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In this article, the author discusses a number of factors which should be considered when valuing oil and mineral interests, with a primary emphasis on estate planning concerns. The article to a large extent focuses on the various techniques utilized in the valuation process, and in so doing, considers a number of key concepts and terms and identifies problems which commonly arise in the valuation of oil and mineral assets.

VALUING OIL AND MINERAL INTERESTS FOR ESTATE PLANNING PURPOSES*

*Lawrence H. Averill, Jr.***

I. INTRODUCTION

The necessity to determine the value of oil and mineral interests arises for all purposes that require valuation determinations.¹ These purposes include valuations for income, gift and estate taxes, real property taxation, eminent domain, lender security, dispute settlement between owners and, of course, sale or transfer.²

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1. Because there are no significant differences between the valuation techniques for oil interests versus those for other mineral interests, the discussion will consider valuation techniques in general and not limit itself to the particular types of interest involved. In addition, the term "mineral interest" will be used hereafter to refer to all types of natural resource interests including oil interests. See Treas. Reg. § 1.611-1(d)(5).
2. Literature on the valuation of mineral interests for estate planning purposes is limited. The following constitutes a bibliography of the most important works:

The emphasis of this article is to discuss the value of such interests from an estate planning standpoint. Because valuation concepts are pervasive, however, the article has relevance for most other valuation purposes as well.³ Gen-

Beyer & Grossman, *Property Tax Valuation Procedures for Mineral Reserves*, 27 OIL & GAS TAX Q. 306 (1979); Broadbent, *Eminent Domain Valuation of Land Containing Minerals*, 6 UTAH L. REV. 345-60 (1959); Engelbrecht, *Valuation of Closely Held Oil and Gas Corporations for Estate and Gift Tax Purposes*, 25 OIL & GAS TAX Q. 273 (1977); Fiske, *The Valuation of Oil and Gas Properties in Estates and Trusts*, 2 ROCKY MTN. MIN. L. INST. 371-86 (1956); Horgan, *Mineral Valuation in Eminent Domain Cases*, 7 HASTINGS L.J. 163-79 (1956); Kaltenbach, *Mineral Deposits*, APPRAISAL J. 617-18 (1970); 10 J. MERTENS, LAW OF FEDERAL INCOME TAXATION §§ 59.80-.91 (J. Doheny ed. 1976); Oberbillig, *Appraisal of Mineral Land*, APPRAISAL J. 518-20 (1964); Oberbillig, *Appraisal of Mineral Property*, ENCYCLOPEDIA OF REAL ESTATE APPRAISING 617-30 (E. Friedman 3d ed. 1978) [hereinafter cited as Oberbillig, *Appraisal of Mineral Property*]; R. Parks, EXAMINATION AND VALUATION OF MINERAL PROPERTY (4th ed. 1957); Parks, *Valuation of Mineral Property*, REAL ESTATE APPRAISER, May-June, 1972, at 37-46; 4 EST. PLAN. & TAX'N COORDINATOR (RIA) ¶¶ 82,188-82,191, 82,616 (May 1980); Tippet & Phipps, *Valuation of Mining Properties*, in 4 AMERICAN LAW OF MINING §§ 26.1-3, at 567-88 (R.M.M.L. F. ed. 1963).

3. Valuation determinations in eminent domain cases have sometimes been more restrictive than valuations for other purposes. Courts in these cases have imposed evidentiary restrictions on certain elements of proof of the future value of the mineral interest using the capitalization of income approach to valuation. For example, the most frequent restriction is to prohibit proof of value by merely multiplying the quantity of the relevant mineral units by the current price for those units. 4 NICHOLS, THE LAW OF EMINENT DOMAIN § 13.22 (J. Sackman rev. 3rd ed. 1978). In addition, the income capitalization techniques are felt to be too speculative and subject to abuse. Outrageously high values might be set by these methods and such a result would be against public policy. Horgan, *supra* note 2, at 177. These restrictions, however, may be more in degree than in kind. The following quote from a leading case reveals both the ambiguity and the flexibility in these rules:

From the foregoing we would summarize the law as follows:

(1) that a landowner in dealing with a parcel of land on which there is a mineral, timber or like substance may not introduce expert testimony by which the expert multiplies the gross material present by the market value per unit thereof and thereby arrives at a figure which purports to be fair market value for the parcel;

(2) that the landowner may not by expert testimony capitalize the present or future value of a business enterprise and thereby arrive at a fair market value; that rental value may, however, be capitalized;

(3) that the landowner is entitled to have an expert or lay witness describe the commodity or substance on the land, the quantity thereof, the going price thereof as *factors* only, upon which the expert may in part base his value as to the *fair market value* of the parcel in question; that a landowner is not entitled to present testimony as to the fair market value of the mineral or timber or other substance apart from the value of the land. . . . In other words, a clear distinction must be drawn between what is presented and considered as a *factor* underlying the expert's opinion as contrasted with opinion as to the fair market value of the substance, timber or mineral itself, apart from the land;

(4) that the landowner must make a showing of some sort of market, poor or good, great or small, for the commodity in question before the quantity and price of the commodity or substance may

eral applicability of the material contained herein notwithstanding, the article is intended more for the estate planner who does not have a vast knowledge of mineral law than for the mineral law practitioner.

The need to value oil and mineral interests for estate planning purposes is growing in importance as more people of wealth acquire such interests. Although the changes made by the Economic Recovery Tax Act of 1981 may reduce the significance of valuation determinations for estate and gift tax purposes for many people, it does not significantly lessen the importance of valuation determination for mineral interests. First, the new gift and estate tax credits and equivalent exemptions⁴ will not sufficiently exempt mineral inter-

be presented to the jury to be used as a factor in the expert's opinion testimony;

(5) that since the inquiry is essentially one as to what would have been the negotiations between the willing buyer and the willing seller, there may be taken into consideration by the expert only those *factors* which would have been reasonably so considered;

(6) that except in cases where the matter is so clear that it becomes a question of law it is generally a question for the jury to determine whether the proposed *factor* underlying in part the opinion of the expert as to the fair market value, is one which would have reasonably been considered by the willing buyer and the willing seller;

(7) that where the commodity in place on the land has a defect, or is deficient in quality, testimony may be introduced showing that the defect or lack of quality may be remedied or cured by scientific or business methods if the willing buyer and willing seller in the market place would have reasonably considered such a *factor*;

(8) that in such instance, unless the matter is so clear that it becomes a question of law, the question is one of fact for the jury to determine whether the commodity could be so remedied or cured and such a factor may only be considered by the jury as supporting the expert's opinion if the commodity could reasonably be corrected or remedied.

The court therefore holds in this case that it will permit testimony as to the proposed cost per ton to remove the sand and the salt from the clay in the deposit in question, subject to the condition that there be introduced evidence of some market value, good or bad, great or small, for the clay so produced and benefited.

As in all cases involving the opinion of the expert as to fair market value, the jury should be instructed that the factors considered by the expert are not in themselves direct evidence of the fair market value of the land condemned, but may be considered by the jury only for the purpose of determining what weight, if any, the jury accords to the testimony of the expert in his ultimate opinion as to the fair market value of the land in question as of the date of taking.

United States v. Land In Dry Bed of Rosamond Lake, 143 F. Supp. 314, 321-22 (S.D. Cal. 1956) (emphasis in original).

The Internal Revenue Service takes a similar position under section 611 of the Internal Revenue Code. See *infra* notes 101-06, and accompanying text.

4. The new phase-in unified gift and estate tax credits or equivalent exemptions are as follows:

ests from taxation because a large number of these mineral interests are often valued at amounts in excess of the exemptions. Second, for exempt gifts and estates, and even now in nonexempt estates, the income tax consequences make valuations extremely important. With reference to the income tax new basis rule⁵ for assets passing through a decedent's estate, valuation determinations for basis purposes are important particularly if sale by the estate or successors is anticipated in the near future.⁶

Date of Gift or Death	Unified Credit	Equivalent Exemption
1982	\$62,800	\$225,000
1983	79,300	277,353
1984	96,300	327,353
1985	121,800	402,353
1986	155,800	500,000
1987 and thereafter	192,800	600,000

See I.R.C. § 2010. Unless inflation or appreciation keeps up with or exceeds these exemption increases, it appears obvious that fewer and fewer people will have federal gift and estate tax problems.

5. I.R.C. § 1014. Property passing through a decedent's estate gets a new basis equal to the property's date of death value or the alternate date value.
6. The Economic Recovery Tax Act of 1981 adds a new section to the Internal Revenue Code that makes it even more important to make accurate valuations of assets for income tax purposes. Applicable to any return filed after December 31, 1981, this new section imposes a special surcharge against the underpayment of income taxes due to a valuation overstatement. I.R.C. § 6659. The surcharges are as follows:

Surcharge Against Tax Underpayment	Percent of Overstatement
10%	150% to 200%
20%	Above 200% to 250%
30%	Above 250%

The appropriate surcharge is applicable only if all of the following conditions are met:

- (1) The stated value exceeds the determined correct value or adjusted basis by 150 percent;
- (2) The overstated value is made on a return filed after December 31, 1981;
- (3) The return is filed by an individual (including a partner of a partnership), a closely held corporation or a personal service corporation;
- (4) The resultant underpayment of the income tax equals \$1,000 or more; and
- (5) The property valued was held by the taxpayer for five years or less.

