maturity Date which is set in stone at the outset).

Debt reductions are also driven by a retesting of cover ratios each time a Banking Case is adopted. The reserve tail concept is an overhang of early development loans designed to ensure repayment of debt comfortably before the abandonment of offshore fields becomes an issue (when the CAPEX for abandonment can be substantial). The tail also adds additional protection in the event of an oil price drop (as fewer reserves will be economic) and in the case of an unexpected reduction of reserves or acceleration of extraction.

As fields have gotten smaller, particularly in the North Sea, the reserve tail itself as a structural feature can in some instances be a less effective credit control as a 25% reserve tail may not equate to a 25% NPV value tail because of the effect of abandonment CAPEX on the NPV. This can be particularly marked on smaller marginal fields. The reserve tail feature can also be particularly important on shorter life offshore fields where, because of the abandonment CAPEX, the Project Life NPV can be less than the Loan Life NPV (due to the effect of the abandonment costs) this is illustrated in the example given in Figure 1.

There are some important differences between the approach just described and the approach in the US. First, available maximum maturities in the US are currently five years, which is shorter than in the international market. Second, while some US RBL facilities step down in a straight line way, most borrowing base lines of credit provide for a bullet repayment at the maturity date of the revolver. The concept of a Reserve Tail Date does not apply in US RBL and, as indicated below, nor do documented cover ratios in the case of a revolving line of credit (it is worth noting, however, that such ratios are critical in the context of a term loan structure).

In the US, the whole approach is very focused on collateral cover (i.e. are there sufficient reserves to see that, on enforcement, banks will get repaid by sale of the assets or by a refinancing led by a financial institution offering a debt product that is further down the balance sheet?). In the international market the approach is more focused on monitoring actual business plan cash flows (i.e. will cash flows be sufficient to see a stepped reduction to full repayment of the facility by the Final Maturity Date?).

## RESERVE ANALYSIS AND BANKABLE RESERVES

In the US, the approach to reserve reporting is driven by the

*“One of the reasons so little value is given to PUDs in US RBL is that, in contrast to many other jurisdictions where the regulatory framework may impose obligations to carry out CAPEX and drill a specified number of wells, in the US context there can be huge uncertainty over whether onshore PUDs, for example, are ever drilled.”*

SEC's requirements and this in turn has driven reserve analysis by lenders and, to some extent, the whole US RBF market. Until a revision in late 2008, (the first time the SEC reviewed its rules in this area for some 25 years) independents were only allowed to report proved reserves. While the SEC does now allow the disclosure of probable and possible reserves to investors, the US bank debt and equity markets were long established to be almost entirely focused on proved reserves. In relation to the bank debt markets (and the “Registered” and “with registration rights” sections of the 144A bond markets), this approach remains the case today.

In the US, each bank providing a senior borrowing base revolving line of credit will make its own calculation of collateral value when determining the borrowing base at each redetermination date. This is done by applying a “risk factor” to each component of the Proved reserve category in the reserve report. Each bank has its own approach, but typically banks will give value to 100% of Proved Developed Producing Reserves (PDP) and perhaps 75% of Proved Developed Non-Producing Reserves (PDNP) and 50% of Proved Undeveloped Reserves (PUD). These calculations are further adjusted (“risked”) and limited by the banks by others variables. For instance, most banks won't allow the PUD portion to contribute more than a certain percentage of the Borrowing Base Amount (typically 20% or 30%) and there may be further limits if a large percentage of PDP comes from one or two wells only.

One of the reasons so little value is given to PUDs in US RBL is that, in contrast to many other jurisdictions where the regulatory framework may impose obligations to carry out CAPEX and drill a specified number of wells, in the US context there can be huge uncertainty over whether onshore PUDs, for example, are ever drilled. This is particularly the case for onshore fields which lend themselves to incremental drilling and which represent the majority of fields currently financed in the North American market (hence need, as described above, for the APOD in Mezzanine loans used to finance PUD's). Offshore fields which represent the majority of fields financed in the International RBL market by contrast have more certainty of timing and commitment to develop undeveloped reserves

<sup>1</sup>There have been a few facilities mainly in the Middle East with longer tenors but 7 years is the maximum in the majority of the market. There are various reasons for this but bank pricing and return models are a factor.

*“Many reserve classification criteria and industry forums have been put in place to address the interrelationship between SEC and other reserve reporting protocols and to bridge the gap between deterministic reserve assessment and probabilistic.”*

due to the commitment of the co-venturers and the relevant government agencies to the field development plan. The issues surrounding the certainty of development commitment and timing have in fact been acknowledged by recent revisions to SEC proved reserve guidelines which now require PUD classifications to be applied only to reserves that will be drilled in a defined time frame: “for undeveloped reserves, there must be an adopted development plan indicating that well(s) on such undrilled locations are scheduled to be drilled within 5 years, unless specific circumstances justify a longer time.”

The “risk weighting”/adjustment approach that the US bank market takes to the company’s reserve base applies also to CAPEX. When PUD’s are restricted to 20% of the NPV calculation the CAPEX included will also be restricted to 20%. This reflects the overall philosophy of the approach to borrowing base calculations in the US where the analysis is more focused on the collateral value of the assets in the event they have to be sold to repay the debt rather than attempting to reflect a quasi “business” or “development” plan of the borrower’s projects.

In the International RBF market, it has long been the tradition for borrowing base calculations to take account of both proved and, if there is a portfolio of fields, probable reserves. Proved reserves are included in the valuation in the case of a loan involving undeveloped fields or fields that do not have a continuous production history, and probable reserves are included in the case of a loan involving groups of producing fields or fields which have a satisfactory production history. Sometimes this convention is specifically set out in the loan documentation. Where this is the case, it is not uncommon for the international lenders also to be entitled to “risk” or adjust the reserves for the purposes of the “Banking Case”. In any event, independent exploration and production companies not listed in the US are not constrained by SEC reporting criteria and tend to use probabilistic reserve assessments to evaluate projects – particularly offshore projects. Under these criteria P90 (reserves with 90% or better probability of being extracted and P50 (mid case or expected case reserves which have a 50% chance of being met or exceeded) are often used when the company assesses the internal rate of return of its project investment. In most cases the P50 roughly equates to the 2P or proved and probable reserve and the P90 to the proved or 1P case. Many reserve classification criteria and industry forums have been put in place to address the interrelationship between SEC and other reserve reporting protocols and to bridge the

gap between deterministic reserve assessment and probabilistic. The most recent is the SPE PRMS initiative which seeks to ensure maximum commonality to reserve classifications (so that “Proved” equates to P90 and 1P and “Proved plus Probable” equates to P50 and 2P). In the international market 1P reserves are, for the most part, used interchangeably with P90 and 2P reserves are used interchangeably with P50.

