



68-01-6425

REGULATORY AGENCY'S REFERENCE MANUAL

FINANCIAL RESPONSIBILITY FOR WELL PLUGGING AND ABANDONMENT

SUBMITTED TO
DR. JENTAI YANG
OFFICE OF DRINKING WATER
U.S. ENVIRONMENTAL PROTECTION AGENCY

MARCH 1983

BOOZ · ALLEN & HAMILTON, INC.
UNDER THE DIRECTION OF
GERAGHTY & MILLER, INC.



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ACKNOWLEDGEMENT

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I. INTRODUCTION TO THE MANUAL

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The Safe Drinking Water Act is designed to protect underground sources of drinking water (USDW) by regulating the design, construction, operation and abandonment of underground injection wells. To achieve this objective, the Act directs EPA to designate States that require underground injection control (UIC) programs and to promulgate minimum technical standards and permitting provisions for State programs. States that have programs meeting the minimum Federal requirements are eligible to have primary enforcement authority (primacy). Alternatively, States that have existing UIC programs for regulating oil and gas operations may continue to administer the programs if their provisions are essentially equivalent to Federal requirements. In all other cases, EPA will promulgate and administer a UIC program.

Under regulations which EPA first promulgated in 1980, program directors must require permittees to plug and abandon their wells properly according to prescribed technical standards. To ensure that well owners and operators will be financially capable of meeting this obligation, the regulations direct the Program Director to require permittees to provide evidence of available assets ("financial responsibility"). Some of the financial responsibility mechanisms available to well owners and operators are:

- . Surety (performance) bonds
- . Letters of credit
- . Trust funds
- . Escrow accounts
- . Corporate financial test.

If the state has required demonstration of financial responsibility in the past, regulators already may be familiar with some or all of these alternatives.

The purpose of this manual is to assist regulatory agencies in evaluating a permittee's financial responsibility demonstration and determining its adequacy. It is designed to provide useful information both to those with experience in administering financial responsibility rules and those managing such a program for the first time. The manual provides a general introduction to the subject, including:

- . Background on the regulations
- . Description of financial responsibility mechanisms (Chapter II)

- . Guidelines for evaluating an operator's selection of a mechanism (Chapter III).

In addition, the manual contains a glossary of financial terms and information on the comparative costs of financial responsibility mechanisms.

The remainder of this chapter provides background information. First, it summarizes the technical and financial provisions of the regulations. It concludes with an overview of the organization of the rest of the manual.

1. REGULATORY REQUIREMENTS

Congress created the UIC program in response to evidence that injection activities could have an adverse impact on the quality of groundwater. Contamination can result from improper plugging and abandonment practices. Accordingly, in carrying out its statutory obligation to establish minimum technical criteria and standards, EPA issued rules governing the plugging and abandonment of injection wells in Classes I-III. One set of rules (40 CFR 146) stipulates plugging and abandonment methods while the other set (40 CFR 122) directs states to require permittees to demonstrate that they will have adequate financial resources to carry out their approved plugging plans.

(1) Technical Criteria and Standards

The objective of the plugging and abandonment standards is to prevent "the movement of fluids either into or between underground sources of drinking water." In order to achieve that objective, well owners and operators generally must plug their wells with cement, although the regulatory agency may authorize Class III well operators to use other plugging materials. Also, prior to placing the plugs, the operator must achieve a "state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once" or by another method acceptable to [the Program Director]" (40 CFR 146.10). These requirements are discussed in greater detail in EPA's Technical Well Abandonment Manual.

Under 40 CFR 122.42 the regulatory agency must require the operator to prepare a plugging and abandonment plan as part of the permit application. If the plan is adequate, it becomes part of the permit. If the plan has deficiencies, the agency either can ask for revisions or deny the permit. EPA's reference manual for operators recommends close consultation with program staff prior to submittal of an application.

(2) Financial Responsibility Requirements

The permitting regulations require permittees to demonstrate that they have adequate financial resources to comply with their plugging plans. EPA's rules give the regulatory agency considerable flexibility in deciding which mechanism(s) an individual operator may use to demonstrate financial responsibility. The agency also has the option of requiring a separate financial responsibility demonstration for each well or allowing a blanket demonstration covering all of an operator's wells in the state.

2. ORGANIZATION OF THE MANUAL

The next two chapters of the manual describe five alternative methods operators could use to satisfy the financial responsibility requirements. Chapter II describes the terms and conditions of each alternative. Chapter III provides a step-by-step outline of how to evaluate the operator's financial responsibility plan.

II. MECHANISMS FOR DEMONSTRATING FINANCIAL RESPONSIBILITY

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The purpose of the financial responsibility requirement is to ensure that the regulatory agency or a third party will have access to adequate funds for plugging in case a well owner or operator fails to comply with the plugging and abandonment conditions of his permit. This chapter describes and evaluates the financial responsibility alternatives which operators may wish to use.

Several mechanisms, some or all of which may be acceptable under state laws and regulations, are available to satisfy the financial responsibility requirement:

- . Surety bonds
- . Letters of credit
- . Trust funds
- . Escrow accounts
- . Financial statements.

Historically, these mechanisms have been used to ensure performance of a variety of Federal, State, or local regulatory obligations. In order to assist regulators in assessing operators' financial responsibility demonstrations, this section provides background information on the terms, conditions, and operation of each mechanism.

1. SURETY BONDS

Surety, or performance, bonding is the most widely used approach for demonstrating financial responsibility, particularly in the oil and gas industry. Bonding is a mechanism whereby a licensed surety company*, in return for an annual fee paid by the operator, assumes liability for the well operator's plugging and abandonment obligation. The surety company is not released from this liability until it receives notification from the regulatory agency that the operator has adequately performed his obligation. Under current practice, plugging bonds written for individual wells cannot be cancelled even if the operator fails to pay the annual fee; and while cancellation of a blanket bond relieves the surety from any liability for additional wells not previously covered, the surety is still responsible for wells already covered.

* Over 300 surety companies are certified by the U.S. Treasury for bonding under Federal programs (see U.S. Treasury Department Circular 570), and others are licensed by the states.

In the event the operator fails to perform, the surety company is responsible for promoting proper plugging and abandonment. Depending on state law and regulation, a bond is written either to provide a beneficiary (e.g., the regulatory agency) with funds to carry out plugging or to specify that the surety company itself will arrange for plugging. Surety companies often prefer to have a choice, since the actual cost of plugging may be less than the estimated cost upon which the bond value was established. Both approaches relieve the regulatory agency of either having to provide plugging funds or take enforcement action to recover plugging costs from the operator.