The Secretary is also given discretion to waive the surcharge in whole or part if the taxpayer, in good faith, had a reasonable basis for the valuation or adjusted basis.

It is important to understand some of the areas of taxation to which the new section applies. For estate planning purposes the section applies to the following determinations of value:

- (1) Adjusted basis of gifted property for capital gain or loss purposes upon sale by the donees;
- (2) Adjusted basis of property passing as part of a decedent's estate for capital gain and loss purposes upon sale by the estate or the distributees;
- (3) The value of stock contributed to an ESOP for deduction purposes by a close corporation;

Because of their legal characterization and physical proximity to real property, mineral interests are valued by use of techniques similar to those used for other forms of real property. As with the valuation of real property in general,⁷ the primary techniques used to value mineral in-

(4) The value of property contributed to charity for charitable deduction purposes on the taxpayer's return.

The stated legislative purpose of the surcharge is to discourage a taxpayer from grossly overstating values in order (1) to obtain valuation compromises that have tended to "split the difference," and (2) to take advantage of the tax interest rate that is below prevailing interest rates. JOINT COMM. ON TAX, GENERAL EXPLANATION OF THE ECONOMIC RECOVERY TAX ACT OF 1981, 97th Cong., 1st Sess. 332 (1981).

Two important limitations on the applications of the surcharge deserve mention. First, it only applies to overstatements of value and not to understatements. Second, and consistent with the first limitation, it does not apply to valuations for gift and estate taxes. Normally when gift and estate taxes are involved, the taxpayer does not want to overvalue an asset.

There are situations, however, in which it could be advantageous to overvalue assets in a decedent's estate. Because the estate tax value and the income tax basis of assets that are part of a decedent's estate are the same, it may be desirable to value estate assets as high as possible, particularly when there is, in effect, little or no estate tax due because of the unified credit or deductions or both. In this situation, the surcharge may be applicable to capital gains taxes when the assets are sold by the estate or successors.

Illustration

Assumptions:

- (1) H, the Decedent, dies in 1987 survived by his wife, W;
- (2) Decedent's only assets at death are:
 - a. \$20,000 cash held in joint account with W;
 - b. \$30,000 life insurance payable to W as beneficiary;
 - c. Residence held in joint tenancy, with right of survivorship;
 - d. Closely held business;
- (3) W, the executor, estimates the value of the residence to equal \$50,000 and the business to equal \$500,000;
- (4) W does not file an estate tax return because the total estate is less than the \$600,000 filing threshold (I.R.C. § 6018);
- (5) W sells business in 1988 for \$500,000 and declares no capital gain;
- (6) W is in the 50% tax bracket;
- (7) I.R.S. audits W's return and determines that the fair market value and basis of the business at the date of decedent's death equals \$250,000.

Calculations:

(1) Overstated Value	\$500,000
(2) Divide (1) by Market Value or Adjusted Basis	÷250,000
(3) Overstated Percentage	2.00 = 200%
(4) Excess Value—Subtract (2) from (1)	250,000
(5) Tax on Excess Value [Capital Gain = Maximum Tax = 20%]	.20
(6) Tax Underpayment	\$50,000
(7) Surcharge Percentage (10% for 200% Overvalue or less)	.10
(8) Surcharge Amount	5,000
(9) Total Tax Due (Without Interest)—Add (6) and (8)	\$ 55,000

7. See 2 AMERICAN LAW OF PROPERTY § 10.3, at 510 (A.J. Casner ed. 1952); Allison & Brown, *Appraisal Theory and Practice in the Computerized Age*, ENCYCLOPEDIA OF REAL ESTATE APPRAISING 9-10 (E. Friedman 3d ed. 1978).

terests are the market approach,⁸ the cost approach,⁹ the income approach¹⁰ and the sales of asset approach.¹¹ The income approach in this area is frequently referred to as the analytical appraisal approach.¹² No matter what it is called, the technique requires the identification of a future income flow and a determination of its present value.¹³

The most common problem in making valuations of these types of assets lies in the determination of the nature and scope of the asset. Each mineral interest must be carefully identified and described.¹⁴ Concomitantly, valuation determinations must be made for each segregatable mineral interest. Each interest is said to be unique and to require individual valuation consideration.¹⁵

A related issue might be labeled the "engineering problem,"¹⁶ which is a reference to the obvious technical intricacies of mineral development. Because the process of valuing mineral interests requires experience with and knowledge of some rather sophisticated technical terms and techniques, use of expert appraisers and specialists is highly recommended and in some cases is essential to accomplish proper valuation determination.¹⁷ Usually appraisers in this

8. See *infra* notes 59-74 and accompanying text.

9. See *infra* notes 75-92 and accompanying text.

10. See *infra* notes 93-95 and accompanying text. Although a relevant evidentiary factor, the book value of the mineral interest is not determinative of value unless substantiated by other evidence of relevant valuation facts. See *infra* note 94.

11. See *infra* notes 96-99 and accompanying text.

12. See Treas. Reg. § 1-611-2(d) (2); Tippet & Phipps, *supra* note 2, § 26.10, at 580; 10 J. MERTENS, *supra* note 2, § 59.91, at 162.

13. See Treas. Reg. § 1-611-2(d) (2); Tippet & Phipps, *supra* note 2, § 26.10, at 580; 10 J. MERTENS, *supra* note 2, § 59.91, at 162.

14. This is a specific requirement for valuations used for income tax purposes. Treas. Reg. §§ 1.611-1(d) (1), 1.611-2(e) (1).

15. Allison & Brown, *supra* note 7, at 620-21.

16. *Id.*

17. Under proper conditions, qualified appraisals may have significant usefulness with respect to their determination of value. The Internal Revenue Service not only obtains and uses these appraisals, it sometimes even requires them. See, e.g., Treas. Reg. § 20.2031-6(b); see also INTERNAL REVENUE SERVICE, ESTATE, GIFT AND GENERATION SKIPPING TAX LAW FOR ATTORNEYS 21-17 (1979) [hereinafter cited as IRS TAX LAW COURSE]; INTERNAL REVENUE SERVICE, APPEALS OFFICER VALUATION TRAINING PROGRAM 16-1 to -7 (1980) [hereinafter cited as IRS. APPEALS OFFICER]. When the expert's opinion has been formed by proper, thorough and comprehensive methods and factors, the testimony of the expert witness may have great weight on the final valuation determination. Loesch & Green Constr. Co. v. Commissioner, 211 F.2d 210 (6th Cir. 1954); see also Opperman Coal Co., 6 B.T.A. 1215 (1927). In addition, appraisals have been of value to the courts in a number of contexts. For example, appraisals may permit the

specialized field have engineering or geological experience or education. The expertise of the appraiser is very important¹⁸ and will weigh heavily if proving value becomes necessary.¹⁹

When an issue arises in regard to the valuation of mineral interests, it is often in conjunction with other valuation issues. For example, the valuation of existing mineral interests may be the most important valuation determination for purposes of valuing the real property in which the mineral interest is located. In such a situation, the valuation

court to weigh the merits of a particular valuation technique or to evaluate the merits of various valuation techniques. *See, e.g.,* Estate of Salsbury, 44 T.C.M. (P-H) ¶ 75,333 (1975). This is particularly true when several appraisals have been introduced and accepted into evidence. Under other proper circumstances, the courts have used appraisals to rebut evidence which might otherwise appear to be conclusive. For example, fair market value of a par value stock might be significantly different than the stated par value. *See* Testard, 6 B.T.A.M. (P-H) ¶ 37,272 (1937).

18. When an expert appraiser testifies in court, the weight to be given to his or her testimony is dependent upon those factors which affect the weight to be given to any other expert witness's testimony. *See* 2 AM. JUR. P.O.F. APPRAISALS 1-6 (1959). "Even between experts, their individual qualifications may be significant in regard to the weight given their opinions Estate of Folks, 51 T.C.M. (P-H) ¶82,043 (1982). Considerations include such things as the appraiser's candor, intelligence, knowledge, and analysis. Among other things, some of the following factors are relevant in evaluating the expertise of an appraiser:

- (1) The length of experience the person has had in appraising;
- (2) The amount and quality of any special study or training in appraising;
- (3) The relationship between the person's experience and training to the particular type and location of property involved; and,
- (4) The extent to which the appraiser is actually performing and committed to the appraising profession. *Id.*

19. The determination of the value of an asset is basically a question of fact. *Tracy v. Commissioner*, 53 F.2d 575 (6th Cir. 1931), *cert. denied*, 287 U.S. 632 (1932). As a question of fact, it must be proved by all of the admissible and competent evidence. 2 AM. JUR. P.O.F. 2d *Valuation of Stock of Closely Held Corporations* 1 (1974).