## **THE BANKING CASE AND ASSUMPTION DETERMINATION**

In the International RBF market, the central tool for regulating debt sizing, drawdowns, repayments, certain defaults and sometimes other matters too (such as the ability for borrowers to withdraw excess cash from project accounts) is the Projection or Banking Case. An agreed model ( excel spreadsheet based) is established between the borrower and the arranging banks at the time the facility is negotiated. Often documentation recognizes a specific role of a “Modelling Bank” who, together with the Borrower, will be responsible for building the model that generates the Banking Cases and operating the model during the life of the facility. While the Banking Case will generally be re-run twice a year, and assumption inputs such as hydrocarbon prices and production profiles, etc. will be reset each time the Banking Case is re-run, the model itself will typically not change unless it needs updating (such as when fields are disposed of or new ones are added).

The Banking Case in the international market is more of a business plan / project execution model than a pure collateral valuation. For example, while P90 reserves may be used for a single field development all of the expected CAPEX including contingency will be included. This contrasts with the “risk weighting” approach of the US collateral valuation focused approach to NPV. While the Banking Case will be conservative compared to the company’s view of the world, it will nonetheless seek to reflect the business plan although under “banking” assumptions. Facility documentation will describe in detail the process for agreeing assumptions that are put into the model and how they are arrived at if the borrower and the banks fail to reach an agreement (typically the Technical Bank or Majority Lenders will determine disputed assumptions though sometimes provision is made for technical assumptions in dispute to be determined by an independent expert). Borrowers will typically seek to reduce the scope for lenders to have absolute discretion in setting disputed assumptions by insisting that the loan documentation require the Technical Bank and Lenders to act “reasonably” in assumption setting.

Sometimes borrowers are successful in getting banks to agree that assumptions used will be “consistent with” or “no less favorable” than the assumptions used by the Technical Bank/ Lenders in other similar facilities (typically though this relates to economic assumptions such as hydrocarbon prices or discount rates as reserves will vary with the field specific context). Because there is an agreed model and the assumptions that go

into it are carefully tested by the Technical Bank, individual syndicate banks do not typically have their own separate models but agree one single model and banking case at each review.

In International RBL facilities, the agreement or determination of assumptions (coupled with pre-agreed cover ratios, as to which see below) drives the new Banking Case and a new Borrowing Base Amount. Each new Borrowing Base Amount may be higher or lower than the previous Borrowing Base Amount (though it may never of course exceed the aggregate lender Commitments) and it is automatically derived from the new Banking Case. There is no further or specific right of approval for lenders over increases in the Borrowing Base Amount. All banking cases in the international market are on a post-tax basis, tax offset only being assumed to the degree that committed spending (CAPEX) and therefore related tax allowances push out the tax payment horizon. As the real actual oil price and therefore profits of companies tend to be higher than the Banking Case the rate at which tax allowances are cannibalised is often faster than modelled in the Banking Case. Accordingly, the tax loss carry forward has to be updated at each review also. Through the assumption setting process an individual lender can be voted into an increased Borrowing Base Amount (and consequent obligation to increase its funding subject to a maximum of its individual commitment.)

The approach in US RBL facilities is very different. There is no Modelling Bank and no Technical Bank although in US RBL facilities the Administrative Agent in effect fulfills the role of a Technical Bank. While the Administrative Agent will, using its own model, propose a new Borrowing Base Amount to the syndicate in connection with each Banking Case redetermination, each syndicate bank will run its own assumptions using its own model and decide if it wishes to approve the new Borrowing Base Amount proposed by the Administrative Agent. If the Administrative Agent proposes an increase in the Borrowing Base Amount, this must be approved by all lenders.<sup>2</sup> If the Administrative Agent proposes a decrease in the Borrowing Base Amount this must be approved by a "Required Quorum" of lenders (typically 66 and 2/3 % of lenders by Commitment). If the Required Quorum of lenders does not approve the new Bor-

rowing Base Amount, the Administrative Agent must poll the bank group to establish the highest Borrowing Base Amount that would be acceptable to the Required Quorum. The entire process is highly discretionary for the lenders. While in practice individual lenders when they run their individual models tend to arrive at or very close to the same result, from a strict legal point of view the borrower has no control or "come back" over what new Borrowing Base Amount may be set when a new redetermination is run. It is this particular feature of US RBLs that attracted negative commentary from Standard & Poor's in their May 2012 article on the US RBL Market entitled "Unique Features in Oil and Gas Reserve-Based Lending Facilities Can Increase Companies' Default Risk". Standard & Poor's comments "We believe the volatile nature of oil and gas prices combined with RBL lenders' unilateral discretion to change the assumptions that go into a company's reserves valuation can limit a borrower's ability to access those funds, especially during a period of stress. As a result, we view RBL facilities as a weaker form of liquidity than traditional asset-based lending facilities. We believe that companies' overreliance on these facilities creates a vulnerability, particularly for companies whose creditworthiness is already weak."

In addition, US RBL facilities are run on a pre-tax basis (apart from field level taxes and royalties) as the assumption is that continued reinvestment offsets a corporate tax burden. Finally the legal obligation of each bank is limited to its share of the borrowing base (which needs a 100 % vote to increase, but see footnote 2) rather than the nominal Facility amount.

While it is undoubtedly the case that International RBL documentation gives the lenders less discretion over assumption setting and provides a range of controls and protections for borrowers against arbitrary decision making by lenders, it is worth noting in passing that the price deck used by lenders in US RBLs tends to be closer to the actual market forward curve than in the case of International RBLs (so, in this respect, International RBLs already have built in an additional layer of protection for lenders).

In Part 3 of this series, the authors will examine debt sizing and cover ratios, loan facility covenant packages, and hedging. **OGFJ**

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<sup>2</sup>Some facilities allow a 90% pass mark for increases however no bank can be forced to fund its share of any increase so an increase in the borrowing base passed by a 90% vote would depend on other banks picking up the shortfall from the dissenting banks.



# Reserve based finance

A TALE OF TWO MARKETS - PART 3

This is the third part of a four part article examining the evolution, practices and future of the reserve based finance markets in the US and internationally. January's Part 1 examined facility structures and sources of debt for the upstream sector in the international market. In February's Part 2, the authors examined the structures and sources of debt for the sector in the North American market, amortization and reserve tails, reserve analysis and bankable reserves, as well as the Banking Case and assumption determination. In this, Part 3, the authors examine debt sizing and cover ratios, loan facility covenant packages and hedging.