(1) Types of Bonds

Surety companies currently offer two types of plugging bonds. The most widely used is the blanket bond, which covers all of an operator's wells within a single state. Bonds may also be written for individual wells. In the past, the regulations of each state have dictated the type and value of the bond required. Exhibit II-1 shows the surety bond form which has been used in Oklahoma. It is similar to forms used in other states.

(2) Bonding Procedures

The procedures for obtaining a plugging bond are well established, and both operators and regulators find bonding a simple mechanism to use. After an operator requests a bond, the surety company conducts a thorough evaluation of the operator's financial health. If the operator's financial status is clear, the underwriter either will write or decline the bond. In borderline cases, the surety company may require collateral. Once the bond is written, the surety company sends evidence of the bond to the appropriate regulatory agency. Thus, bonding relieves the agency of the need to conduct a special financial evaluation of the permit applicant or to track the permittee's continuing financial responsibility.

(3) Cost of Bonds

All operators must pay an annual premium, which typically ranges from 1.0 to 1.5 percent of the face value of the bond. The cost of a blanket bond may range up to 5 percent and there may be an added charge for each new well. Exact rates generally are filed with and approved by state insurance commissions. While surety companies cannot impose surcharges on financially weak companies, they often provide healthier companies with discounts.

Costs to well operators may be considerably higher if the surety company requires collateral. Surety companies

EXHIBIT II-1
Surety Bond Form

Form No. 1008
Rule 3-201.2(c)
(1975) Rev.

Bond No. _____

OKLAHOMA CORPORATION COMMISSION
CONSERVATION DIVISION
380 Jim Thorpe Building
Oklahoma City, Oklahoma 73105

**SURETY BOND FOR PLUGGING OIL, GAS AND
SERVICE WELLS WITHIN THE STATE OF OKLAHOMA**

KNOW ALL MEN BY THESE PRESENTS:

That _____, as Principal,

Mailing Address _____

_____ Zip Code _____

And That _____, as Surety,

Mailing Address _____

_____ Zip Code _____

authorized to do business within the State of Oklahoma are held and firmly bound unto said State in the penal sum of Ten Thousand Dollars (\$10,000), lawful money of the United States, for which payment well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators or successors, and assigns jointly and severally, firmly by these presents.

The condition of this obligation is that whereas the above bounden principal proposes to drill and/or operate an oil, gas, injection, disposal or service well or wells within the State of Oklahoma, and has furnished his agreement in writing to the Corporation Commission of the State of Oklahoma to plug each such well at the time and in the manner prescribed by the laws of the State of Oklahoma and the General Rules and Regulations and Special Orders of the Commission.

NOW, THEREFORE, if the above bounden principal shall plug each well drilled and/or operated by him within the State of Oklahoma at the time and in the manner prescribed by the laws of the State of Oklahoma and the General Rules and Regulations and Special Orders of the Corporation Commission of the State of Oklahoma, then this obligation shall be null and void; otherwise, the same shall be and remain in full force and effect. This obligation may be terminated by the Surety upon six (6) months notice in writing to the Conservation Division. (OCC Rule 3-201; 52 OS Supp 1971 §319.)

PROVIDED, HOWEVER, the aggregate liability of the surety hereunder shall in no event exceed the sum of this bond.

Witness our hands and seals, this _____ day of _____

Principal

Witness our hands and seals, this _____ day of _____

COUNTERSIGNED BY:

Oklahoma Resident Service Agent

Surety

(If the principal is a corporation, the bond should be executed by its duly authorized officers, with the seal of the corporation affixed. When principal or surety executes this bond by agent or attorney in fact, the evidence of authority must accompany the bond.)

Approved _____ Date: _____
Conservation Division — Oklahoma Corporation Commission

are very cautious and, unlike liability insurers, theoretically assume no risk. Thus, if the surety company considers a company's financial position to be at all uncertain, the surety will ask for collateral equal to all or part of the bond's face value. Collateral generally consists of treasury bills, cash, certificates of deposit, government secured general obligation or revenue bonds, or an irrevocable letter of credit. The additional cost of collateral is that some of the operator's capital is tied up in low yield investments and not available for higher yield investments.

(4) Drawdown of Funds

If the UIC program is administered by EPA, a permittee should establish a stand-by trust when obtaining a performance bond. The terms of the bond would provide that in case the operator defaults, all payments under the bond would be deposited directly into the stand-by trust. Without such a depository mechanism, any funds drawn under this mechanism, payable to the Regional Administrator would have to be paid into the U.S. Treasury and could not be designated specifically to pay for plugging.

2. LETTERS OF CREDIT

An irrevocable letter of credit (LOC) is a less widely used approach but one which is advantageous both to some large companies and to regulatory officials. As applied to plugging obligations, it is an irrevocable assurance, usually provided by a bank, to pay the beneficiary (i.e., a state agency) up to a certain sum if the operator fails to perform. In other words, if the operator fails to perform, the agency would be able to draw funds from the bank upon the presentation of documents consistent with the terms of the letter of credit. Exhibit II-2 presents the form currently used in Oklahoma for letters of credit. As with surety bonds, if EPA administers the UIC program, the permittee also should establish stand-by trust funds to serve as the depository mechanism for drawdowns on the LOC.

The availability and cost of the letter of credit may vary according to the operator's financial status, relationship with the issuing institution, value of the LOC, and the issuing institution's outstanding loans. Letters of credit typically are available only to large companies with a substantial, verifiable net worth. Banking industry representatives suggest that large oil companies will find LOC's easy to obtain, whereas firms with less identifiable assets or with only limited operating histories may face greater difficulties. Blue chip firms (with a AAA rating) having an established relationship with the issuing bank may pay an annual fee of no

EXHIBIT II-2
Letter of Credit

FORM NO. 1006C (1975) RULE 3-291.4

No. _____

OKLAHOMA CORPORATION COMMISSION
CONSERVATION DIVISION

IRREVOCABLE COMMERCIAL LETTER OF CREDIT

DATE: _____

TO: Corporation Commission of the State of Oklahoma,
Third Floor, Jim Thorpe Building,
Oklahoma City, Oklahoma 73105

Gentlemen:

We hereby authorize you to draw on _____
Name of Bank

_____ Street Address City State Zip

by order of _____
Name of Operator

_____ Street Address City State Zip

and for account of _____
Operator

up to an amount not exceeding Ten Thousand Dollars (\$10,000) available by your drafts on ourselves at sight for 100% invoice cost accompanied by a formal order of the Corporation Commission of the State of Oklahoma entered pursuant to and in aid of the enforcement of Commission Rule 3-201 and 52 O.S. 1971 §318.1 and as the rule or statute may be amended.