In tax cases, because the commissioner's determination of value is presumptively valid, the burden of proof or risk of nonpersuasion concerning the value of an asset is on the taxpayer. *Welch v. Helvering*, 290 U.S. 111 (1933). Under a few circumstances, (for example, when the Service's valuation lacks reasonable basis under the facts available, is based on some error of law or where the Service attempts to change its original valuation determination), the courts have held that the burden is on the Internal Revenue Service. *See, e.g., Andrews v. Commissioner*, 135 F.2d 312 (2d Cir. 1943), *cert. denied*, 320 U.S. 748 (1943).

The rules of evidence concerning valuations are the same as the rules of evidence concerning the proof of any other fact. Proof of valuation will quite frequently be concerned with the testimony of an expert witness. *See supra* note 17.

The determination of value by the trier of fact is given substantial weight on appeal. Thus, the decision of the trier of fact should not be overruled provided there is "substantial evidence" to support the decision. *Elmhurst Cemetery Co. v. Commissioner*, 300 U.S. 37 (1937). This substantial evidence rule will prevent a reversal even where the trier of fact has failed to give a detailed analysis of the reasons behind his or her valuation determination.

determination is primarily one of determining the value of real property, and in essence, constitutes merely a specialized valuation effort for the real property.

In addition, when mineral interests constitute a segment of a business interest, the valuations of the mineral interests may be only one step in the process of valuing the business interests as a whole. When a business interest which holds a mineral interest is involved, valuation techniques may or may not segregate the mineral interest depending upon the significance of this mineral interest to the business in general. Most frequently, the mineral interest asset constitutes a significant or predominant part of the business interest and thus requires separate consideration.²⁰

Another special valuation situation deals with the mineral interest that is divided into working and nonworking interests.²¹ The most common example of a nonworking interest is the landowner's royalty interest in the production of the oil and mineral properties. Sometimes valuation determination must attempt to define the value of the royalty interest alone. In turn, this ordinarily requires valuation of the entire property of which the royalty interest is only a part.²²

II. FAIR MARKET VALUE

A. Definition

The most important definition of "value" for estate planning purposes is the meaning given to the term "fair

20. A generally recognized exception is that for gift and estate tax values, corporate stock of a corporation traded in sufficient quantity and for a sufficient length of time on a recognized exchange should be valued at its market price value. See Treas. Reg. §§ 20.2031-2, 25.2512-2. The fact that this corporation owns a mineral interest does not make any difference.

If an asset such as stock is bought and sold (traded) with some reasonable degree of frequency on an established market, the courts have found that the market price for the asset is presumptive evidence of market value subject, of course, to rebuttal. *E.g.*, *Estate of McKitterick*, 42 B.T.A. 130 (1940). When an asset is actively traded, there are several reasons for for using market price as the test of market value. First, the determination of market value for actively traded securities is ordinarily not very difficult. It merely requires one to make a simple mathematical calculation using readily available market price data. Because this is efficient and convenient, from a practical standpoint the use of market price data is justifiable. Second, market price is an objective standard that in most situations is preferable to any attempt to establish an asset's subjective value.

21. See *infra* notes 37-46 and accompanying text.

22. See *Estate of Frankel v. United States*, 512 F.2d 1007 (5th Cir. 1975).

market value." Although its definition varies to some extent among the various authorities that have attempted to define it, "fair market value" has remained fairly constant for estate valuation purposes.²³ The standard and oft quoted Internal Revenue Service definition is as follows: "The fair market value is the price at which the property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of relevant facts."²⁴ This terse yet pregnant statement constitutes the primary test of value for tax and all other estate planning purposes.

One of the most lucid statements attempting to explain this fair market value concept appears in an instruction to the jury made by District Judge Ewing T. Kerr in *Lewis v. United States*.²⁵ In an effort to broaden the applicability of Judge Kerr's instruction, the Author has paraphrased the instruction in the next few paragraphs as follows:

The term "fair market value" means that price, in money or its equivalent, that the property would have brought on or about the valuation date²⁶ considered at its highest and best use when the buyer is not compelled to buy and the seller is

23. See IRS, APPEALS OFFICER, *supra* note 17, at 1-2; Treas. Reg. §§ 20.2031-1(b), 25.2512-1.

24. Treas. Reg. § 20.2031-1(b).

25. 27 A.F.T.R.2d (P-H) ¶ 71-1650 (D. Wyo. 1970).

26. Valuation for most purposes is only relevant with regard to a particular date. The date on which a valuation must be made depends upon the purpose for which the valuation is being made. The following lists the most important valuation dates for estate planning purposes:

Purpose of Valuation

- (1) Sale or exchange of asset
- (2) Gift of asset
- (3) Asset in a decedent's gross estate

Date of Valuation

- Date of gift (I.R.C. § 2512)
(Treas. Reg. § 1.1001-1(a))
Date of gift (I.R.C. § 2512)
(a) Date of death (I.R.C. § 2031)

- or
(b) The earlier of
(i) Date of sale of asset after date of death
or
(ii) Date six months after date of death (I.R.C. § 2032)

- (4) Generation Skipping Transfers (I.R.C. §§ 2611-2614)
- (5) Various income tax transactions

- Date of "taxable termination" (I.R.C. § 2613(b))
Date on which the transaction finalizes.

not compelled to sell. When the expression "highest and best use" of property is used, it means that use that would give the property its highest fair market value as of the valuation date. This may be the actual use of the property on that date, or a use to which it was then adaptable, even though on the date in question the property was not being put to such use.

It must be assumed that the purchaser in such a transaction was desirous of buying the property, but not forced to buy, and that the seller was desirous of selling the property, but not forced to sell. It must also be assumed that both the buyer and the seller were fully informed on that date as to all circumstances and factors favorable with respect to the property; as to all uses to which the property was then being put; as to the highest and best use; and of all other uses for which the property was at that time actually and potentially suitable and adaptable.

In determining fair market value of the asset, it is necessary to consider what amount could have been realized by a reasonably efficient disposal of the asset on the valuation date, or within a reasonable time thereafter.²⁷

Despite all attempts to define and explain fair market value, its determination in specific situations is often speculative. Even the Internal Revenue Service recognizes that when a market price is not available, the determination of

27. Because of the diversity of valuation issues that arise for tax purposes, it is not unusual to discover that the Internal Revenue Service may at different times be taking contradictory positions on a valuation issue. It is helpful, then, to understand what the Service's expected position will be under certain common situations. The following denotes several tax value issues and indicates whether in litigation the Service would usually seek a higher or lower value.

<i>Income Tax Cases</i>	<i>Value Issue</i>	<i>Value Desired</i>
Compensation in kind	Gross Income	Higher
Deduction in kind	Deduction	Lower
Sale of Property	Capital Gain Basis Sale Price	Lower Higher
<i>Estate and Gift Tax Cases</i>		
Gift Value	Gift Tax	Higher
Gross Estate Value	Estate Tax	Higher
Adjusted Gross Estate	Deduction	Lower

fair market value is basically a question of fact subject to sound judgment and common sense.²⁸ Such a nebulous concept is obviously subject to disagreement and has at least the potential of inviting litigation.²⁹

B. Ascertainability of Value

Another issue of fair market value that arises in tax cases and that is relevant to mineral interests is the issue of ascertainability of value. This issue of the "ascertainability" of the value of an asset or interest has two aspects to it.³⁰ The first concerns the asset or interest that is valueless or is deemed to have *no* value. This determination con-

28. IRS, APPEALS OFFICER, *supra* note 17, at 1-2.

29. Because taxpayers of estate and gift taxes frequently complained that the Internal Revenue Service set, without explanation, different values for assets included in tax returns, Congress was moved to provide that under specific circumstances the Service is required to provide a statement setting forth specific information in regard to a value it has determined. I.R.C. § 7517. The stated purpose for this requirement is to provide both parties with full information as to how each arrived at its valuation. H.R. REP. NO. 1380, 94th Cong., 2d Sess. 61, reprinted in 1976 U. S. CODE CONG. & AD. NEWS 3415. Since the taxpayer submitted its valuation data with the return, the requirement that the Service likewise provide valuation data in certain circumstances is intended to somewhat equalize the situation. The hope, of course, is that value differences may be more easily resolved and that litigation will be avoided.

The valuation statement applies to determined or proposed valuations of assets made by the Service with regard to estate, gift and generation skipping taxes. I.R.C. § 7517. It is necessary to provide the statement, however, only when the Service's determination is different from that submitted by the taxpayer. Treas. Reg. § 301.7517-1. An appropriate person may obtain this valuation statement by filing a written request with the district director's office that has audit jurisdiction over the return involved. Treas. Reg. § 301.7517-1. This filing must be made before the expiration of the statutory period for assessment of the tax, and the request must be made by the executor for estate tax valuations, by the donor for gift tax valuations, or by the person required to file the return for generation skipping transfers. When properly requested, the statement by the Service must be furnished to the taxpayer within forty-five days after the date of the request or the date of the Service's determination or proposed determination, whichever is later. I.R.C. § 7517(a). The statement must include the following information:

(1) The Service's basis or method on which the valuation was determined or proposed;

(2) Any computations used in arriving at the asset's value; and

(3) A written copy of any expert appraisal made by or for the Service.
I.R.C. § 7517(b).