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## DEBT SIZING AND COVER RATIOS

The US RBL approach to determining the Borrowing Base Amount is very 'black box'. The Borrowing Base Amount is determined by a process whereby the lender serving as the administrative agent recommends to the syndicate lenders its own suggested Borrowing Base Amount based on (a) the reserve reports (b) other field data provided by the borrower and (c) other relevant variables, including the presence or absence of hedging. The recommended amount is then subject to lender approval. In the case of a typical US senior bank borrowing base revolving line of credit, the loan documentation sets out no methodology for the calculation

(in some mezzanine loans, however, rigid formulas may be used to determine loan amounts). The lenders have absolute discretion over how they calculate the Borrowing Base Amount, although to give the borrower some protection there is usually some wording that each lender will determine the Borrowing Base Amount in a manner consistent with its “customary oil and gas lending criteria”. The borrower, however, is also protected from the arbitrary nature of the process by the fact that competitive pressures will often force lenders to be reasonable (and in some instances, to stretch to arrive at the desired borrowing base amount). As noted in Part 2 of this Article, the Borrowing Base Amount is primarily sized by “risk weighting” the reserves and the approach is relatively common across banks. In addition, as noted above, other factors may affect the Borrowing Base Amount. Some of these factors include (but are not limited to) the existence of other debt (e.g. second lien obligations, high yield bonds, etc.), the existence or absence of hedging, the existence of title defects or potential material environmental liabilities and operational issues.

An example of how this approach is taken is shown on the next Table which is a theoretical extract from a borrowing base model. In the “RISKED” section of the table the percentages indicate the risking or adjustment factor applied to the various sub categories of Proved Reserves. In this example 100% of the value of the PDP (Proved Developed Producing) Reserves are included in the NPV analysis, but only 70% of the PDNP (Proved Developed Non-Producing) reserves are taken into account and finally only 40% of the PUD (Proved Undeveloped Reserves) are taken into account. In all cases not only are the reserves are adjusted by the relevant factor, but also the associated costs. So only 40% of the PUD capex will be included in the model run in this case.

The bottom line of this block of the table shows how these reserve categories, having been risk-adjusted, then contribute to the makeup of the aggregate NPV value – in this example 67% of the Borrowing Base NPV value is coming from PDP, 5% from PDNP and 23% from PUD (with the remaining 5.7% coming from the incremental value of

hedges above the bank price deck). In cases where the PUD contribution to the NPV was considered excessive, perhaps above 30% or so, then an iteration to the PUD “risk factor” (which in this case is 40%) might be made adjusting it (taking less PUD’s, so maybe reducing it to 35%) until the contribution to the NPV of the borrowing base was reduced to a level deemed acceptable. The amount of PUD’s included will vary depending, amongst other things, on the cover ratio of the amount of debt available to the NPV. If the cover ratio is high then more PUD’s may be acceptable, but if the cover ratio is low (say 1.5 or less) then a

**TABLE 1: THEORETICAL EXTRACT FROM A BORROWING BASE MODEL**

"XYZ Oil & Gas"		Base Case			
		Current			
<b>Proved reserves - UNRISKED</b>					
Gas		BCF	749		
Liquid		MMbbl	191		
Total		BCF <sub>eq</sub>	1,894		
		MMbbl	316		
Reserves/Production ratio				13.2	
<b>Proved reserves - RISKED</b>				132	
Risk factors applied to PDP/PDNP/PUD			100%	70%	40%
Total		BCF <sub>eq</sub>		1,078	
		MMbbl		180	
Reserves/Production ratio		—		9.3	
% of NPV – (PDP/PDNP/PUD/Hedges)			67%	5%	23% 5.7%
<b>Pricing</b>					
Pricing policy date				Apr-13	
Gas		1st period realized	\$/MCF	\$2.79	
Average life of reserves			\$/MCF	\$3.71	
Oil		1st period realized	\$/bbl	\$71.08	
Average life of reserves			\$/bbl	\$70.24	
% of revenue – (oil/gas/cond & NGL/hedges)			60%	22%	17% 2%
% of NPV of Rev – (oil/gas/cond & NGL/hedges)			61%	21%	16% 3%
Lift costs (current)		\$/boe		\$8.19	
<b>Debt and present value</b>					
NPV@9%		\$MM		1,781	
Facility size		—		1,250	
Borrowing base		—		1,000	
NPV 9%/ borrowing base		—		1.78	
Annual cash flow coverage		—		1.20	
BB loan repaid		Months/Date	101	Months	May-22
NPV remaining after repayment		%-\$MM	26%		457
Other pari passu debt		\$MM		0	
Senior unsecured debt		—		0	
Other debt		—		250	
NPV 9%/total debt		—		1.4	
Total debt repaid		Months/Date	126	Months	Jul-24
NPV remaining after repayment		%-\$MM	18%		313

borrowing base made up more of more PDP might be desirable. The whole process is somewhat iterative and subject to banks' internal guidelines. However the pressures of the market mean that there tends to be a trend to a "market" norm. In the below example the cover ratio is 1.78 meaning that the \$1 billion dollar borrowing base is underpinned by an estimated NPV for collateral valuation purposes of \$1.781 Billion. The table also shows the contribution to NPV made by different commodities – (oil, gas and NGLs).

Figure 1 shows the result of the Borrowing Base analysis exercise in comparing the forecasted reserves and production from the company's most recent reserve report to the amount of reserves and production included in the banking case expressed as NPV value at a given price assumption. It can be seen that the amount of PUD reserves (the red solid bar) included in the bank calculation are significantly reduced from the reserve report whereas full value is given to the PDP (green bars). In this example the Borrowing Base available is shown in a solid black line (reducing over time with reserves unless they are replaced or increased). The company in question also has some subordinated debt (shown in dashed line).

International RBLs provide for a much more transparent and formulaic approach to the calculation of the Borrowing Base Amount. The Borrowing Base Amount will be determined by the Banking Case. It is driven by the assumptions plugged into the model (which are determined following an iterative process between the borrower and the Technical Bank) and applying cover ratios (which are set out on the facility agreement) to the discounted future net cash flows from the borrowing base assets. The Borrowing Base Amount for a given period will be the lower of an amount which provides for an agreed Project Life Cover Ratio (typically 1.5:1) and an agreed Loan Life Cover ratio (typically 1.3:1). Sometimes there is also a Debt Service Cover Ratio, although this tends more to be more a way of monitoring that future net cash in each semi-annual period will be adequate than a driver of debt capacity. As an undiscounted number the Debt Service Cover Ratio is essentially a liquidity test rather than a value test.