This Letter of Credit will expire midnight on the _____ day of _____, 19____ or when the next succeeding Letter of Credit is furnished to the Commission, whichever occurs first. In no event will the obligations of multiple Letters of Credit securing the same Operators Agreement be cumulative or in excess of the total aggregate sum of \$10,000.

We hereby agree with the drawers, endorsers and bona fide holders of all drafts drawn under and in compliance with the terms of this Letter of Credit that such drafts will be duly honored upon presentation to the drawee.

Yours very truly,

President - Vice President

Cashier - Assistant Cashier

more than .25 percent of the full value of the LOC annually, although the cost can be as high as one percent. An additional cost to operators is that the LOC counts against the firm's credit line and reduces its access to capital for expansion or investments. In some cases, the bank may require up to 100 percent collateral, applying the same terms to an LOC as to an outright loan. If collateral is required, the cost will rise considerably. Although Federal regulations limit the amount of credit a lending institution can make to any one company, this should not be a problem for injection well operators since the costs of plugging typically are relatively modest.

3. TRUST FUNDS

A trust fund is an arrangement whereby the operator deposits sufficient funds for regulatory compliance with an independent trustee. The trustee then bears legal responsibility for managing the fund for the benefit of the regulatory authority in accordance with the designated terms of the trust. These terms may specify investment procedures as well as eventual disposition of the funds for plugging and abandonment. The operator pays the trustee a management fee that is generally a percentage of the size of the trust and varies with the duties of the trustee.

Once established, the operator cannot terminate the trust fund without the consent of both the trustee and the beneficiary, in this case the regulatory authority. Trust funds are widely used to isolate funds for government mandated programs, and are included as an option for financial responsibility assurance for EPA's hazardous waste program.

(1) Types of Funds

Well owners and operators may establish a fund either individually or as part of an industry group. All aspects of the trust such as costs, fund management, and fund disbursement can vary and are defined in the trust agreement. The trust agreement will set forth the trustee's role and any limitations on his investment of the trust funds. The objective, for both individual and industry trusts, is to make investments which at least keep up with, and even exceed, inflation. Trust funds intended for assuring regulatory compliance generally limit investments to low risk securities such as U.S. Treasury bills. This assures that the funds are available for their regulatory purpose and not lost through speculation.

The regulatory agency may stipulate in advance the trust terms that it would find acceptable. EPA has not established such terms in the UIC rules and intends to leave that task up to each Program Director.

(2) Cost of Establishing Trust Fund

The cost of a trust fund may vary according to the management fees, payment schedule, and whether the trust is an individual or industry fund. Typical annual management fees run about 1.0 to 1.5 percent of the value of the trust.

In establishing an individual trust, the operator generally can choose from two different payment methods. The terms of the agreement either may require a lump sum payment upon establishment of the trust or may allow an annual payment into the fund.

Although the latter approach considerably lightens the operator's financial burden by spreading payments over a number of years, it provides less assurance that sufficient plugging funds will be available when needed. For example, if the operator goes bankrupt or ceases his operations prematurely and fails to comply with his plugging plan, the size of the trust fund may not be sufficient to make adequate plugging funds available to the agency. By contrast, a lump sum payment at the outset assures the availability of funds regardless of when or why the operator shuts down his well.

Despite the potential risks, regulatory agencies need not categorically prohibit the use of annual payment trusts. Instead, the agency could pursue options such as initially requiring a surety bond and gradually reducing its value as the amount in a trust fund rose.

For industry-wide trusts, the payment schedule is always an annual one dictated by the number of participants and anticipated rate of noncompliance. These assessments are likely to be lower than those to an individual trust fund, since the probability of noncompliance for all wells covered by the fund is considerably less than that for any single well. Industry trust assessments are non-refundable, however; funds are available only if the operator fails to perform.

4. ESCROW ACCOUNTS

An escrow account, like a trust fund, is an account into which the operator deposits sufficient funds in advance to pay for proper plugging and abandonment. The funds may be deposited in full upon establishment of the escrow or over any stipulated period during the life of the well, and are disbursed to the operator either as payment for abandonment or reimbursement for completion of his responsibilities. The funds may be used only to meet the costs of abandonment. An

account administrator verifies deposits and disbursements. Typically, the account administrator is a financial institution or other independent third party, for whose services the operator pays an annual management fee on the order of one percent of the value of the account. Alternatively, the regulatory agency may administer the account if it is willing to undertake the increased administrative burden and has the authority to do so.

Unlike a trust fund, which transfers legal title for the funds to the trustee and requires him to protect the interests of the beneficiary, the escrow account administrator is responsible only for specifying the terms of the escrow agreement and for administering the account accordingly. The operator retains legal title to the funds, and unless prohibited by the terms of the escrow agreement, may use the funds for abandonment. The operator's maintenance of title also implies that, in the event of operator bankruptcy, the funds may be subject to creditors' claims. Because it is difficult to draft an escrow agreement that addresses all of these contingencies, escrow accounts have not been allowed as a financial responsibility assurance mechanism for some other regulatory programs, including EPA's hazardous waste program. Program Directors should be especially alert to the potential shortcomings of escrow accounts as a means for guaranteeing financial responsibility.

5. CORPORATE FINANCIAL TEST

A financial statement summarizes an operator's current financial status. It indicates liquidity and stability but does not guarantee that the operator will have adequate financial resources for abandonment in the future. Most financial analysts agree that the data the operator is likely to submit will not be useful in predicting a firm's financial health more than three years into the future.

Presumably, a regulatory agency would use extreme care in accepting a financial statement from an operator as evidence of financial responsibility, since the operator does not have to set aside funds for abandonment. Thus, the acceptability of a financial statement depends upon whether the regulatory agency is confident that a relationship exists between the operator's current assets and his future willingness and ability to fulfil regulatory obligations.

(1) Types of Financial Data

Exhibit II-3 displays a simple financial statement required of permittees in Oklahoma. Essentially it is a balance sheet presenting the permittee's total accumulated assets and liabilities at the end of a particular period, indicating the operator's net worth and liquidity. To

EXHIBIT II-3
Example of Financial Statement

REVISED Form No. 1006A
Rule 3-201.1 (1975)

OKLAHOMA CORPORATION COMMISSION
CONSERVATION DIVISION

380 Jim Thorpe Building
OKLAHOMA CITY, OKLAHOMA 73105

FINANCIAL STATEMENT

That _____ Operator.

