

WHAT MAKES THOSE BANK ENGINEERS SO CONSERVATIVE?

By GERALD E. SHERROD, Vice President, First National City Bank, New York, N. Y.

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My purpose here is to explain the position and viewpoint of the oil lenders and to tell you the broad basis on which Citibank makes oil and gas loans. My remarks will be directed principally towards the non-recourse, ABC type oil loan. When I refer to oil loans I am including gas, distillates, and plant products.

What makes those bank engineers so conservative? How many times have we all heard that query?

Let me quote from Shakespeare's Hamlet: "Neither a borrower nor a lender be; for loan oft loses both itself and friend".

The economy of our country would still be back in the colonial stage if this quotation had been adhered to by our ancestors.

Let me rephrase the quotation in what I believe should be the modern version: "Neither an UNSAFE borrower nor an UNSAFE lender be; for an unsafe loan oft loses both itself and friend".

Banks are service oriented organizations and when we try to meet a customer's loan request our problem is fairly simple in concept. We must design an oil loan that will permit the customer to accomplish his purpose, profitably, and we must make sure that the loan is a safe loan for the bank.

This can be a delicate position to be in. In acquisition financing if the loan size is too small the customer may not be able to make his purchase in a competitive situation. If the loan is too large the bank may lose money. If, to accommodate a customer, a bank makes a loan that is too large, this may make the customer happy initially but usually will make both the customer and the bank unhappy in the long run. Management of both the bank and the customer company always want to know how specific loans or purchases are performing compared to their forecast. If a loan (and purchase) gets very far behind the original forecast it becomes a matter of embarrassment to the banker and the customer. When this happens the customer is usually more comfortable doing his banking business where the atmosphere is less embarrassing. In other words, a bank cannot always win doing what the customer desires.

Do banks take risks on oil loans? Not intentionally, but unfortunately the science of petroleum engineering and the Banker's financial analysis of companies is not infallible. Even with the best of properties and a very accurate loan analysis there are factors beyond the control of either the lender or property operator that can cause slow loans or outright losses. Some of these factors are: drastic cuts in allowable, price cuts, loss of market, pipeline disconnection or even an unexpected

water influx into a reservoir. Thus far, however, the loss ratio on oil and gas loans has been low at our Bank and other oil banks, and these loans are still attractive to lenders. We ran a survey of 40 oil lenders which showed that about 5% of all types of loans made, based on production, became problem loans. About 1.7% of these loans involved losses but the actual loss experience was less than 0.4% of the original face amounts extended.

One myth that has persisted over the years is "why should the banker care if the loan repayment is slower than forecast, he is getting his interest isn't he?" Well, to a banker TIME IS MONEY AND MONEY IS TIME. Banks are service organizations and, therefore, the more times the same money can be loaned out the more service banks can offer to their customers. Although some insurance companies are amenable to having well secured oil loans stretched out, with the final loan term extended well beyond the original term, nothing pleases banks more than to have loans pay out right on schedule.

This brings me to the subject of the types of risks that lenders are subject to on oil loans.

There are two types of risk; the first is called the loss risk, that is, will the lender lose all or part of his investment? When a situation develops where it is indicated that an oil loan is likely to result in a loss, the lender has only a few choices of action:

With the cooperation of the present owner the lender may seek a buyer for the property, or he may foreclose on the interest under mortgage. If it is a production loan he can foreclose on the entire property but if it is a payment loan he can foreclose only on that portion of the production pledged to the loan. A production payment is a non-operating interest in oil and gas which can be retired only from production when, as and if it is produced. In either case he can:

- a. Leave the existing loan on the property, or
- b. Sell the loan at a discount and take a loss.

If it is a production loan he can take over the operation of the property; in a payment loan the lender may succeed to the operation if the present operator abandons the responsibility or voluntarily turns the operations to the lender.

Foreclosure is the step that the lender is most reluctant to take. If the situation is bad enough to foreclose on, it probably means an immediate loss on the loan, while by riding it out there is always the hope that the loss will be reduced or that most of the investment will be recovered. Certainly foreclosure is bad public relations. Operation of a property is also un-

attractive to lenders because it is costly, time consuming and inconvenient.

The second type of risk is called the term risk, that is, will the loan be repaid on schedule so that the money can be used again as scheduled? You are familiar with situations where investments get tied up for periods far exceeding the original expectation. Disregarding the liquidation possibility, the best solution may be the passage of time with the investor hoping the situation will work itself out. This is analogous to the situation on oil property loans where something interferes with the production with the result that the loan amortization is extended far beyond the original forecast. If the reserves are adequate there is usually no loss; however, if the term is extended too far it can lead to a loss even with excellent reserves. Loans with terms in excess of 10 years are more vulnerable because of the relatively small proportion of loan service that is applied to principal in the early years. If the property revenue flow is forecasted to increase substantially from further drilling, allowable increases, secondary recovery response, etc. . . . , the term risk and loss risk liability are increased sharply if the revenue increases do not take place.