If at inception the borrowing base portfolio is predominantly based on OECD assets then sometimes there are limits on the portion of the NPV of cash flows which can be derived from assets in non-OECD countries. Obviously for facilities where, at inception, the

assets are exclusively or predominantly in non-OECD countries the loans will be priced to reflect that and to attract banks active in (and with country limits for) the relevant region or country.

Similarly, if a facility benefits from a low margin because there is a high proportion of producing fields (as opposed to development assets) there may be a limit on the portion of the NPV of cash flows that may come from assets under development.

### THE COVENANT PACKAGE

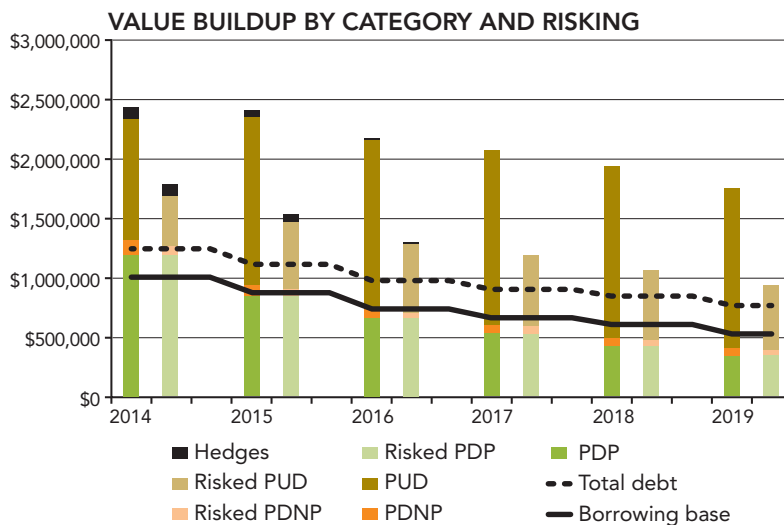
It is fair to say that there are more similarities than differences in the typical covenant packages seen in US and International RBLs, but there are some differences worth noting. In general the differences can largely be attributed to the fact that US RBLs are heavily sized against proved developed producing reservoirs and not development projects. So the loan covenants in US senior bank borrowing base

facilities tend to be somewhat lighter on a comparative basis. Mezzanine facilities may have much tighter restrictions because of the higher development risk and fewer producing assets that are typically associated with such transactions. As noted in Part 1 of this article, because the International RBL market developed out of project finance, the covenant package in International RBLs has more of the features you would see

in a project financing (although the degree of control lenders apply does vary considerably depending on the number of fields in the borrowing base and the proportion which are not yet producing). A few particular points are worth noting:

- there is typically more focus in International RBLs on the field related documentation to which the asset owning group members are party ( licenses, joint operating agreements, offtake agreements etc.) and controls / triggers linked to these
- in International RBLs there will usually be a suite of project accounts, a requirement that revenues pass through these accounts and some sort of cash flow waterfall, although there is a huge variation in the degree of control depending on number and nature of the fields in the borrowing base. It is unusual to see a project account regime in US RBLs (although the pledging of bank accounts as collateral is fairly common as part of a US RBL collateral package)
- as noted above, the Banking Case is a central feature of Interna-

Fig. 1: NET PRESENT VALUE COMPARED TO LOAN





*There are more similarities than differences in the typical covenant packages seen in US and International RBLs, but there are differences worth noting. US RBLs are heavily sized against proved developed producing reservoirs and not development projects.*

tional RBLs and is a prominent feature in International RBL documentation (whereas it does not feature at all in US RBL documentation). In International RBLs, the Banking Case is not only used to drive the calculation of the Borrowing Base Amount and the testing of cover ratios but, in development financings, it is also typically used in connection with the monitoring and control of expenditures by the borrower

- following the failure of a prominent North Sea exploration and production company in 2008 (Oilexco North Sea Limited) due to a variety of factors but, in particular, huge cash leakages on commitments on non-borrowing base assets, it is now standard for International RBLs to include a forward looking group liquidity test to give lenders visibility on the future consolidated liquidity position of the borrower and its affiliates
- because independents in the US typically raise funds through a range of debt products and in, particular, raise significant debt through the bond markets, US RBLs tend to be less restrictive on third party debt (except in instances involving early stage companies with fewer producing assets). This feature looks set to change as the high yield market outside North America develops and an increasing number of non-North American independents look to the bond markets to diversify their funding sources.

## HEDGING

Commodity price volatility has always been with us and is the single biggest variable in forecasting EBIT for non-integrated exploration and production companies. Nowhere has this volatility been more pronounced than in the context of the recent collapse in US gas prices. Commodity hedging often has a role in reserve based lending both in the US and elsewhere. Many of the features of how hedging is handled where a company has an RBL facility are common to both the US and international markets, but there are some differences. Perhaps the biggest difference is the geological background. Often the fields that serve as the collateral basis for RBLs in the US are now “resource plays”. These plays are unusual in that while the initial decline rates can be rapid and type curves take some time to establish on newer plays, the risk of a proved undeveloped drilling location being “dry” is far lower than in conventional reservoirs. Also, these resources are based onshore with the companies developing them often having constant drilling programmes converting PUDs to PDP.

That means that for companies that have active drilling campaigns and rig resources more aggressive hedging that takes account of this rapid conversion of very low risk PUD to PDP as a result of

near constant drilling can be undertaken and this is a general trend in the US market. Further analysis of the credit risk issues regarding hedging and production predictability in both the US and the international markets can be found in Kevin Price’s article “Hedging is an effective risk management tool for upstream companies” in the November 2012 edition of OGFJ. The following paragraphs examine how RBL facility documentation typically addresses hedging.

### *Enhancement of the Borrowing Base*

The Borrowing Base Amount in an RBL facility will be determined by the lenders based on a wide variety of factors but at, its core, is the assessment of the projected cash flows associated with the volumes of hydrocarbons forecast to be produced from the borrowing base fields. Extensive technical analysis is performed by the Technical Bank (in International RBLs) or Administrative Agent (in US RBLs) to determine the quantity of reserves expected to be produced in a given period as well as the cost to produce such reserves. The commodity price utilized for the purposes of the borrowing base calculation (the “price deck”) will be a conservative one, determined by the lenders, and will be materially lower than the prevailing market spot price. If, however, the producer has locked in a fixed price for its production through a hedge or swap, then the lenders will generally be amenable to giving the borrower credit for the cash flows associated with the hedge (rather than what the price deck would yield). These enhanced cash flows will result in an increase to the Borrowing Base Amount (compared to what it would have been without hedging). Because borrowers typically want as high a Borrowing Base Amount as is possible, most lenders will then quote them the higher number but also require the minimum hedging needed to achieve that number. These hedges must be maintained and if they are unwound or restructured, resulting in a material decrease in pricing support, the lenders may require a redetermination of the Borrowing Base Amount.