Mailing Address _____

Zip Code _____

hereby attests that he has a total net worth of \$_____. The description and value of assets and liabilities are as shown below. A statement reflecting a net worth of less than \$10,000.00 is not acceptable and partial Financial Statements will be returned to the operator. If Accounts Receivable are listed, they must be accompanied by a statement attached and made a part hereof of the dollar amount of delinquent accounts. The value of producing oil and gas leaseholds for which this statement stands as security, will be deducted from total net worth unless the Financial Statement is accompanied by the written appraisal of a recognized independent appraiser of oil and gas properties showing the fair market value of the leasehold interest owned by the operator.

ASSETS

LIABILITIES

Total Net Worth \$_____

I, the undersigned, being duly sworn upon oath, state that this Financial Statement is a true and full statement of assets and liabilities.

Signature (Operator)

Title

Subscribed and sworn to before me this _____ day of _____ 19____

My Commission Expires: _____

Notary Public

EXHIBIT II-4
Approaches to Financial Data Analysis

Type of Measure	Description	Advantage/ Disadvantage	Data Sources
Ability to Finance Obligations	<ul style="list-style-type: none"> Gross measures of size <ul style="list-style-type: none"> - Net worth (or stockholder's equity) - Total assets Large firms have more assets and lower probability of bankruptcy 	Easy to read directly from balance sheet	Balance sheet
Dependence on Creditors	<ul style="list-style-type: none"> Extent to which operator relies on debt financing Highly leveraged firms usually are more vulnerable, but it depends upon cash flow stability 	<ul style="list-style-type: none"> Requires calculation of several ratios: <ul style="list-style-type: none"> - Total debt/total assets - Total debt/net worth - Long term debt/capitalization - Long term debt/net worth Necessitates trend analysis (including cash flow volatility) 	<ul style="list-style-type: none"> Balance sheet Statement of sources and uses of funds
Liquidity	<ul style="list-style-type: none"> Adequacy of assets to meet obligations as they come due 	<ul style="list-style-type: none"> Requires calculation of several ratios: <ul style="list-style-type: none"> - Current ratio (current assets/current liabilities) - Quick ratio (cash + current receivables + marketable securities/current liabilities) - Necessitates comparison with other firms 	Balance sheet

Type of Analysis	Description	Advantages/ Disadvantages	Data Sources
Common Size Measures	Compares permittee's financial performance with other firms of a similar asset size, in the same industry	Not comprehensive	<ul style="list-style-type: none"> Annual surveys (e.g., Robert Morris Associates, <u>Annual Statement Studies</u>; Troy Leo, <u>Almanac of Business and Industrial Financial Ratios</u>) Computerized services (e.g., Compustat)
Trend Analysis	Ascertains positive/negative trends in permittee's financial position over several years	Proper interpretation requires familiarity with economic cycles, industry-specific factors and their impact on individual operators	Financial statements for multiple years

ensure a more reliable estimate of the operator's financial condition, the regulatory agency may want to require a considerably greater amount of data such as that found in the following additional tables:

- . Income statement
- . Statement of sources and uses of funds
- . Accumulated retained earnings statement.

The income statement presents the firm's revenues, expenditures, and profits for the preceding year. It is thus a record of the operating activities for that year. The statement of sources and uses of funds breaks down information from the income statement and balance sheet to show the firm's income sources, including operation income and sale of assets, the uses to which this cash was applied, and the resulting net change in working capital, or net current assets. This may be followed by an analysis of changes in net working capital for the reporting period, describing changes in current assets and current liabilities. Finally, the accumulated retained earnings statement indicates how much of the firm's profit for the year was retained for reinvestment and new growth after payment of stockholders' dividends.

(2) Interpretation of Data

The income statement, balance sheet, and statement of sources and uses of funds are likely to be the most useful parts of the financial statement for analyzing an operator's ability to meet well plugging and abandonment requirements. Income statement and balance sheet data are generally provided for two or more years, allowing analysis of trends in the firm's financial performance. Cash flow analysis based on the statement of sources and uses of funds has become recognized as a valuable tool for interpreting the data in the income statement and balance sheet.* The agency may choose from among several available measures of financial health. Some of these may be read directly from the balance sheet, while others are best interpreted in ratio form from information contained in the balance sheet, income statement, and statement of sources and uses of funds. Unfortunately, no single measure or set of measures can be regarded as best in all cases, nor can specific threshold values be established as meaningful indicators of good financial health for firms of all sizes in different industries and circumstances.

* A useful introduction to cash flow analysis can be found in Techniques of Financial Analysis by Erich Helfert, DBA, Fourth Edition, 1977, Chapter 1.

Exhibit II-4 summarizes several different approaches that may be used in analyzing the operator's financial data. Although other indicators of financial health are available, these are perhaps the most commonly used and have been successfully employed in other Federal regulatory programs. It should be clear from the preceding discussion, however, that no standard values can be relied upon to discern the healthy from the unhealthy firm. It is up to the regulatory agency to specify the conditions under which financial statements are acceptable as a demonstration of financial responsibility.

(3) Cost of Financial Statement Preparation

From the operator's perspective, submittal of a financial statement is the simplest method of demonstrating financial responsibility and involves a negligible incremental cost. Federal securities regulations require that all publicly-held companies submit a complete set of financial statements in their annual 10-K report to the Securities and Exchange Commission, although these may be presented in consolidated form for all operations of a conglomerate. Most private companies prepare comprehensive financial statements for their own purposes, and hence would incur a very limited incremental cost.

The five financial assurance mechanisms discussed above are those that have been in most widespread use prior to the promulgation of Federal UIC rules. Program Directors are neither required to allow all of these mechanisms nor prohibited from using other ones.

* * * * *

The five financial assurance mechanisms discussed above are those that have been in most widespread use prior to the promulgation of Federal UIC rules. Program Directors are neither required to allow all of these mechanisms nor prohibited from using other ones.

III. EVALUATION OF FINANCIAL RESPONSIBILITY DEMONSTRATION

III. EVALUATION OF FINANCIAL RESPONSIBILITY DEMONSTRATION

The guidelines in this chapter are not meant to recommend which financial responsibility mechanisms should be accepted in all cases. Each case will have unique characteristics, and the agency should evaluate the operator's financial responsibility demonstration against program objectives. The purpose of these guidelines is to outline an approach that can be used to assess the financial responsibility portion of an application.

The agency's assessment of the adequacy of an applicant's selection of a financial responsibility mechanism should reflect three factors:

- . Consistency with regulations of regulatory agency
- . Effectiveness in promoting compliance
- . Administrative burden.

The agency should be sensitive to the relative costs of financial responsibility mechanisms to the operator, as cost is one of the most important factors in the operator's choice of a mechanism. Following a brief overview of the evaluation process is a discussion of each of the evaluation criteria.