Let me review the chief difference between the investment position of a customer and a bank lender.

The customer is usually an oil company who has the normal profit incentive. He is used to taking risks because he deals in one of the more hazardous investment media. However, in his risk oriented investment atmosphere he usually judges his potential profit, or loss, on his equity investment. He invests large sums of money on acreage, exploration, drilling and development of property without complete assurance of getting his investment back on any one project. In fact, a considerable passage of time, after investment, is usually necessary before he can ascertain that he *will* get his money back or that he will make a profit. How does he circumvent the risk on individual prospects? First he uses every available analysis tool and second he spreads his risk among many projects. How can he do so well in face of these risk obstacles? He has one advantage that the bankers do not have, he can apply profits from successful projects against unsuccessful ones when calculating overall return on risk assets or investments. On the other hand: The bank lender is using depositor's money which, collectively, must be returned to them at some future time. In other words, the depositor's money *cannot* be put at risk. The company, however, is using equity investor's money which can seek a high yield return on *risk assets* and he *does not have* to return the investor's money *upon demand*.

The viewpoint of the bank lender is geared to the *fact* that the most he can ever get back from a loan is the principal and interest, nothing more and he hopes, nothing less.

In most property purchases the buyer can look forward to getting his equity investment returned several

times over prior to abandonment of the property. In any case his average rate of return is well in excess of the interest rates that are charged on oil loans. The customer also can benefit from plus factors such as unexpected discoveries on undrilled acreage acquired and unexpected reserves from secondary or tertiary recovery mechanisms. The lender, however, can *only* collect his profit from interest, and therefore, has a very narrow margin from which to create a profit pool against which he can charge any substantial losses. The customer (on the other hand) with his larger profit potential, can create profits which he can use to offset periodic equity losses. This provides a base on which he can take *some risk*.

Citibank uses a lending base which we believe has minimized our risks and has satisfied our customers' goals.

When appraising properties for loans we place the most importance on the following three factors:

1. Quality of reserves
2. Management—Operation
3. Spread of reserves

My comments will assume that adequate data is available and that a thorough engineering appraisal has been made on the properties in any specific loan situation.

In reserve analysis the determination of the quality and quantity of the reserves is related to the age of the field. The ideal reserve, of course, is in a field which has a high reserve to production ratio and which can be produced at a low cost. The best reserve estimates are based on reservoir performance and most engineers feel that more accurate estimates can be made when at least 20% (some prefer 40%) of the ultimate recoverable reserves have been produced at the time of the appraisal.

Examples of high quality fields are East Texas, Sacroc and Wilmington; these fields have massive oil columns and long production histories. Reserve estimates and production rates can be estimated accurately within plus or minus 5% in these fields. Their operating, work-over and maintenance costs are well established; their future investment requirements are predictable.

The area of maximum risk in estimating primary reserves is the new field which has been partially developed but lacks sufficient performance history on which to judge the volumetric reserves estimates. There *are* such situations in which the productive zones are so large or multitudinous that there is little doubt that very large reserves are present, underground, on the property. However, usually at this stage of partial development, the reservoir limits have not been firmly defined: such parameters as water levels and porosity pinchouts are estimated from a limited geological interpretation. Besides the potential errors in estimating reservoir volumes there is usually very little performance history on which to base the recovery efficiency. In other words, there is not only a possible error in how much oil is in place but also in how much of it can be recovered. If the reservoir analysis in this case

is essentially volumetric, with little performance, the reserve error can be in the area of 50% plus or minus.

In older fields where only 25% or less of the ultimate reserves remain, the magnitude of reserve error is probably less than 10%. However, from a lender's standpoint, the amount of revenue available for loan service may be small in relation to the reserves because of the high cost of operation during the latter stages of depletion.

It is usually difficult to determine the quality, or loan value, of those reserves which are not primary reserves. We are frequently asked to make loans on reserves which can be broadly classed as undrilled reserves and non-producing reserves. The non-producing reserves are usually either behind-the-pipe or in proposed secondary recovery programs. Many times these reserves are termed probable, possible, potential or additional reserves.

The undrilled reserves can vary from infill locations to situations where only one well has been drilled and the rest of the reserves claimed for the field are based wholly on geological interpretation. The danger, of course, in undrilled reserves is: first, the possibility of drilling a dry hole, second, the risk that offset operators will drain all or part of the reserves off the property and, third, the risk that the present operator may not have sufficient capital to drill all the proposed locations. Behind-the-pipe reserves are also subjected to the latter two hazards.

The secondary recovery reserves can vary from projects that have been completely developed and are over their peak to situations where there has not even been a project tried in similar formations and the reserves should be more aptly described as a gleam in the operator's eye. Of course, we view secondary projects that are fully developed and that are approaching their peak no differently (from a security standpoint) than from seasoned primary reserves.