### *Limitations on Hedging Activities*

Mandatory hedging is rare in International RBLs and unusual in US RBLs unless (a) it is done in the context of protecting against downside where the borrower has high leverage (such as post an acquisition or with second lien debt in the capital structure) or (b) it is required to achieve the required Borrowing Base Amount as noted above.

The bigger issue for lenders is making sure that there are protections in place to avoid the producer overhedging. Both US RBL and International RBL facilities will usually restrict the volumes that a producer may hedge over a given period of time. Lenders are concerned if a borrower enters into swap contracts covering notional volumes that are at or near the borrower’s expected production levels because, if production declines, the company may become “overhedged.” In a typical swap the producer pays the variable price for its production to the swap counterparty in exchange for a fixed price. As the company sells its production in the market, it receives the variable market price for such production and (notionally) pays this to the swap counterparty in exchange for the fixed price. In practice

the two parties net the payments and the party that is “out of the money” pays the net amount to the party that is “in the money.” If, however, there is no production to sell and hence no revenues to net against, the company will be forced to pay such swap obligations out of its own cash reserves. To mitigate this risk lenders invariably impose limitations on the notional volumes that may be hedged.

In the US limits historically have ranged from 80% to 90% of anticipated production from existing PDP reserves. Some lenders have, however, allowed producers to sometimes (and this is increasingly the trend in the case of non-conventional reserves) hedge a percentage of all proved reserves anticipated to be converted to PDP reserves during the life of the hedge. In International RBL the limits on hedging are usually much stricter than in the US. This difference is for a number of reasons. Firstly this reflects the usually greater uncertainty of PUD reserves on conventional reservoirs and so the associated risk of reservoir performance. Secondly it reflects the fact that lenders are dealing with predominantly offshore fields with less well count and much more time and cost taken in remedial drilling and well intervention. Finally another important factor is the fiscal regime. In many places in the world the hydrocarbons recovered are taxed at well-head prices so hedge losses and gains are not offset at the corporate tax level and hedging too much on such fields can lead to a situation where a company has to pay tax on wellhead prices and cannot offset hedge losses against those tax liabilities. Typically International RBLs limit hedging to something in the range of 50- 75% of Banking Case projected production. A few other standard limitations (common to both US and International RBLs) include: (i) strength of counterparty (usually tied to a minimum long-term unsecured debt rating) (ii) tenor (usually not more than three to five years) and (iii) types of collateral or credit support. Finally, there is always a general prohibition on speculative hedging.

### *Collateral and Ranking*

Most independent exploration and production companies will have to offer security to obtain competitive pricing when entering into a derivative instrument involving a contingent liability for it (e.g. a swap). In other arenas, security for hedging often takes the form of cash margin or letters of credit. In the upstream finance markets, however, this is not normally the case for two reasons. First the “negative pledge” covenant in the Facility Agreement will usually prohibit the giving of such security, secondly, an independent exploration and production company would typically not want to tie up its cash or letter of credit capacity. So the more usual route is to use the company’s own oil and gas reserves to serve as collateral for the hedges. If

the swap counterparty is a lender or an affiliate of a lender, the facility documentation will generally provide that those hedges are secured with the loans on a pari passu basis. There can be issues, however, if a lender enters into a hedge and then subsequently leaves the bank group. In those circumstances the normal position under US RBLs is for then existing hedges to remain secured but no new hedges by that lender (or its affiliates) will be secured.

In International RBLs a variety of different approaches are seen to address this issue but there seems to be a developing trend towards the US position. In the US market in recent years it has become more common to allow third party hedge providers (i.e. counterparties that are not part of the borrower’s senior bank group) to share in the collateral. In such instances there will be an intercreditor agreement which governs certain aspects of the collateral sharing arrangement. In International RBLs sharing of collateral with non-lenders/non-lender affiliates does not occur. Indeed it is not uncommon for facilities to entirely prohibit hedging with non-lenders (even for products like “puts” which involve no contingent liability on the borrower).

### *Voting Rights*

Both in US and International RBLs, lenders do not get voting rights for hedging exposure (voting typically being done only by reference to Commitments under the loan facility) though occasionally in International RBLs one sees voting rights for lenders (in their capacity as hedging counterparties) where a hedge has been closed out and the hedging termination payment has not been paid. Lender affiliates providing hedges do not typically need or require any such voting rights because such affiliates can be protected by the voting rights afforded to the lenders themselves. Facility agreements do, however, often contain limitations on amending certain provisions without the consent of the lender affiliates undertaking hedging (e.g. no amendment to the guarantee/security package in a way that would be prejudicial to the hedge counterparties). As noted above, in the past decade or so in the US market there has been an increased willingness by senior lenders to allow third party (non-lender) hedge counterparties to share in the senior lender collateral package so long as a detailed intercreditor agreement is in place to manage the arrangement. Third party hedge providers obviously don’t have voting rights under the facility agreement and will therefore insist upon having voting rights granted to them in the intercreditor agreement. The voting usually involves a majority or supermajority percentage of the combined loan and hedge mark to market exposure. **OGFJ**



# Reserve based finance

A TALE OF TWO MARKETS - PART 4

This is the fourth and final article in the four-part series examining the evolution, practices and future of the reserve based finance markets in the US and internationally. Parts 1, 2, and 3 appeared in the January, February, and March 2014 issues of OGFJ, respectively.

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## SECURITY

Senior bank borrowing base revolving credit facilities in the US are almost always secured (unless the producer's long-term unsecured debt is at or near an investment grade rating). High yield bond transactions and certain other higher yielding debt products may also be unsecured. In the international market RBL facilities are always secured. The banker's typical mantra on the subject of security is to take security over "anything you can get". What you can get, however, does vary significantly depending on the jurisdiction where the assets are situated.

The value of security in the US, for onshore fields at least, is possibly the best in the world as it is possible to own the oil reserves when still in the ground meaning that mortgages can be taken over fields and reserves. In most other jurisdictions around the globe the oil or gas is owned by the

state with exploration and production companies simply having a licence to extract and sell it (with ownership transferring at the well head during production rather than when still in the reservoir rock).