Although this valuation statement is intended to encourage valuation settlements, neither the value determination nor the method used in arriving at such a value is binding on the Service. I.R.C. § 7517(c). Presumably, however, the Service will not often change its stated values or methods except to compromise with the taxpayer. The statement should provide the taxpayer with a reasonable basis upon which to decide whether to litigate a valuation disagreement. See also *supra* note 6, for a provision with the similar purpose of controlling the taxpayers' tendencies to litigate.

30. 4 EST. PLAN. & TAX'N COORDINATOR (RIA) ¶¶ 82,075-82,079 (May 1980).

cerns the whole area of valuation determination including the particular valuation technique to be employed and the type of evidence relevant to prove value. In the final analysis, one is essentially faced with a question of fact. In a particular situation, the facts may prove an asset or interest to be valueless.

The second aspect of the situation deals with an asset that has "no ascertainable value." This issue is a mixed question of fact and law. It assumes that an asset or interest has value but that the evidence is inadequate to set a fixed value for the property. This problem has arisen mostly in connection with valuation issues related to income taxation, and more specifically, capital gains and loss determination.

The Internal Revenue Service takes a firm position that "only in rare and extraordinary cases will property be considered to have no fair market value."³¹ Consequently, when a determination of the value of an asset is made for tax purposes, all relevant evidence and factors must be considered. "Approximate valuations" and "a rough estimate" are sufficient to overcome an objection raised due to the "difficulties of evaluation."³² Even where it has been determined that an asset has no ascertainable value as of a particular date, the Service has taken the position that this is only a temporary situation and that the asset must be given a value at the earliest possible date.

Most of the litigation in this area has dealt with income tax cases where the value must be ascertained in order to close a transaction; otherwise, the transaction remains open and the possibility of tax avoidance increases significantly in importance.³³ Commonly, the taxpayer contends the value is greater than the Service's valuation.

In the estate and gift tax area, however, this has not been a serious problem. The value under these taxes must

31. Treas. Reg. § 1.1001-1 (a).

32. Rev. Rul. 58-402, 1958-2 C.B. 15.

33. Webster, *Ascertainable Value*, 19 INST. ON FED. TAX'N 509 (1961); see *Burnet v. Logan*, 233 U.S. 404 (1931); *Commissioner v. Edwards Drilling Co.*, 95 F.2d 719 (5th Cir. 1938).

be determined as of a particular date and the parties are resigned to the task. This does not mean, however, that all assets or interests for estate and gift tax purposes will have a value. If it can be substantiated that an asset has a zero or a negative value, a zero value will be assigned to that asset.³⁴

III. THE COMPOSITION OF A MINERAL INTEREST

The valuation of a mineral interest is typically more complex than valuing the real property in which the mineral interest is located. A brief explanation of the divisibility of a mineral interest should prove helpful to an understanding of this point. It is important to emphasize that the following discussion is significantly generalized in substance and is not a substitute for careful study of those matters when necessary. In addition, hard mineral interests and oil and gas interests are lumped together although they may be severable and distinct under specific circumstances and laws.³⁵ Differences between hard minerals and oil and gas are mentioned only if valuation determinations are affected.³⁶

A. *The Separate Estates*

Generally, the ownership of the surface of real property and the ownership of the mineral interests in that property are severable.³⁷ This means that a landowner can convey, usually by way of a lease, a mineral estate separate and distinct from his or her surface ownership. Both estates are considered real property.³⁸

34. See, e.g., *May v. McGowan*, 194 F.2d 396 (2d Cir. 1952).

35. The *American Law of Property* states: "The law of solid minerals and that of oil and gas developed separately, being based on the problems peculiar to each process, and the legislation affecting one bears no resemblance to that of the other." 2 AMERICAN LAW OF PROPERTY § 10.4, at 510 (A. J. Casner ed. 1952).

36. See *supra* note 1.

37. 1 E. KUNTZ, OIL & GAS § 3.1 (1962); Martz, Carrell & Kirgis, *Conveyancing and Status of Mineral Interests*, in 3 AMERICAN LAW OF MINING § 15.13 (R.M.M.L.F. ed. 1960); Swensen, *Solid Mineral Leases*, in 5 AMERICAN LAW OF MINING § 30.1 (R.M.M.L.F. ed. 1968).

38. Helmick & Tippit, *Royalty Interests and Ore Payments*, in 3 AMERICAN LAW OF MINING § 17.2, at 435-37 (R.M.M.L.F. ed. 1960); 1 E. KUNTZ, *supra* note 37, § 3.1. The relationship between the separate estates has been characterized as adjoining landowners rather than cotenants. 1 E. KUNTZ, *supra* note 37, § 3.2.

The scope and extent of the mineral estate is very broad and basically parallels that of the surface estate. Thus, for example, in regard to mineral estates,³⁹ a deed may:

- (1) establish enjoyment or duration limitations (or both);⁴⁰
- (2) separate different minerals (including oil and gas) from other minerals;
- (3) give separate treatment according to strata or location of the interest; and
- (4) create co-ownership interests.⁴¹

From a valuation standpoint, it may be necessary to value the mineral estate separate from the surface estate.

B. *The Mineral Lease*

The mineral lease is the instrument in which the working interest in the minerals is created.⁴² Typically, the term of the lease is set for a specifically stated period of time called the "primary term."⁴³ During this term, the lease is kept active either by royalty payments or by drilling or other mining activity on the subject land. Provision is made in the lease for termination of the lease if production does not occur within the primary term or if its expressed alternative requirements are not met. After the primary term lapses, the lease usually includes a clause that provides for its continued validity so long as certain events continue. The typical event that is necessary in order to continue the lease is production in paying quantities. So long as the paying quantities are produced, the lease will continue for an unlimited length of time thereafter. A lease of this nature has been construed

39. 1 E. KUNTZ, *supra* note 37, § 3.1, at 77; Martz, Carrell & Kirgis, *supra* note 37, §§ 15.23-31.

40. See H. WILLIAMS & C. MEYERS, OIL AND GAS TERMS 146 (1957) (Mineral interest). "[D]uration [of a mineral interest] is like that of common law estates, namely, in fee simple, in fee simple determinable, for life or for a fixed term of years." *Id.*

41. See 1 E. KUNTZ, *supra* note 37, § 5.1.

42. H. WILLIAMS & C. MEYERS, *supra* note 40, at 134 (Lease); see also Donley, *Coal Leases*, in 3 AMERICAN LAW OF MINING § 16.5, at 255-56 (R.M.M.L.F. ed. 1960).

43. H. WILLIAMS & C. MEYERS, *supra* note 40, at 189 (Primary Term); see also Martz, Carrell & Kirgis, *supra* note 37, § 15.23.

in effect to create a fee simple defeasible in the lessee with the lessor retaining a possibility of reverter.⁴⁴

C. *The Working Interest*

The working interest is the interest held by the person who has the exclusive right to exploit the minerals in or on the land.⁴⁵ It is also called the operating interest.⁴⁶ Economically, it equals the mineral interest minus the royalty interest,⁴⁶ and is burdened with the cost of development and operations of the property. The owner of the working interest may in various ways convey other interests which are derived from this interest, including the transfer of overriding royalty interests.

D. *Payments Resulting from Mineral Production*

Several terms are commonly used with regard to commercial transactions dealing with mineral interests. They include the bonus, the royalty, the overriding royalty and production payments. Basically, they deal with the lease of a mineral interest and the various types of payments made under it.⁴⁷

A bonus is ordinarily a cash payment by the lessee to the lessor landowner in consideration for the execution of a mineral lease.⁴⁸ Sometimes it is not a cash payment and may, in effect, constitute an overriding royalty.⁴⁹

The right to a royalty is an interest retained by the landowner that permits the landowner to share in the return on the production of the mineral interest free of the expenses

44. H. WILLIAMS & C. MEYERS, *supra* note 40, at 134 (Lease).

45. *Id.* at 281 (Working interest). *Id.* at 170 (Operating interest).

46. The landowner's royalty interest usually equals 1/8th or 1/6th; thus the working interest equals 7/8ths or 5/6ths respectively.

47. See 1 E. KUNTZ, *supra* note 37, § 15.1; Helmick & Tippit, *supra* note 38, § 17.31. There are many variations of these transactions applicable to individual situations or particular minerals. The following discusses only the primary and basic types.

48. H. WILLIAMS & C. MEYERS, *supra* note 40, at 19 (Bonus); see also 1 E. KUNTZ, *supra* note 37, § 15.5; Swensen, *supra* note 37, § 30.4.