1. OVERVIEW OF THE EVALUATION PROCESS

EPA's financial responsibility rules are designed to promote proper plugging and abandonment without placing unreasonably high compliance costs on operators or administrative burdens on regulatory officials. To promote these objectives, the rules neither prescribe nor preclude the use of specific mechanisms; rather, they give Program Directors responsibility for determining which financial responsibility mechanisms are acceptable. Exhibit III-1 presents a summary evaluation of the five mechanisms considered in this manual.

Exhibit III-2 provides an overview of general procedures to be followed in evaluating financial responsibility demonstrations. Consistent use of these or other similar procedures can promote a smooth, efficient permitting process by disseminating permitting information to applicants.

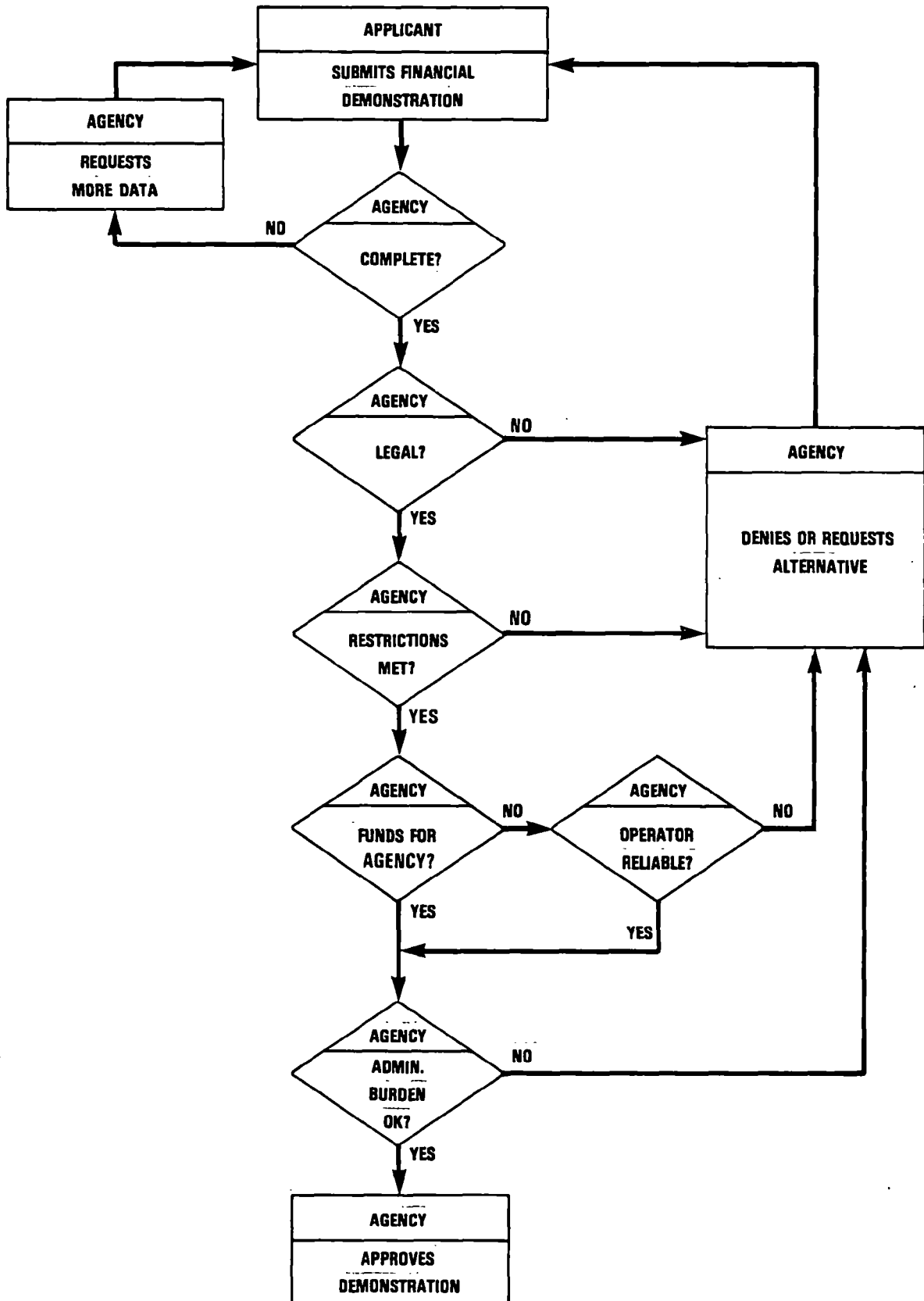
2. COMPLETENESS OF APPLICATION

The type and amount of information required of applicants will vary according to the financial responsibility mechanism the applicant has chosen. In any case, the agency cannot

EXHIBIT III-1
Comparative Evaluation of Financial
Responsibility Mechanisms

	Consistency With State Regulations	Effectiveness	Administrative Burden
Surety Bonds	Generally accepted in most states	Most effective because funding mechanism guaranteed. Surety company typically takes full responsibility for abandonment needs in cases of nonperformance.	Mininal burden since surety company performs all of the work.
Letters of Credit	Varies	Since funds are specifically guaranteed to be available, LOC's should generally prove adequate.	State may have to verify soundness of LOC and ensure it remains updated.
Trust Funds	Varies	As long as they are properly administered they should be effective. Most suitable when needed funds are deposited at beginning of well operation rather than incrementally.	State will have to monitor payments to funds and the legal standing of fund.
Escrow Accounts	Often not acceptable	Less certain than trust funds because creditors may have access to funds in escrow account if operator goes bankrupt.	Lack of guarantees associated with an escrow account could require that the state would have to continually monitor account operation.
Financial Statements	Varies; stringent criteria often applied	Provides no direct financial assurances. Best used as an indication of when some other mechanism may be needed	Regular oversight of statements by qualified analysts is essential.

EXHIBIT III-2
Overview of Evaluation Process



evaluate the adequacy of a financial responsibility demonstration unless it is complete. Information typically needed for each mechanism includes:

- . Surety bond: a properly executed bond which clearly identifies the bond's value, number and classes of wells covered, obligation to pay or perform, and name of surety company.
- . Letter of credit (LOC): a letter or other form from the issuing bank identifying the letter of credit number and value, verification of regulatory agency as beneficiary, effective and expiration dates, and conditions for drawdown of the LOC.
- . Trust funds: a copy of the trust agreement identifying the trustee, the payment schedule, the allowable investments, and conditions for terminating the fund and releasing its assets.
- . Escrow accounts: a copy of the escrow agreement specifying the account administrator, deposit schedule, allowable investments, and conditions for terminating account and releasing assets.
- . Financial statement: a summary of the applicant's financial status including income statement, balance sheet, statement of sources and uses of funds, and accumulated retained earnings statement

To promote a streamlined permitting process, the agency should provide applicants with a checklist for determining completeness.