In the US, the typical security package consists of a mortgage or deed of trust lien on at least 80% of the value of the producer's proved oil and gas reserves. The 80% minimum is an acknowledgement of the fact that some producers may have their assets strewn across multiple states and therefore lenders must weigh the cost of getting collateral documents for each jurisdiction (including fees and expenses associated with obtaining legal opinions, preparing property descriptions, etc.) with the relative benefit of obtaining a higher percentage of the proved reserves as collateral. In addition to the reserves, US lenders will typically require substantially all the personal property assets of the borrower and any guarantors to be pledged, as well as the stock of such entities (although the stock of the borrower may not be pledged in some instances depending on the bargaining leverage of the owners). Enforcement of such liens can be a relatively straightforward process, although producers may choose to seek relief in bankruptcy court to avoid the taking of such assets by the lenders (and, further subject to the usual constraints posed where a company does in fact go into Chapter 11 of the US Bankruptcy Code). In one important respect the Chapter 11 process provides protection not only for borrowers but, indirectly, for lenders too and that is that during the Chapter 11 process a counterparty to a lease or licence with an oil and gas company cannot terminate the lease or licence without leave of the Court. This contrasts with the position in most other jurisdictions where the occurrence of insolvency or receivership can trigger termination rights so there is the risk that at the very point lenders wish to enforce security the main asset itself could disappear (because the lease or licence can be terminated by the grantor being, usually, the host government).

The position in International RBLs is more complex and varied and practice is linked to what is possible under the laws where the borrowing base assets (and the companies that own them) are situated. An in-depth analysis on the issues of taking and enforcing security is beyond the scope of this article. However, a few general points are important to note because they are, in the view of the authors, one of the factors that drive the way banks in the international market view RBL. These points perhaps in part account for some of the broader differences in the US and International RBL markets.

The optimal security package - and what lenders will seek to get if they can - comprises security over the borrower's interests in the borrowing base assets themselves and the shares of the companies that own them together with security over all project accounts, insurances and hedging agreements. In certain jurisdictions where this form of security is available and can be readily taken (such as in England, Wales, and Scotland) it is common for lenders to take a floating charge over

all the assets of the group members which own the borrowing base assets. However in many jurisdictions it is not possible to take the full security package for a variety of reasons. In some emerging markets it may simply not be possible to take effective legal security over certain classes of assets. More often the issue is one of consents (either governmental or contract counterparty).

In most non-US jurisdictions where the right to explore for and extract hydrocarbons requires the grant of some form of license or concession (or the entering into of a production sharing agreement or such like) with a governmental authority the consent of that governmental authority is needed to take security over the license/concession/agreement. It is almost always the case that governmental consent is needed to enforce security (even if it is not needed to take it). In some jurisdictions, the consent point arises also in relation to taking security over the shares in the company that holds the license (and potentially companies higher up the corporate tree). Where these issues arise obviously the ideal solution is to seek and obtain the relevant consent. However in some jurisdictions this may be difficult, protracted or even impossible. Lenders in the international markets are used to these issues and tend to be pragmatic. In emerging market RBLs it is often the case that financings proceed with no field asset security and lenders rely only on share security, bank account security and security over insurances and hedging agreements.

Consent issues also not uncommonly arise in relation to contracts with third parties (e.g. co-venturers, offtakers etc.). Where this is the case the relevant consent will have to be obtained (or the relevant contracts carved out of the security package).

The fact that almost invariably government consent is needed to enforce security (a feature not just of oil and gas financing but of financing assets in many regulated industries) is significant. Because the International RBL model is so robust there are very few examples (in any jurisdiction) of attempting to enforce security and the examples that do exist are usually not public. There have been cases where governmental consent to enforce security in the context of an RBL has been successfully sought but there have also been cases where the host government has not been co-operative, on occasion for arbitrary reasons. Because of this issue (and other issues) enforcement of security over licenses or concessions should never be viewed as an easy option (and particularly so in emerging markets).

It is for this reason that RBF bankers in the international market place great emphasis on the probability of default and putting in place structures, controls and checks to avoid default and always to get early warning of it. The fact that the collateral cover may be more than adequate to cover the loan it is not an adequate answer to an otherwise weak structure or poorly managed company. Whilst the authors would not suggest that lenders in the US are not also focused on lend-

ing under robust structures to well-run companies with good assets, the ability of lenders to effectively enforce security is probably one of the factors why there is greater focus in the US on collateral cover than some of the other factors that receive similar prominence in the context of International RBLs.

### **DEFAULT IN US AND INTERNATIONAL RBL**

Given the very different backdrops to the US and International RBL markets - physical, geological and political (in particular the difficult emerging markets for which much of International RBL debt is raised) and given also the very different lending practices that underpin the two markets, it is interesting to consider and compare the prevalence of default in the two markets. This is difficult to do for a number of reasons. The first is that (as with other classes of lending) defaults under RBL facilities may be serious or may be minor or technical and waived with minimum process or formality. Secondly, defaults are of course confidential and often never become public (save where they result in some insolvency process or the producer is a public reporting company and is required to make a disclosure). Standard & Poor's and Moody's have published reviews of North American RBF Loans dated January 18, 2013 and January 16, 2013, respectively, which showed very low levels of losses in defaults in the North America. Moody's Investors Service published a paper dated February 4, 2013 entitled "Default and Recovery Rates for Project Finance Bank Loans, 1983-2011" which looked at general project finance loans.

There are no comparative surveys for the international RBL markets so information on default in international RBF loans is somewhat anecdotal and comparative comment on this subject is difficult and must be tentative. Also International RBF Loans are far more heterogeneous than their North American Counterparts so general conclusions on loans spanning multiple geographical locations and representing a mixture of multiple field, single field and producing and undeveloped field loans would in any case not itself be very informative.

The International RBL market is undoubtedly much smaller by absolute number of deals and number of participant banks, so defaults that result in a full blown work out or actual loss tend to be fairly quickly known to the market. Looking at the International RBL market over the last 20 years, the authors are only aware of a handful of deals where bank lenders have lost money and a similar number of other ones where the borrower has become seriously distressed and a full-blown work out or rescheduling has occurred. The most serious defaults where losses have occurred have been on single field development loans where the field has underperformed expectations materially. Putting aside the single field loan workouts, anecdotally (and allowing for the fact that the International RBL market is smaller) it seems that despite the apparent more aggressive lending practices in the International RBL market (in particular, lending to development projects and

lending against probable reserves) the frequency of default may be higher in the US market. However it should be emphasised that losses even in both markets are extremely rare. The authors offer the following possible explanations.