49. H. WILLIAMS & C. MEYERS, *supra* note 40, at 19. If it does not constitute an overriding royalty, its value is simply the stated amount of the bonus due if it has not yet been paid.

of production.⁴⁸ Ordinarily, a royalty of this nature is set as a fraction, (such as one eighth, one sixth or one fifth) of the return on gross production,⁵¹ or as a fixed sum or a fixed percentage of the "market value" of each ton or other measurement of the mineral removed.⁵² The particular "measuring stick" selected depends on the mineral and the custom and usage of the area of the country involved.

An overriding royalty is similar to a simple royalty described in the preceding paragraph except that the overriding royalty is carved out of the lessee's working interest.⁵³ This overriding royalty may be retained by the lessor, transferred to third persons or retained by the lessee upon assignment of the remaining working interest. Like a simple royalty, it is free of the expenses of production. Use of overriding royalty interests are more prevalent with oil and gas interests than with hard mineral interests.⁵⁴ An overriding royalty may commonly range in fractions of 1/8th or less. It is always limited in duration to the terms of the underlying lease.

50. *Id.* at 213-14 (Royalty); Helmick & Tippet, *supra* note 38, § 17.3; 1 E. KUNTZ, *supra* note 37, § 15.4. A related type of payment is the "minimum royalty." A "minimum royalty" is a payment in the nature of a rent paid by the lessee to the lessor. Helmick & Tippet, *supra* note 38, § 17.4. It must be paid regardless of whether the mineral interest is worked or production of the mineral occurs. Its purposes, of course, are to encourage the lessee to diligently and promptly conduct the relevant mining operations and to guarantee the lessor of a definite minimum of income from the lease. Such payments are common with hard mineral operation leases but are seldom found in oil and gas leases.

Standard minimum royalty provisions contain exception clauses that relieve the lessee from payment due to circumstances beyond the lessee's control such as acts of God, fires, shortages of transportation equipment, strikes, etc.

From a valuation standpoint, minimum royalties should be valued as leases are valued subject to a discount due to the exception clauses. This would equal the present value of the minimum royalties for the length of the lease less an estimated discount for the possibility of reduction due to the circumstances.

51. H. WILLIAMS & C. MEYERS, *supra* note 40, at 213-14. Federal government royalties reserved for mineral leases vary depending on the type of lease and the minerals involved. See 43 C.F.R. §§ 3103.3-4 (Oil and gas, competitive and noncompetitive), 3205.3-5 (Geothermal resources), 3503.3-3 (Hard minerals) (1980).

52. Helmick & Tippet, *supra* note 38, § 17.3, at 451-52. See Annot., 10 A.L.R. 4th 732 for an annotation of cases defining the terms "market value" or "market price" as used in oil and gas leases.

53. H. WILLIAMS & C. MYERS, *supra* note 40, at 173-74 (Overriding royalty); Helmick & Tippet, *supra* note 38, § 17.6, at 477-82.

54. Helmick & Tippet, *supra* note 38, § 17.6, at 578; Swensen, *supra* note 37, § 30.8, at 325.

A production payment similarly includes both a share of the mineral produced from the mineral interest and is free of the expenses of production.⁵⁵ It differs from a royalty in that it terminates upon the payment of an aggregate sum. For example, a production payment may be set to equal one-eighth of production until payments received equal an aggregate value of \$2,000,000. The total sum due may earn interest.⁵⁶ Production payments may be reserved by the lessor or by an assignor of the lease, or they may be carved out by the owner of the royalty or of the working interest.⁵⁷

The normal order of payment for the above transactions would be as follows:

- (1) Bonus;
- (2) Lessor's royalty;
- (3) Overriding royalties;
- (4) Production payments.

This order of payment may affect the risk of nonpayment and thus the value of the particular interest.

E. *The Reserves*

Reserves refer to the estimated quantity of the particular mineral in the mine or well that requires valuation. There are basically three types⁵⁸ of reserves:

- (1) Proven reserves;
- (2) Probable reserves; and
- (3) Prospective reserves.

Proven reserves are those reserves of the mineral that are still in the ground but that have been located and determined to be recoverable. Probable reserves are reserves of the mineral based on estimations from geological information or prior experience. Prospective reserves are reserves of the

55. H. WILLIAMS & C. MEYERS, *supra* note 40, at 164-65 (Oil payment). Production payment arrangements may be used, for example, as a means of providing the lessor with a bonus payable out of production rather than up front, or as a means of financing the cost of production by the owner of the working interest. *Id.*

56. See *Estate of Frankel v. United States*, *supra* note 22.

57. See *supra* note 54.

58. Oberbillig, *Appraisal of Mineral Property*, *supra* note 2, at 619. See also Treas. Reg. § 1.611-2(c) where the determination of a mineral interest's content for income tax purposes is defined.

mineral that are even less certain to exist than probable reserves and thus more speculative. For most valuation purposes only proven reserves are considered.

IV. THE MARKET APPROACH TO MINERAL INTEREST VALUATION

Just as with the valuation of other forms of real property,⁵⁹ determining valuation of mineral interests from sales data⁶⁰ of comparable properties is an important and primary technique.⁶¹ And as is the case with other forms of real property, the most difficult task in this technique is finding sufficiently comparable property for which sales information is available.⁶² With mineral interests the problem is magnified by the lack of homogeneity between different properties

59. The most common (and some believe the most reliable) valuation technique for real property is to estimate value from sales of similar and comparable property. See Rev. Proc. 79-24, 1979-1 C.B. 565. When sales of similar properties are numerous and contemporary with the valuation date, the market approach is very simple in application. It merely requires making minor adjustments to the sales prices of the most parallel properties. See 5 AM. JUR. P.O.F.2d *Market Value of Single-Family Residence—Market Comparison Appraisal* 411 (1975). This approach has been used often by the courts for tax valuation purposes. *E.g.*, *Wolfsen Land & Cattle Co.*, 72 T.C. 1 (1979); *Estate of Murphy*, T.C.M. (P-H) ¶ 81,489 (1981).
60. The first order of business for the market approach is to gather as much information as possible concerning sales of real property contemporary with the date of valuation. There are numerous sources of this information, including, for example:

- (1) Files of appraisers;
- (2) Listings and files of real estate concerns;
- (3) Records of abstract or title insurance companies;
- (4) Files of the tax assessor's office;
- (5) Reporting services of real estate or financial newspapers;
- (6) Other public records.

A. RING, *THE VALUATION OF REAL ESTATE* 115 (2d ed. 1970).

61. There are various factors that are useful in making a market comparison. The ideal situation would include the following:
 - (1) Knowledgeable buyers and sellers who are familiar with the local market;
 - (2) A large number of relevant sales;
 - (3) Sales involve factually comparable properties to the property to be valued;
 - (4) Terms of the sale are similar; and,
 - (5) All sales are contemporary.

Parvin, *Market Approach to Value*, *ENCYCLOPEDIA OF REAL ESTATE APPRAISING*, 23-24 (E. Friedman 3d ed. 1978).

62. Oberbillig, *Appraisal of Mineral Property*, *supra* note 2, at 620-21. Almost every factual issue conceivable is significant when the market approach is used. Comparability not only applies to the physical similarity between the properties but also to all other economic considerations that must be taken into account. In addition, it is particularly important to weigh relevant economic trends in the nation and in the particular community. These trends include such factors as interest rates, construction costs, new starts, operating expenses and, of course, income. Trends may indicate a downturn or an upturn in market values. The appropriate trend, then, should be reflected in the estimated market value.

which contain the same mineral.⁶³ The distinctiveness and uniqueness of each mineral interest is clear. Even within the same field, district or area, significant differences may be present between separate interests. Much of the problem relates to the fact that mineral interests are working properties which have a capacity to earn income which is subject to an almost unlimited range of variables.

A. Using Comparable Sales for Valuation of Mineral Interests

Notwithstanding the difficulties with the identification of sales of comparable properties, this technique is viable and often employed when important valuations of mineral interests are to be made. The task, while difficult, is not impossible. It requires the valuator to make an earnest and comprehensive review of the sales of comparable property. In this analysis it is necessary to identify the most important comparable features and to make adjustments if differences exist between the subject property and the property sold. These adjustments would be made in the same manner as they are made whenever the market approach to valuation is employed.

A nonexclusive list⁶⁴ of the most important comparable factors would include:

- (1) Accessibility;
- (2) Contemporaneousness of sale;
- (3) Estimated life of the interest;
- (4) Labor expenses and considerations;
- (5) Location of the interest;
- (6) Monthly income of the interest;
- (7) Operating costs;
- (8) Quality of the interest;
- (9) Quantity or size of the interest;

63. *Id.* Professional appraisers seem to have a negative attitude toward use of the market approach on the basis of lack of homogeneity between mineral interests. *Id.* On the other hand, the Internal Revenue Service's authorities may indicate a general preference for its use. *See* Treas. Reg. § 1.611-2(d) 2(i); Rev. Proc. 79-24, 1979-1 C.B. 565; IRS TAX LAW COURSE, *supra* note 17, at 21-7.