3. CONSISTENCY WITH STATE REGULATIONS

The agency should ascertain that the applicant has selected a mechanism allowed under the laws and regulations governing the administering agency. Although EPA has not restricted the use of any of the five mechanisms discussed in Chapter II, it has not prohibited Program Directors from doing so. In fact, some programs already restrict operators to using surety bonds or depositing cash or securities with the state treasurer. If the operator has selected a mechanism expressly forbidden by Federal or state regulations, the agency should notify the operator in writing that he must amend the financial responsibility portion of his application. Alternatively, the agency may wish to consider other mechanisms not considered in this manual, in which case the Program Director should be prepared to request specific information needed for evaluation. If prevailing regulations require the agency to

render a permit decision within a specified period, the agency can comply with that requirement at this point by phrasing the letter to the applicant either as a permit denial or as a request for additional information. Currently, in most states, requests for more data "stop the clock."

Many Program Directors either have or may wish to adopt special conditions associated with the use of one or more of the financial responsibility mechanisms. Typical examples of such restrictions include:

- . Size of companies allowed to use financial statements
- . Specified duration or value of surety bonds
- . Mandatory collateral with financial statements
- . Designation of a governmental agency as escrow administrator.

Some of these restrictions may be explicit in state or Federal laws or regulations, in which case the agency should include them in its legal review of the operator's application. Alternatively, such restrictions may be treated as operating guidelines, applied on a case by case basis. In that event, the application should be evaluated against any special restrictions or conditions subsequent to the completion of the legal review. In either event, the agency should disseminate them to operators before applications are prepared. As mentioned earlier, the permitting process can operate most expeditiously when applicants seek and the agency is prepared to give pre-application assistance. This type of permittee/ regulatory agency interaction will be particularly essential if the financial responsibility rules represent a new program area for the agency.

4. EFFECTIVENESS IN PROMOTING COMPLIANCE

Unless the regulations require all applicants to use the same financial responsibility mechanism, applicants may select different mechanisms; and the next step is to consider whether the operator's selection of a mechanism sufficiently addresses the principal objective of ensuring proper plugging and abandonment. The agency should look particularly favorably on mechanisms which make plugging funds available to the operator to comply with his permit or to the agency or a third party in case of the operator's nonperformance.

(1) Surety Bonds

Surety bonds are the most effective of the five financial mechanisms considered here for promoting proper well plugging and abandonment. The availability of funds is guaranteed by the surety company, which assumes responsibility should the operator fail to perform. In contrast to trust funds and escrow accounts, the availability of funds

is not dependent upon establishment and maintenance of an independent account. As long as the surety company remains financially viable, it is legally obligated to assume responsibility according to the terms of the agreement. If performance of compliance activities rather than payment of the face value of the bond is required by the agreement, this mechanism guarantees not only the availability of funds but the completion of proper abandonment procedures as well.

(2) Letters of Credit

Letters of credit provide almost as much assurance for the regulatory agency as surety bonds. If the operator fails to comply with the plugging conditions of his permit, the agency can present documentation to the bank enabling it to draw against the operator's line of credit in order to obtain funds for abandonment. In contrast to surety bonds, a letter of credit always requires the agency to oversee plugging and abandonment.

(3) Trust Funds and Escrow Accounts

Both trust funds and escrow accounts offer an advantage in that they isolate funds specifically intended for abandonment in advance, when the operator's financial interest in the well is greatest. These funds are available for use when his interest in the well is lowest, i.e., when the useful life of the well is exhausted. Assurance of the availability of funds is greatest if the entire cost of abandonment is deposited in the account at the time the well is drilled. Annual deposits ease the operator's financial burden but increase the risk that the account will never be filled, since the well may be abandoned when annual profits fall below the amount of his annual deposits to the account.

Despite their similar approach to isolating funds for compliance, trust funds are superior to escrow accounts in that legal title to the trust fund is assumed by the beneficiary (i.e., the regulatory agency), preventing the operator from revoking the trust. The agreement generally specifies that funds are to be released to the operator only after plugging is complete. If the size of an individual operator's fund is greater than the actual cost of abandonment, holding the funds until after abandonment is complete imposes an additional incentive on the operator to comply. In case of nonperformance, the funds are payable to the agency. Thus, eventual availability and use of the funds is assured. In the meantime, the trustee is obligated to invest the funds in the beneficiary's interest.

In contrast to an individual trust fund, an industry trust fund encourages compliance by reducing the size of assessments in return for a high industry compliance rate, and thus promotes industry policing of individual operators. Should the noncompliance rate exceed its anticipated level, however, sufficient funds may not be available in the industry trust in any given year. For this reason, industry trusts may have selective memberships to avoid subsidizing unreliable operators by their financially sound associates.

Escrow accounts, like trust funds, isolate funds for abandonment in advance, assuring their availability for compliance with technical standards. The operator retains legal title to funds in escrow, however, and may initiate their use for abandonment, subject to verification of performance by the account administrator. The agency therefore is likely to have less control over the contents of an escrow account than a trust fund unless the agency is the escrow administrator.

(4) Financial Statements

Financial means tests, as portrayed via the operator's financial statements, provide the least assurance of proper abandonment afforded by the five mechanisms considered here. While operator financial health serves as an indicator of impending bankruptcy and hence warns of the need to establish a more dependable financial responsibility assurance mechanism, it provides no direct guarantee of performance other than for maintenance of a good relationship with the state agency in order to be able to continue using this low-cost mechanism. No funds are set aside for compliance and no responsible third party stands ready to assume financial responsibility should the operator fail to perform. The agency is likely to bear the technical and financial burden of plugging and abandonment in the event the operator does not fulfill his plugging obligations. Because of the lack of compliance guarantees associated with financial means tests, the agency may want to screen out potentially unreliable operators, and to require operators to establish alternative mechanisms should their financial condition begin to deteriorate.

5. IMPLEMENTATION BURDEN

The agency should take care not to authorize a financial responsibility mechanism that would impose on itself an undue administrative burden, but should also be sensitive to the burden imposed on operators. In some cases, the alternative least burdensome to the agency may be the most burdensome to the operator.