#### ***Less corporate leverage and simpler capital structures***

International RBL deals typically prohibit or heavily restrict other financial creditors sitting alongside the RBL lenders whereas US RBL ones do so less. The presence of different classes of creditors and additional leverage through the use of second lien facilities and high yield bonds creates additional cross default risks in the US market which are typically not present to the same degree in the international market. In a more complex capital structure there is more risk of cross default.

#### ***More structure***

As described earlier in this article, International RBL deals tend to be more structured than US ones (sculpting of amortization, monitoring through documented cover ratios, more restrictive covenant package etc.). There is more focus in the International RBL market on the probability of default rather than simply ensuring adequate collateral cover to be confident the loan will be paid out on enforcement (enforcement of security being relatively easy in the US both compared to emerging markets and compared to developed markets where enforcement cannot in any event occur without host government support).

#### ***Most loans to listed entities***

In part because of the focus on offshore fields and the usually greater technical challenges associated with upstream development in the EMEA region as compared to the US (the deep water Gulf of Mexico discoveries of course being an exception to this) there are no "mom and pop" companies in the International RBL market. It is this end of the market which seems to contribute disproportionately to default in the US. In the International RBL market, loans to private companies of any kind are relatively rare compared to the US meaning most borrowers have some access to public equity capital markets. A related point is that larger companies, while having bonds in the capital structure, often use that capital to maintain large amounts of undrawn liquidity available on their borrowing bases, whereas smaller companies if unlisted, will not have bonds but have second lien debt instead which will often be fully drawn having been used to fund an acquisition; therefore they will have less unutilised headroom on their borrowing base.

#### ***Most loans against assets with multiple partners***

In many (though certainly not all) of the countries where assets financed in the International RBL market are situated, projects are undertaken by consortia so there is the combined expertise of a group of companies behind many projects (with

the checks and balances that go with that) as well as close monitoring by host governments that have granted the license or concession. It is perhaps notable that a disproportionate number of the known single field loan losses were for companies that were sole developers or small JV partner groups of the relevant field. The undeveloped nature of some fields and their invariable offshore nature also mean companies can get trapped with development delays and cost increases more easily than in the US where onshore fields allow capex to be cut quickly. It remains to be seen how the surge of unconventional field development and the need to continue drilling to offset rapid PDP declines may affect default rates and losses in future however the very high level of hedging associated with these loans suggest risks other than price may be needed to cause problems.

### **Lower Price decks**

The more conservative price decks (currently) used in International RBLs mean that price deck changes tend to be less sharp than in US RBLs. So the Borrowing Base Amount is less volatile to hydrocarbon price movements (reducing the risk for the borrower of sudden debt capacity reductions). In the US it seems that some defaults have been caused by a liquidity crunch caused by hydrocarbon price volatility. In many cases, well-hedged companies are insulated at least for a time. But for unhedged production, the resulting drop in cash flows can be significant and have a devastating effect on the producer's borrowing base. Even where this may be manageable in itself, if the borrower has other creditors to service this can lead to cross default with other parts of the capital structure. Because of the degree of diversification of asset base and well count on most US loans, reservoir underperformance has been a lesser issue than price drop in causing a reduction in borrowing base and attendant liquidity squeeze than it has on international loans.

### **IS A PARADIGM SHIFT ABOUT TO OCCUR?**

Both in the US and elsewhere the RBL product has proven to be a robust financing technique that has stood the test of time through different economic and commodity cycles and through the turmoil in the financial markets of recent years. In the international market there have been some evolutions in what and how banks are prepared to lend, but the basic features of the product have changed little since the first portfolio RBL facilities came on the scene in the early 80s. In the US, competition among capital providers continues to result in new and creative structures depending on the asset risks, but on the whole the primary borrowing base revolving line of credit remains the mainstay debt product for upstream energy companies.

Undoubtedly in an ever more globalized market place, the question of whether it is logical for there to be two very different parallel worlds for financing in the upstream oil and gas

*"In many jurisdictions it is not possible to take the full security package for a variety of reasons. In some emerging markets it may simply not be possible to take effective legal security over certain classes of assets. More often the issue is one of consents (either governmental or contract counterparty).*

sector is coming to the fore. Increasingly the same banks are operating in both market places and increasingly so too are oil and gas companies and private equity sponsors.

The catalyst for a coming together of the two markets may well be the coming need to finance the development of deep water fields in the Gulf of Mexico, a number of which are leased by smaller independent exploration and production companies backed by private equity sponsors that will be looking to maximize leverage through development bank financing (as they have successfully done with other non-US oil and gas fields). The international bank market has decades of experience of such financings, and banks and bankers are eager to provide such finance in the stable legal and political environment that the US offers. Similarly, as finance directors of US independents start to understand what lenders are offering their counterparts in the international market there will undoubtedly be demand for debt sized against US assets to be raised in the International RBL market (there have been some examples) and/or demand by borrowers for some of the more attractive features offered by the International RBL market. Below we examine some of the challenges to be overcome and drivers that will push change.

### **The Gulf of Mexico (GOM)**

Upstream financing offshore, even in the shallow waters of the Gulf of Mexico, has been relatively rare and an acquired taste for domestic US banks. A relatively small subset of the US domestic banking market has been comfortable with financing offshore projects. There are many reasons for this.

First, the size of the market means there is plenty of opportunity to lend to onshore assets with lower perceived risks. Second, the unique nature of GOM and gulf coast reservoirs often with rapid decline water drive mechanisms<sup>1</sup> may make even PDP prediction less reliable than for more established onshore conventional plays. Third, hurricane concerns have also played their part in the risk assessment matrix of prospective US banks. Fourth, historically the US offshore upstream industry itself has been dominated by bigger companies capable of financing their activities with other forms of capital than secured bank debt.

Even where loans have been provided they have been based, as in the onshore markets, primarily on proved developed pro-

*“With gross well costs over \$100 million in some cases, even a 10% non-operated JV interest can lead to a need for a large amount of capital. With no revenue to service interest coupons, the High Yield markets will not be an option for some companies.”*

ducing reserves available only after the cost intensive development drilling and platform infrastructure has been put in place. Finally, more recently, the issues surrounding Macondo may cause greater concern among lenders and lead to a trend away from offshore lending.