64. *See* Treas. Reg. § 1.611-2(e).

- (10) Recoverable reserves;
- (11) Terms of leases; and
- (12) Transportation to market expenses.

The most common technique is to attempt to identify the most common denominators. Probably the most frequently used common denominator is the price per appropriate unit of the mineral interest.⁶⁵ This may be particularly useful where the only difference is one of size or quantity. When other differences exist, however, a more refined approach will be necessary.

Another common technique is to break the differences down into particular categories and to attempt to attribute some adjustment factor for each of the differences.⁶⁶ The adjustment factors are usually stated either (1) in the form of a lump sum single monetary adjustment,⁶⁷ or (2) in monetary adjustments related specifically to the different component factors,⁶⁸ or (3) by index or decimal adjustments depending on the particular difference in the factors.⁶⁹

The lump sum adjustment method requires a thorough understanding of the market as well as other comparable

65. See *infra* note 73 and accompanying text.

66. Parvin, *supra* note 61, at 31-34.

67. The following is a simplified illustration of the lump sum single monetary adjustment:

Lump Sum Adjustment			
(A) Comparable Sales	(B) Sales Prices	(H) Adjustment	(J) Adjusted Value of Subject Mineral Interest Property
1	\$730,000	+\$20,000	\$750,000
2	\$700,000	+\$30,000	\$730,000
3	\$770,000	-\$30,000	\$740,000

68. The following is a simplified illustration of the component adjustment:

(A) Comparable Sales	(B) Sales Price	(C) Time	(D) Mineral Interest Quality	(E) Land	(F) Improvements	(G) Term of Sales	(J) Adjusted Value of Mineral Interest Property
1	\$730,000	-\$20,000	+\$20,000	—	+\$20,000	—	\$750,000
2	\$700,000	—	-\$10,000	+\$20,000	+\$10,000	+\$10,000	\$730,000
3	\$770,000	—	-\$20,000	+\$10,000	-\$10,000	-\$10,000	\$740,000

69. The following is a simplified illustration of the index adjustment (see *supra* note 68 for headings):

Index Adjustment							
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(I) Index of Comparability
1	\$730,000	.97	1.03	1.00	1.03	1.00	1.03
2	\$700,000	1.00	.99	1.03	1.01	1.01	1.04
3	\$770,000	1.00	.97	1.01	.99	.99	.96
							(J) (Rounded)
							\$750,000
							\$730,000
							\$740,000

The Index of Comparability (I) is calculated by multiplying the index numbers in columns (C) through (G). The index numbers in columns (C) through (G) roughly compare to the monetary adjustments made in columns (C) through (G) under the Component Monetary Adjustment system.

factors. The index adjustment method is least desirable because it requires an additional calculation that may change results. The component of adjustment method is possibly the most preferred method because it is a compromise between the other two methods. It incorporates a degree of refinement in technique without significantly increasing the complexity of the calculations.

In making adjustments to the above variable facts, considerable assistance can be had by coordinating valuation determinations under the market method with the other techniques employed including the income,⁷⁰ and cost,⁷¹ and sales of asset⁷² techniques. Much of the information gathered and analyzed under these other techniques is useful for the market technique and vice versa.

B. Assimilating the Comparable Data

Once comparable property is identified and appropriate adjustments are made to the sale prices for the comparable sales, it is usually necessary to make a comparison of the prices for the properties involved. Typically, the comparisons are made by identifying a common financial figure that is available for the subject property and for the comparable properties.⁷³

70. See *infra* notes 75-92 and accompanying text.

71. See *infra* notes 93-95 and accompanying text.

72. See *infra* notes 96-99 and accompanying text.

73. The following illustrates this technique:

Assumptions:

Comparable Mineral Interest—

Common Financial Figure

100 (Units)

Adjusted Sales Price

\$500,000

Subject Mineral Interest

Common Financial Figure

150 (Units)

Calculation:

(Comparable Interest)

Common Financial Figure

(Subject Interest)

Common Financial Figure

Adjusted Sales Price

100

VMI (Market Value)

150

500,000

150

VMI

VMI = $\frac{100}{150} \div 500,000$

VMI = .0002

VMI = \$750,000

The estimated market value of subject mineral interest equals \$750,000.

C. *Alternative Calculations*

Similar calculations can be made using any of the other common financial figures or with any other comparable determinable figure known for the comparable sale property and the subject mineral interest. The most commonly used financial figures⁷⁴ include:

- (1) Price per economic unit, ton, barrel, etc.;
- (2) Payout on investment such as on royalties;
- (3) Price per separable mineral interest including well, pit or shaft; and
- (4) Production quantity of the mineral measured on a periodic basis (including day, week or year).

V. THE INCOME METHOD TO MINERAL INTEREST VALUATION

The income method of valuation for mineral interests would appear to be the most frequently used technique by professional appraisers.⁷⁵ When used, the income valuation technique for mineral interests is the same as it is for other real property assets.⁷⁶ First, it requires the determination of future net profit or income derived from the mineral interest. Second, a determination must be made of the proper rate of capitalization or the discount rate for the purpose of attributing a present value to the future net profit or income. Because mineral interests are wasting assets and thus have limited lives, the future net income is projected for only a specific length of time. The future net income is then discounted over the life of the interest.⁷⁷ After the current interest rate for such investments is determined, the value of the business is calculated by using a straight line annuity

74. See Fiske, *supra* note 2, at 377-79.

75. See Oberbillig, *Appraisal of Mineral Property*, *supra* note 2, at 621-22. Some courts have expressed their acceptance of this approach, too. See, e.g., *Royal Mineral Ass'n*, 5 B.T.A. 1126 (1927).

76. See generally Cox, *Income Approach to Value*, *ENCYCLOPEDIA OF REAL ESTATE APPRAISING* 39-61 (E. Friedman 3d ed. 1978).

77. *Id.* When an asset has a wasting aspect to it, the return on the investment should include a return of the original investment as well. *Id.* at 47. This is referred to as recapture of the investment. The techniques for determining recapture are dependent upon the expected economic life of the wasting asset.

table⁷⁸ or sometimes the Hoskold Table.⁷⁹ The former is the preferred approach today.⁸⁰

A. Determining Gross Future Net Income

As with valuing other assets by use of the income approach, it is necessary to make an estimate of the total future net income that the mineral interest will produce during its life expectancy.⁸¹ Because of the nature of the asset, this involves certain specific considerations.⁸² For example, the following matters must be estimated:

(1) The total quantity of the mineral recoverable from the mineral interest measured in appropriate units, (tons, pounds, ounces, barrels, thousands of cubic feet, or other measure), considering proven reserves and giving only slight consideration to probable and prospective reserves;⁸³

(2) The price of the marketable units of the mineral, (either current prices or average prices for the last five years are commonly used. A modern approach would be to attempt to estimate the future prices throughout the life of the mineral interests from market studies);⁸⁴

78. The straight line method merely determines an equal rate per year attributable to recapture and is dependent upon the number of years that the asset will remain productive. Oberbillig, *Appraisal of Mineral Property*, *supra* note 2, at 623-24. In other words, if an asset is expected to be productive for forty years the recapture rate would be 2.5 percent per year.

79. The Hoskold method or sinking fund determines a rate by combining the ordinary rate of return on capital with a safe compound interest rate on an assumed sinking fund that will equal the value of the asset at the time of exhaustion of the asset. A. RING, *supra* note 60, at 273-74. This method assumes that the owner of the asset does not have access to all of the net income. Although this method is no longer used for most capitalization purposes, it is still used in the valuation determination of mineral interests when using the income approach. There are tables available that provide factors to use for calculation purposes. See, e.g., IRS TAX LAW COURSE, *supra* note 17, at 25-21.

80. Oberbillig, *Appraisal of Mineral Property*, *supra* note 2, at 623.

81. *Id.* at 621-22. The determination of the net income flow may be a difficult task. It often requires projecting a hypothetical future income flow based primarily on past experience. And, even past experience may be an inadequate basis for such a determination. For example, past data may not be useful where (1) the property is producing no income but is capable of producing income, (2) the property is producing less income than it should be because of the owner's failure to exact the full limits of the market, or (3) the past income figures available are inaccurate because of accounting discrepancies including, for example, management expenses that are understated or excessive. IRS TAX LAW COURSE, *supra* note 17, at 21-10.

82. See generally Oberbillig, *Appraisal of Mineral Property*, *supra* note 2, at 622-23; Fiske, *supra* note 2, at 382; see also Treas. Reg. § 1.611-2(c).