If the property is still producing by primary and pilot floods have been successful on similar formations in the same area, the reserve risks on future secondary on this property are probably on the order of 50% plus or minus. If a property in the field has had a successful pilot flood on it, the reserve risk is reduced probably to 25% plus or minus. The problem from a lender's standpoint, in either situation, however, is that it is more difficult to forecast producing rates, operating costs and investment requirements in secondary recovery projects. Consequently, when we have to rely on net revenue for loan service there is considerably more room for error in the secondary projects, than in the primary in judging the amount of revenue available for loan service.

Gas or gas condensate reservoirs are usually viewed as better loan risks than oil reservoirs because of their higher reserve to production ratio, more stable market for the product, and the fact that their low-cost operation allows proportionately more revenue for loan service. Depressed gas prices, interrupted takes and pipe line prorations have disturbed the normally serene

gas market during the past 10 years.

MANAGEMENT-OPERATION

The second principal factor in our loan analysis is the management-operation of the properties.

In any property appraisal, it is usually assumed that competent management will be available to continue (or even improve) operations of the properties. When a well known company is the residual interest owner in a purchase, this problem is minimized. At the other extreme, there is the situation where the operator may be a one-man company with little or no technical ability and no other assets of any consequence except the properties under mortgage.

We cannot overemphasize the importance of good management on oil properties under loan. We ask ourselves a number of questions about the proposed management, some of which are:

Do they have adequate capital to run an enlarged operation? Are they adequately staffed with competent personnel in the areas of:

Company administration—operations, finance, tax and accounting?

Engineering/geology—at staff and field levels?

Field operation—engineers, supervisors, pumpers, etc. . . . ? How well does their present geographical spread of personnel and facilities fit the new situation?

How good is their reputation? i.e., do they have a good reputation as administrators, as efficient operators, for staying up to date on technical advances and in all other phases of oil company operation.

If they have been involved in other loan purchases, we consider how well they have performed in them.

We are simply trying to determine whether or not they can adequately perform the management-operation function in an enlarged operation. Because of their profitability, at the field level, oil properties are considered excellent loan security, but as you all know inept management can decrease (or even ruin) the value of good oil properties.

SPREAD

The third principal factor in our engineering loan analysis is the distribution of reserves which, in turn, bears on the concentration of economic and political-regulatory risks.

A geographic spread of the reserves reduces the risk of reserve errors because many individual errors tend to compensate each other. If a field is a multi-pay producer then the one-field reserve risk is reduced considerably. This vertical spread protection does not, however, give adequate protection against the concentrated economic and political-regulatory risk. Horizontal reserve spread-protection may also be achieved in large units where the interest being appraised is undivided over a great many wells.

In the appraisal of proved undeveloped primary and secondary reserves, a large spread can offer substantial

protection in a situation where the number of properties involves a fairly large portion of reserves other than primary. These may be considered for loan analysis if the spread is adequate among the primary, secondary and undeveloped classes.

If the reserves are confined to one local geographic area, the economic risk is concentrated because of the vulnerability to price changes or interruption of the outlets in a one-field situation. Concentration also endangers the profit (or future net revenues) from the properties because the lifting costs are more vulnerable to local increases in labor costs and taxes.

The principal risk from a political standpoint is proration, either by the states or pipelines. Regulatory bodies can change gas/oil ratio penalties, spacing requirements, field rules and many other factors that, in one field, can influence the revenue stream severely. Properties hooked to one pipeline system (whether gas or oil) can have their outlet restricted or in some cases completely shut-in because of some economic factors that are beyond the control of the operator.

Pipeline purchasers have been known to levy gathering or pipeline transportation charges, which in effect reduce the posted price, thereby reducing the revenue available for loan service.

Perhaps I have overemphasized the spread factor in loan analysis. Certainly there is the danger that a loan appraiser will attach too much importance to spread and may neglect the quality and management aspects of a given situation. Too much spread, of course, can be inimical to loan security when the properties being considered are small splinter interests and are *too widely* spread. High administrative and overhead costs, on such

properties, may prohibit their profitable operation and therefore endanger loan security.

GENERAL

In general our property appraisal approach for loan analysis is to seek an adequate balance between the factors of quality, management and spread. It is normally assumed that quality is the most essential factor. However, with a large enough spread on properties, in the medium-to-late depletion age, safe loans can be engineered on properties of lesser quality. If the quality is high enough, safe loans can also be made on properties where there is a one-field risk. Generally these situations must be properties where excellent performance has been demonstrated and long life reserves remain from which to service a loan. Adequate management must be available in every situation, but frequently this is automatic when competent management assumes control of properties upon purchase. Very few situations are found which have all these factors at the optimum: Quality and spread can compensate each other but nothing can replace competent management.

In conclusion, let me say that I believe that bank engineers have *not* been too conservative. Look at the record. In the last 15 years it is estimated that over 5 billion dollars of oil properties have been purchased which have been financed by banks and insurance companies. The number of loan losses and bad purchases has been small.

I believe we have accomplished our purpose. That is, the customers have made profitable purchases and the lenders have made safe loans.