Finance markets are, however, like any other kind of market. They react to forces of supply and demand. Outside of the US, banks have moved to meet the demands of their oil and gas customers as those demands have changed over time. As described earlier, International RBLs began in the North Sea. Then, as independent exploration and production companies expanded into emerging markets and found and exploited reserves there, banks began to lead against assets in these markets. Over time the field discoveries have got bigger, the water and rock depths deeper and the associated cost of development greater. Recent examples of this trend, where companies raised finance to fund their share of capex on large undeveloped fields include, Niko Resources (D6 gas field offshore India) in 2007, Kosmos Resources (Jubilee oil field offshore development Ghana) in 2009 and more recently Delek Drilling (Tamar gas field offshore Israel) in 2012.

This trend will continue and the authors believe the next basin to be financed with this kind of debt will be the deep water of the GOM.

#### ***Factors driving change in the GOM***

Several changes will mean that there now will be increasing demand for offshore development capital in the GOM in the next few years.

First, post Macondo, GOM drilling has recommenced with a vengeance particularly in the deep water / deep rock Tertiary plays. This has resulted in a series of apparently very large discoveries. At the same time the regulatory oversight framework for safety and environmental aspects has had a major overall (and been tightened in many respects). It is now very similar to the framework observed in many other highly regulated developed markets like the UK and Norway.

Secondly, as in the expansion of development finance in the North Sea and then the wider international arena, it is the

“demographic” changes of the oil companies, developers and investors that will drive the financing markets response. A significant portion of GOM exploration is being undertaken by independents and many of these are privately-owned or have a significant component of private equity in their shareholder base. Where such companies have been involved with significant discoveries they now have to finance the appraisal and ultimately the subsequent development. With gross well costs over \$100 million in some cases, even a 10% non-operated JV interest can quickly lead to a need for a large amount of capital. With no revenue to service interest coupons, the High Yield markets will not be an option for some companies. With no asset base other than a large discovery, the only source of potential bank debt such companies can turn to is the upstream project finance market - a market that does not currently exist within the domestic US.

There will be a number of challenges for this new finance market to become established. Some of those are external and some internal to the bank market itself.

#### **EXTERNAL CHALLENGES INCLUDE**

**Technological:** The envelope is being pushed ever further including the depth of water and rock, thereby causing significantly higher well cost and increasing the possibility that such costs can rise even more significantly over the planned development budget.

**Reservoir:** Risk is increased by several factors. First by the lower seismic resolution and increased depth conversion challenges at the increased depths. Secondly, by the lower level of appraisal wells drilled because of the high costs involved and the oil company’s desire to optimize project IRR. Finally by uncertainty in the new plays of drive mechanisms and resultant prediction of decline rates.

**Regulatory:** The GOM offshore regime is highly regulated. Drilling rights are dependent on leases granted by the Bureau of Ocean Energy, Management, Regulation and Enforcement. Understanding how the regulator views the interests of finance institutions and how it is likely to react in the event of a company having financial strain will be important to any bank entering this market. For a regulator, the maintenance of safe operations will rightly always be the overriding concern where a company operates the field but prospective financiers will want to know that a lease or license will not be “pulled” suddenly when a company is in trouble (thereby rendering valueless the banks security). Interestingly as explained in the section above on Security, US Chapter 11 provisions designed to protect the borrower actually help lenders in the protections they offer in this regard.

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<sup>1</sup>Offshore GOM fields and onshore Gulf Coast fields may have large aquifers underlying them. When the oil is extracted the aquifer will flow into the former reservoir rock creating a drive that helps “push” the oil out. While this can lead to very healthy production rates (high well productivity) it can lead to very rapid decline rates meaning the reserves are produced out very quickly. Predicting declines can be subject to uncertainty and so can recovery as the aquifer can also influx on the lateral sides of the reservoir as well as from the bottom up leaving by-passed oil that is not “swept”.

	International RBL	US RBL	GOM development finance?
<b>Title to reserves in reservoir</b>	(Usually) the Borrower only takes title to hydrocarbons at well head	The Borrower has title to reserves in the reservoir	The Borrower will have title to reserves in the reservoir
<b>Security</b>	Typical security packages includes shares and bank accounts etc but often there is no "asset security"	Security will include not only shares and bank accounts but also full asset security.	Security will include not only shares and bank accounts but also full asset security.
<b>Consent to enforce</b>	Typically host government consent is needed to enforce asset security and often share security also	No governmental consents are needed to enforce security	No governmental consents are needed to enforce security
<b>Categories of reserves taken into account</b>	Typically proved reserves for development projects and proved and probable reserves for producing projects	Proved reserves only. Only a limited amount of non-producing reserves will be taken into account.	It seems likely that the International RBL convention will apply.
<b>Development finance</b>	A standard aspect of International RBL	Not available from the senior bank RBL market	Single field development finance or development finance as part of a portfolio is expected.
<b>Banking case</b>	A central feature of RBL facility documentation. Model represents a conservative view of project or company business. One model for all banks	Each bank does its own analysis of collateral values but the Banking Case concept is not a feature of RBL facility documentation	A single Banking Case documented in the facility agreement will be needed as this will drive a range of necessary controls
<b>Liquidity test</b>	A standard feature	Does not appear	It seems likely that the International RBL convention will apply
<b>Project accounts</b>	A standard feature	Not typical (though accounts typically will fall within the broader security package)	An accounts regime with typical project finance style cash waterfall seems likely
<b>Other matters</b>			Liquidity in capital structure likely to be very important (deep offshore drilling expenditure may be unfixed)

## INTERNAL CHALLENGES FOR THE BANK MARKET

First, the expertise in development oil field finance for sub investment grade borrowers (where the borrower has little of value other than the undeveloped field itself) resides primarily in the international arena.

Secondly, most banks active in upstream finance have separate divisions in North America and outside and in the relatively few cases where North American banks are active in upstream oil and gas lending outside of North America the credit approval, management, risk and syndication functions are often separated between North American markets and international ones. The same is often true for European banks. Only in the case of a few banks (Société Générale is one of these) does all of the upstream finance go through one single global business management chain with a complete overview and understanding of both markets.

These internal structural and policy divisions in many institutions can act as an impermeable membrane that prevents the flow of expertise from one part of the institution to another and lead to a strange situation (in some cases) where an institution can theoretically happily finance an offshore development in West Africa but is incapable of doing so in North America.

The larger the deal the greater the need for a large number of banks and the greater these challenges will be to overcome. For this reason we believe the first deals of this kind will be at the smaller end of the spectrum and be extended by "clubs" of banks. From there one can readily see that other banks will

not want to miss out on this market and the pool of willing senior bank participants will expand.

Despite all the challenges the authors have no doubt that the bank market, supported by the right advice, will do what it has always done – innovate and adapt itself to meet the needs of its clients. **OGFJ**

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