83. See *supra* note 58 and accompanying text.

84. Oberbillig, *Appraisal of Mineral Property*, *supra* note 2, at 623.

(3) The production costs including royalties, development costs, milling and other necessary refinery costs, overhead costs, marketing costs, exploration, research, development and equipment costs and any other related and relevant costs in the endeavor;

(4) The amount of all federal and state income and property taxes after deductions and depreciation allowances;

(5) The salvage value for equipment and machinery used in the mineral development and production;

(6) The life expectancy of the mineral interest as a producing asset.

B. Income Value Worksheet for Mineral Interest

The income value of the mineral interest, such as a working interest, is determined by use of the above figures. The calculations are as follows:

- | | |
|--|---------|
| (1) Total units of mineral recoverable | _____ |
| (2) Multiply (1) by price per unit | x _____ |
| (3) Result equals gross income per interest | _____ |
| (4) Subtract production costs | _____ |
| (5) Result | _____ |
| (6) Subtract net federal and state, income (after depletion and other allowances) and property taxes | _____ |
| (7) Result | _____ |
| (8) Add salvage value for equipment and machinery | + _____ |
| (9) Gross future net income | |

The gross future net income value must then be given a market value for the whole interest either by capitalization or by present value techniques.

C. The Capitalization Rate

In making the valuation determination under the income method, it is essential to select a current interest or capitalization rate.⁸⁵ Generally, for mineral interests the capitali-

85. *Id.*

zation rate is higher due to the greater degree of risks attributable to such investments. They will run from ten to twenty-five per cent, with most appraisals running closer to the higher percentage.⁸⁶

D. *Annual Future Net Income*

In order to properly determine the present value of annual future net income, it is necessary to determine how the gross future net income will likely be distributed throughout the life of the asset. One method of making this determination is to assume that the income will be paid in equal annual amounts.⁸⁷ This method is the easiest to determine because it merely requires dividing the total amount by the estimated number of years of the life of the asset. It is frequently referred to as the straight line annuity or discount method.⁸⁸

Another possible method is to allocate various and specific sums of the gross future net income among the remaining years of the asset's life.⁸⁹ This requires making an estimate of the interest's productivity and profit for each year. For example, in the life of a mining interest, income usually is low in the early and later years but is high during the middle years. Consequently, it is sometimes appropriate to specifically allocate the gross future net income among the various years according to what is estimated to be the production for each of those years. Such an allocation, of course, is only an estimate.

When this allocation technique is used, it is necessary for purposes of giving the future net income a present value, to determine the present value of the income allocated in each year of the life of the asset. A present value of a future payment table is used rather than the straight line annuity

86. See Fiske, *supra* note 2, at 383, when the author states: "In many cases a reasonable value can be obtained by taking 50 percent of the expected future net income, thus giving a return on the investment of two for one, which is the basis of trading in many actual sales."

87. Oberbillig, *Appraisal of Mineral Property*, *supra* note 2, at 623.

88. See *supra* note 78.

89. Oberbillig, *Appraisal of Mineral Property*, *supra* note 2, at 624.

90. *Id.*

table.⁹⁰ The market value equals the sum of the present value of the income for each of these years.

If the allocation is made on a low/high/low scale, (corresponding to a common income pattern in the mining industry as noted above), the determination of present value using the income allocated each year method is less than by using the straight line annuity method. The same result occurs if the income is low in the early years but increases in the later years. If the higher income is apportioned to the early years, however, and the lower income to the later years, using the income allocated each year method produces a market value higher than the straight line annuity method.

The following illustration shows how the two methods work and compare.⁹²

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91. Although mathematical formulae are available for these calculations, ordinarily it is preferred that one consult readily available valuation tables that have precalculated the appropriate factors or certain calculators that can quickly make the needed calculations. Factors on these tables are calculated with regard to the amount of one dollar. The user, then, need only take the appropriate factor and multiply it by the known amount. It is essential when tables are used that you select the table that concerns the type of calculation desired. Selecting the wrong table guarantees that errors will be made.

It is also essential that you find a table that both employs the desired rate of interest and calculates the factor on the appropriate compounding timetable. Most tables are calculated on the basis of compounding interest annually. If it is desired to assume interest is compounded on a more frequent basis (such as semiannually, quarterly, monthly, daily or continuously) different tables must be utilized or the tables in use must be adjusted. Although the yearly compounding tables can sometimes be altered to apply to more frequent compounding situations, the best course of action is to find a table that properly reflects the interest rates and the proper compounding frequency.

The advent of relatively inexpensive and sophisticated preprogrammed or programmable calculators has revolutionized valuation mathematics. To a great extent these calculators have made the use of tables obsolete. They enable the valuator to make the necessary mathematical calculations quickly and simply, usually merely by entering the appropriate figures. For example, the typical calculator programmed or programmable for financial matters can calculate compound interest, sinking fund arrangements, various annuity factors, various types of depreciations and many other statistical problems. Anyone who plans to deal with valuation matters frequently should consider obtaining such a calculator. The mini computers that are becoming more readily available can also make these calculations with the use of proper programs.

92. These illustrated methods are also applicable to royalties and production payments. See *supra* notes 47-57 and accompanying text. Several courts have held that once the present value of these payments is determined, they must be discounted again in order to take into account the high risk attributable to mineral interests. *Estate of Frankel v. United States*, 512 F.2d 1007 (5th Cir. 1975) (6% discount); *Earl Hightower, T.C.M. (P-H) ¶ 72,252* (1972) (7% discount); *L. Lee Stanton, T.C.M. (P-H) ¶ 67,039* (1967) (40% discount).

Assumptions:

- (1) Total Future Net Income: \$2,000,000
 (2) Life of Asset: 10 years
 (3) Rate of Capitalization: 25%

Calculation:

Straight Line Annuity Method—

- (4) Divide total future net income by life expectancy to get per year figure

$$\frac{2,000,000}{10} = \$200,000$$
- (5) Multiply per year figure by appropriate factor on the straight line annuity table assuming the above life expectancy and rate of capitalization

$$200,000 \times 3.570503 = \$714,100.60$$
- (6) Estimated market value equals \$714,000
 (Rounded)

Income Allocated Each Year Method—

- (7) Allocate income each year for life of asset;
 (8) Determine present value for each year's income;
 (9) Add present value of each year.

Year	Annual Income	Present Value
1	100,000	80,000
2	200,000	128,000
3	200,000	102,400
4	300,000	122,880
5	400,000	131,072
6	400,000	104,858
7	200,000	41,943
8	100,000	16,777
9	50,000	6,711
10	50,000	5,369
Totals	2,000,000	740,010
(10) Estimated market value equals		\$740,000 (Rounded)

Because the earlier years had more income allocated than the later years, the market value under the income allocated each year method is higher than it is under the straight line annuity method.

E. Short Form Technique

A technique commonly used in attempting to estimate the value of mineral interests that do not appear to possess substantial present value is to multiply production payments before depletion by a locally developed multiplier. The primary problem is to estimate the appropriate annual payments. This amount will usually be determined from actual annual production payments for the last five or ten years, if such information is available. These payments are then averaged or a weighted average is determined and adjusted depending on the future prospects for the payments.

This approach is very useful for many royalty and overriding royalty interests. The multiplier used will vary from mineral to mineral and from location to location. For mineral interests in Wyoming, for example, the multiplier has generally been four or five.

The following illustrates:

Assumptions:

1. 1/8th overriding royalty
2. Adjusted production payments equal \$5,000 per annum before depletion
3. Multiplier equals 5.

Calculation:

$$V = \$5,000 \times 5 \times .125$$

$$V = \$25,000 \times .125$$

$$V = \$3,125.$$

For tax purposes, mineral interests with an estimated value of \$50,000 or more will probably require appraisal and thus use of the more complex technique.

VI. THE COST APPROACH TO MINERAL INTEREST VALUATION

Using cost as a valuation for mineral interests poses the same problems as it does in the valuation of other assets.⁹³

93. Tippet & Phipps, *supra* note 2, § 26.6, at 577. Actual cost is an accountancy term commonly mentioned in regard to valuation matters. Typically, it refers to an asset's acquisition or historical cost. T. HORTON, ACCOUNTING: THE LANGUAGE OF BUSINESS 2 (1974). For estate valuation purposes it has limited utility. Its most common use is in conjunction with income taxation in the context of determining the basis of an asset that has been sold or retired from use for the purpose of determining capital gain or loss.

In fact, the problems may actually be exaggerated with mineral interests where the asset has been held for a period of time and during that period has been consumed. The point is that mineral interests are wasting assets and the longer they are producing the less time they have to produce in the future. Consequently, cost analysis, although a factor for valuation, will seldom be determinative. The same can generally be said for book value as well.⁹⁴

There is, however, at least one situation in which costs may be determinative or particularly influential in market valuation: that is, where costs represent the price paid for the asset at a point in time very close to the valuation date.⁹⁵ The next section of this Article discusses the relevance of such transactions.