(1) Surety Bonds

The implementation requirements of the five financial responsibility mechanisms considered here vary widely. Surety bonds are considerably easier for the agency to implement than most other financial responsibility alternatives. Most states which have well operations also have surety bond requirements which predate the Federal UIC rules. Since the surety company conducts the requisite financial analysis, issues the bond, and notifies the agency of any change of status, this mechanism imposes no significant demand on the agency's technical or manpower resources.

(2) Letters of Credit

Letters of credit may place a greater but not substantial burden on the regulatory agency's resources. Unlike surety bonds, under which the surety company often carries out the plugging in the case of an operator's noncompliance, letters of credit place responsibility for plugging upon the regulatory agency. The agency, rather than a third party, has the burden of trying to recover costs from the non-performing operator.

(3) Trust Funds

The implementation burden of trust funds depends on the type of trust and its specific terms. The agency will have to monitor deposits to an individual trust or payment of annual assessments to an industry trust to assure that funds are being made available. Although the financial burden to the operator is somewhat greater, the agency may prefer to require a lump-sum deposit since it provides a better guarantee of the availability of funds. With regard to industry trusts, the agency will have to certify compliance rates and determine the appropriate size of assessments as well as monitor their payment by operators.

(4) Escrow Accounts

The use of escrow accounts to demonstrate financial responsibility may prove cumbersome for the agency without offering specific advantages beyond those of a trust fund. In addition to giving less control to the regulatory agency, escrow accounts must be monitored more closely than trust funds. In the event of operator bankruptcy the funds in escrow may be legally subject to creditors' claims, endangering their availability for well plugging and abandonment.

(5) Financial Statements

The use of financial statements to demonstrate financial responsibility poses significant administrative problems for the agency. Assuming that meaningful financial tests could be devised and applied to all operators, the agency may have neither sufficient manpower nor technical expertise to evaluate and periodically monitor operators' financial status. In addition to burdening agency resources, reliance upon faulty financial analysis may defeat the purpose of financial responsibility requirements by certifying financially unqualified operators and exposing the agency to unnecessary risk if the operator fails to perform.

6. OPERATOR COST

While the regulatory agency's principal objective is to promote proper abandonment without draining its resources, it should be sensitive to the operator's costs of compliance. Cost is typically the most important decision criterion the operator applies to the range of available alternatives. Cost considerations include not only the fees (such as premiums or management fees) and opportunity costs of capital but also whether the alternative provides the actual abandonment funds or a post-closure reimbursement.

The cost of a given financial responsibility assurance mechanism varies with the terms of the agreement, the amount of collateral required, and the difference between the rate of interest received on invested collateral and the rate obtainable from alternative investments. Because small, independent operators are unlikely to qualify for the best terms, their costs are likely to be the highest, as is the impact relative to their resources. Nevertheless, while the cost of the mechanism is their main consideration in choosing among alternatives, well operators indicate that the burden of demonstrating financial responsibility is rarely prohibitive. The cost element of the five mechanisms considered here are summarized and compared in the appendix.

(1) Financial Statement

Reliance upon financial means tests, demonstrated via the operators' financial statements, is undeniably the least-cost method of assuring financial responsibility. Because most companies routinely prepare a complete set of financial statements and because no capital is tied up in the process, the incremental cost of submitting financial statements is likely to be negligible.

(2) Letter of Credit

Another fairly low-cost approach is the letter of credit. The operator sets aside no funds to pay for closure, and thus incurs only administrative costs. Operators who are favored customers of the issuing institution are likely to pay an annual management fee of only one quarter of one percent of the value of the letter of credit. However, an indirect cost is that less credit is available for expansion or other investment.

(3) Surety Bond

Bonding is incrementally more expensive than financial statement preparation and letters of credit, but generally less expensive than trust funds or escrow accounts. The total cost of the bond may vary with the terms, collateral required, and coverage of the bond. For operators with multiple operations, the average cost per well is likely to be lower if a blanket bond is obtained. Because many operators are already familiar with the bonding process and are organized to take advantage of bonding, they are often resistant to alternative mechanisms.

Bonding is available to most applicants upon payment of an annual premium of 1.0 to 1.5 percent of the face value of the bond, although small or financially weak operators may be required to post collateral in the form of cash, certificates of deposit, or a bank letter of credit. The surety company retains this collateral until abandonment is completed. If a letter of credit is accepted as collateral, the operator must pay an additional 1.0-1.5 percent to the issuing bank, although this may be heavily discounted for large customers. For other forms of collateral, the operator incurs an opportunity cost equal to the difference between any return on invested collateral and the return he could otherwise obtain by investing it himself.

(4) Trust Fund or Escrow Account

The cost of a trust fund or escrow account is similar to that of a surety bond backed by interest-bearing collateral, assuming that the annual administration fees and return on investment of the funds are similar to that of the surety bond and that the funds are deposited as a lump-sum upon establishment of the account. If the account is accumulated over the life of the well through annual deposits, the operator has greater use of the funds for alternative investment. In that case, the cost would be lower than that of a surety bond with collateral, which generally is posted at the time the bond is secured.

* * * * *

While each of the alternatives discussed above has advantages and disadvantages, surety bonds guaranteeing performance appear to be the most consistent with EPA's objectives of proper well abandonment and minimizing cost to the operator and administrative burden to the regulatory agency. Letters of credit offer low cost to the operator, but potentially greater agency responsibility should the operator fail to perform. Trust funds offer an attractive alternative for operators who cannot obtain a bond even with collateral. Escrow accounts offer similar advantages, but are relatively unattractive to the agency compared to trust funds and serve no additional useful purpose. Submission of financial statements is likely to be the most popular alternative with operators, but does not assure compliance and should be considered only if meaningful financial tests can be devised to guarantee that unreliable operators are excluded.

APPENDIX A

EXHIBIT A-1
Cost Elements of Alternative
Financial Responsibility Assurance Mechanisms

Financial Instrument	Description of Cost Elements	Cost Discounting Equation
Financial Statement	Costs of abandonment incurred by operator when well is abandoned. Total cost equals present value of abandonment costs discounted at operator's real cost of capital. Preparation of statement involves no incremental cost.	$TC = \frac{C}{(1+r)^n}$
Surety Bond (No Collateral) and Letter of Credit	Costs of abandonment incurred by operator when well is abandoned. Total cost equals sum of present values of abandonment costs and annual premium charges, discounted at operator's real cost of capital.	$TC = \frac{C}{(1+r)^n} + SC \left[\frac{(1+r)^n - 1}{r(1+r)^n} \right]$
Surety Bond (100% Collateral)	Costs of abandonment incurred by operator when bond is purchased and held by surety as interest-bearing collateral. Total cost equals present value of abandonment costs at time of abandonment, discounted at real market rate of interest, plus present value of annual bond premium charges, discounted at operator's real cost of capital.	$TC = \frac{C}{(1+i)^n} + SC \left[\frac{(1+r)^n - 1}{r(1+r)^n} \right]$
Trust Fund/ Escrow Account (Lump Sum Initial Deposit)	Costs of abandonment incurred by operator when interest-bearing account is established. Total cost equals present value of abandonment costs at time of abandonment, discounted at real market rate of interest, plus present value of annual account administration fees, discounted at operator's real cost of capital.	$TC = \frac{C}{(1+i)^n} + SC \left[\frac{(1+r)^n - 1}{r(1+r)^n} \right]$