VII. SALES OF THE ASSET

The price at which an asset has been sold may be very relevant, if not determinative, of market value.⁹⁶ Obviously, there is no better evidence of market value than the value received for the asset in the market place, and this principle is as applicable to mineral interests as it is to other assets. This observation is indicative of the rationale behind using market price data, when available, as market value evidence.⁹⁷

Even when assets are not traded on a recognized market, the sales price received for an asset is, subject to qualifica-

94. Tippet & Phipps, *supra* note 2, § 26.9, at 580. The term "book value" is primarily an accountancy term with several applications. T. HORTON, *supra* note 93, at 4. It refers to an amount entered on the accountant's books that records the cost of an asset or group of assets less reductions such as depreciation and amortization. Reference to the book value of an entire firm or business or corporation denotes the difference between total assets and total liabilities. When book value is recast in a more appropriate form, "adjusted book value," which rejects the mere historical value and accepts the actual market value on the date in question, book value and fair market value may be synonymous. IRS TAX LAW COURSE, *supra* note 17, at 24-7 to -9. In addition, because adjusted book value sometimes equals the lowest value for the asset or firm, adjusted book value is indicative of liquidation value. This would not, however, establish the asset's highest and best use value.

95. See *infra* notes 96-99 and accompanying text.

96. *E.g.*, F.G., Inc. v. Commissioner, 47 F.2d 541 (7th Cir. 1931); see also IRS, APPEALS OFFICER, *supra* note 17, at 6-4 to -8. Even offers to purchase the interest may be significant. A. G. & S. Mining Co., 8 B.T.A. 1260 (1927).

97. See *supra* note 20.

tions, relevant to market value. The qualifications concern four conditions:

- (1) The sales must be made from arm's length dealing;
- (2) The sales must be for a reasonable consideration;
- (3) The sales must not have been forced or made under distress; and
- (4) The dates of the sales must have been at a time in reasonable proximity to the valuation date.

If these requirements are met, then the sales price for the asset is significant in the determination of market value.

The arm's length requirement is designed to prevent market value from being set by parties who do not have a desire to extract the best economic bargain from each other. Obviously, sales between close business associates and family members are most suspect. Nonetheless, such sales can qualify if the basic philosophy of fair market value has been satisfied.⁹⁸

The reasonable consideration and non-forced sale requirements merely carry out the definition of fair market value.⁹⁹

The timing requirement is designed to guarantee that the market price is relevant to the economic considerations at the valuation date. The longer the time between the dates, the greater the chances are that economic conditions have changed. Even when economic changes have occurred, however, sales prices may still be relevant if appropriate economic adjustments can be made. A reasonable period of time may vary depending on the type of interest involved and the volatility of the market for that interest.

When sales are a valid valuation factor, several other factors are relevant in determining the degree of weight to be given to the sales prices. Greater or lesser weight will be given to sales prices depending upon where on the various scales the particular sales transactions fall:

98. IRS, APPEALS OFFICER, *supra* note 17, at 6-6 to -7.

99. See *supra* notes 23-29 and accompanying text.

<i>Greater Weight</i>	<i>Lesser Weight</i>
(1) Large number of sales	Few or sporadic sales
(2) Sales date close in time to valuation date	Sales date distant in time from valuation date
(3) Quantity of sales to be valued similar	Quantity of sales to be valued dissimilar
(4) Sales of same kind or quality of interest as interest to be valued	Sales not of same kind or quality of interest to be valued

It will be very relevant if other valuation techniques arrive at values that are similar to the sales prices received.

VIII. THE QUALIFIED OPINION METHOD TO MINERAL INTEREST VALUATION

Because of the technical and complex nature of valuing mineral interests, the opinions of persons experienced and knowledgeable in the field are frequently sought.¹⁰⁰ Even if such person is not a professional appraiser, if he or she is knowledgeable of actual sales of similar properties, their valuation estimates may be given great weight when other forms of market value evidence and information are unavailable. Such "expert opinions" may also be useful to corroborate market values determined through the other techniques.

IX. FEDERAL INCOME TAX VALUATION DETERMINATIONS FOR MINERAL INTERESTS

The Internal Revenue Service establishes its position on the fair market value determination of mineral interests in its regulations to section 611 which deals with the allowance of a deduction for depletion.¹⁰¹ Basically, the regulation adopts the usual "all relevant data" approach.¹⁰² Emphasis is placed on the fact that value must be determined as of the valuation date and that subsequent events should not change that determination. The techniques mentioned include actual sales, comparable sales, costs, replacement costs and income analysis. The regulation states, however, that analytical ap-

100. Fiske, *supra* note 2, at 383.

101. I.R.C. § 611; Treas. Reg. § 1.611-2(d) (e).

102. Treas. Reg. § 1.611-2(d) (1).

praisal methods of valuation, including present value methods using assumable projected income analyses, are not to be used if the value of the mineral property can be determined by cost, comparative values and replacement value of equipment, or any other method of valuation.¹⁰³

Curiously, and almost in the same breath, the regulation then lists ten essential factors for determining fair market value of a mineral interest under the forbidden analytical appraisal method.¹⁰⁴ This list includes all of the usual type of information necessary to make a valuation using a technique that attempts to determine present value from projected future income. These factors deal with quantity, quality or grade, expenses, life expectancy, profit and rate of capitalization. Despite the expressed limitation on analytical appraisals, the Service has in practice considered such appraisals "for what they are worth" along with other relevant evidence.¹⁰⁵

It is important to note that whereas under estate and gift tax provisions the Internal Revenue Service desires to establish as high a value as possible for assets, under section 611 the reverse is true. It is to the Government's advantage to have a lower market value because market value under this provision sets the basis for the property; consequently, the lower the market value is set, the lower the taxpayer's depletion deduction allowance is and the higher the potential capital gain on resale.¹⁰⁶ This goal of the Service under section 611 may taint the regulations when considering the applicability of the regulations to other tax issues. It is doubtful that the Service would feel restricted by these regulations for gift and estate tax valuation issues although it would apply them to the valuation of charitable gifts for income tax deduction purposes.

X. NONPRODUCING MINERAL INTEREST VALUATION

When mineral interests are not producing, the valuation determinations become more difficult. This is obvious

103. Treas. Reg. § 1.611-2(d)(2). See *Green v. United States*, 460 F.2d 412 (5th Cir. 1972).

104. Treas. Reg. § 1.611-2(e).

105. Fiske, *supra* note 2, at 381-82.

106. See Treas. Reg. § 1.611-1.

because there is less data upon which to compare and to weigh valuation determinations. Most frequently, valuation determinations in such situations refer to leasing arrangements for comparable property and attempt to capitalize the appropriate rentals over the expected term.¹⁰⁷ The same approach to comparable leases is taken as in other valuation areas.¹⁰⁸ Ordinarily, the values of the most comparable leases, which are used for valuation purposes, are computed on a per acre basis.

Another common valuation technique for nonproducing property is to refer to the opinion of those who are experienced in the field.¹⁰⁹ This is particularly true where these persons are in the process of buying and selling such interests and are very knowledgeable of current market conditions and transactions.

XI. CONCLUSION

The effort necessary to make valuations of mineral interests may range from "eyeballing" or "horseback" estimates to elaborate and comprehensive written or printed appraisals. Unfortunately, as with so many issues concerned with valuation, there is no set formula to follow. The answer basically lies in the judgment of the valuator. A few points of reference might be meritorious, however.

(1) You need only satisfy "what the traffic will bear." This means that the purpose behind the valuation may be very important. For example, one should ask if the valuation is merely a general reference point, as it is for some credit purposes, or is it determinative of a particular consequence, as it is in tax situations. General reference point valuations require much less documentation and care than determinative valuation issues do. For the former, actual appraisals are not necessary and the valuation determinations are ordinarily satisfied by use of short form or rule of thumb valuation guides.

107. Fiske, *supra* note 2, at 85-87.

108. See *supra* notes 59-74 and accompanying text.

109. Tippit & Phipps, *supra* note 2, § 20.10, at 287.

(2) Numerous and generally lower value mineral interests can ordinarily be valued in a very casual way. It is common for persons in such situations to select an arbitrary amount that represents the sum total of all of the similar type assets. Unless specifically required by law, detailed appraisals of these assets would generally be counterproductive and too expensive.

(3) Determinative valuations of high valued mineral assets will ordinarily require careful and complete appraisals by persons qualified to make them. Frequently, money and time can be saved by making these appraisals immediately and by not waiting until a valuation disagreement arises. Still some discretion must be employed in these situations. There is no need to pay \$1,500 for an appraisal when a \$200 appraisal would do.

(4) The amount you should spend on an appraisal or appraisals depends upon many things. Certainly, the most important factor relates to the importance of the valuation. A cost-benefit analysis of sorts is necessary. You must decide how much the appraisals will cost versus how much financial benefit will be derived in making the valuation in this manner. For example, the effect of a high or low valuation of an asset for estate and gift tax purposes depends on the rate of the tax applicable: It is never a dollar for dollar trade-off. Consequently, you should be careful that net costs of the appraisal do not exceed the net benefit expected from decreased taxes.

(5) The best advice one can get in this regard is to use reasonable judgment under the circumstances.