Key:

- r = Operator's real rate of return
- i = Real market interest rate
- n = Number of years until well abandonment
- SC = Annual service charge (in dollars) on bond, escrow account, or trust fund
- C = Cost at time of abandonment
- TC = Present value of costs of abandonment plus financial responsibility demonstration

APPENDIX B

EXHIBIT B-1
Total Cost of Well Abandonment
Using Alternative Financial Responsibility
Assurance Mechanisms (1980 Dollars)*

	One Year Before Abandonment	Five Years Before Abandonment	Ten Years Before Abandonment	Twenty Years Before Abandonment
Financial Statement				
$r^{**} = 5.0\%$ $i^{***} = 2.0\%$	\$9,524	\$7,836	\$4,810	\$3,769
$r = 7.5\%$ $i = 2.0\%$	\$9,302	\$6,139	\$3,380	\$2,354
Surety Bond (No Collateral)				
$r = 5.0\%$ $i = 2.0\%$ $SC^{+} = 1.0-1.5\%$	\$9,619-9,667	\$8,268-8,484	\$6,911-7,297	\$5,015-5,638
$r = 7.5\%$ $i = 2.0\%$ $SC = 1.0-1.5\%$	\$9,395-9,442	\$7,371-7,593	\$5,538-5,882	\$3,373-3,883
Letter of Credit (No Collateral)				
$r = 5.0\%$ $i = 2.0\%$ $SC = .25-1.0\%$	\$9,548-9,619	\$7,945-8,268	\$6,347-6,926	\$4,085-5,015
$r = 7.5\%$ $i = 2.0\%$ $SC = .25-1.0\%$	\$9,369-9,395	\$7,067-7,371	\$5,024-5,538	\$2,609-3,373
Surety Bond (100% Collateral)				
Escrow Account (Initial Lump-sum Deposit)				
Trust Fund (Individual Operator, Initial Lump-sum Deposit)				
$r = 5.0\%$ $i = 2.0\%$ $SC = 1.0-1.5\%$	\$9,899-9,947	\$9,490-9,706	\$8,975-9,361	\$7,975-8,599
$r = 7.5\%$ $i = 2.0\%$ $SC = 1.0-1.5\%$	\$9,897-9,944	\$9,462-9,664	\$8,889-9,233	\$7,749-8,260

* Assumes cost of abandonment equals \$10,000 in 1980 dollars at time of abandonment.

** r = Operator's real rate of return

*** i = Real market interest rate

⁺ SC = Annual service charge on bond, escrow account, or trust fund, as a percentage of total value

APPENDIX C

NET CURRENT ASSETS	The excess of current assets over current liabilities; equivalent to working capital.
NET PROFIT	The income remaining from all sources after deducting all expenses, including corporate taxes and interest on loans, and available for distribution to stockholders or retained as earnings.
NET WORTH	Total assets minus total liabilities and is equivalent to stockholders equity.
OBLIGEE	Individual or firm (the well owner or operator) obligated to perform in compliance with the requirements of a surety bond, escrow, or trust agreement.
OPPORTUNITY COST	The value of the alternative opportunities foregone in order to achieve an objective. The opportunity cost of capital in trust or escrow or posted as collateral is equal to the return that could have been earned from that capital if invested elsewhere.
PERFORMANCE BOND	Surety bond.
PLUGGING BOND	Surety bond written to assure payment for or performance of proper well plugging and abandonment.
RETAINED EARNINGS	The accumulated total profits which have been undistributed by a firm, and included in the net worth or equity section of the balance sheet.
STOCKHOLDER'S EQUITY	The net worth of a firm after all obligations have been paid.
10-K REPORT	Annual report required by the U.S. Securities and Exchange Commission of all publicly traded companies, containing a complete set of financial statements and summary of operations for the past year.

GLOSSARY OF FINANCIAL TERMS

ASSETS	The items owned by a firm, the value of which are shown on its balance sheet at cost or cost less depreciation.
BALANCE SHEET	A statement of a firm's financial condition at a given date, as indicated by the book value of assets and liabilities.
BENEFICIARY	The person or organization (in this case the regulatory agency) designated to receive the funds held in trust or escrow.
BLANKET BOND	A surety bond covering more than one well within a state.
CAPITALIZATION	The total liabilities of a business, including both ownership capital (equity) and borrowed capital.
CASH FLOW	(1) Changes in a firm's cash account over a given period caused by the timing of revenues and expenditures. (2) A measure of corporate worth that includes net income after taxes plus the value of tax allowances for depreciation and depletion.
COLLATERAL	Property pledged by a well operator to secure the interests of a surety company or financial supporter in case of failure of the operator to perform as agreed.
COMMON SIZE MEASURE	Analysis of a firm's financial performance relative to other firms of similar size in the same industry, as indicated by comparing values or trends in values of financial variables or ratios.

CURRENT ASSETS	Cash and other assets that are reasonably expected to be realized in cash or sold or consumed during the normal operating cycle of the business or within one year, whichever is shorter.
CURRENT LIABILITIES	Obligations whose liquidation is reasonably expected to be satisfied by the use of current assets or the creation of other current liabilities, or those expected to be satisfied within the normal operating cycle of the business or within one year, whichever is shorter.
DEBT FINANCING	A firm's generation of capital by borrowing, either from a bank or through the sale of corporate bonds to the public.
DEPRECIATION	An allowance deducted from the cost of a fixed asset to allow for aging, and providing for a tax credit for the loss in value.
EQUITY FINANCING	A firm's generation of capital by sale of ownership through new issues of corporate stock.
INCOME STATEMENT	That portion of a firm's financial statement which indicates profit and loss during a given time period.
LEVERAGE	The proportion of a firm's debts, bonds, and preferred stock relative to the value of its common stock.
LIABILITIES	Any direct financial obligation, including current liabilities and long-term debt.
LIQUIDITY	The ease with which assets may be converted to cash.
LONG-TERM DEBT	That portion of a firm's obligations that are not expected to be paid in less than a year.