

»Accounting
 »Part V – Pre-changeover accounting standards
 »Accounting Standards
 »Specific items [Sections 3000 — 3870]
 »3110 - Asset Retirement Obligations

SPECIFIC ITEMS

SECTION 3110

asset retirement obligations

**Additional
Resources**

**Background
Information and
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PURPOSE AND SCOPE

- .01 This Section establishes standards for the recognition, measurement and disclosure of liabilities for asset retirement obligations and the associated asset retirement costs.

.02 This Section applies to legal obligations associated with the retirement of a tangible long-lived asset that result from its acquisition, construction, development or normal operation. This Section covers the obligations of both lessors and lessees in connection with leased assets, whether imposed by a lease agreement or by a party other than the lessor, except for those obligations of a lessee that meet the definition of either minimum lease payments or contingent rentals in LEASES, Section 3065, and are accounted for in accordance with that Section. This Section also covers obligations arising in connection with leasing and other agreements concerning the rights to explore for or exploit natural resources, to which LEASES, Section 3065, does not apply. This Section does not apply to:

- (a) obligations that arise solely from a plan to sell or otherwise dispose of a long-lived asset subject to DISPOSAL OF LONG-LIVED ASSETS AND DISCONTINUED OPERATIONS, Section 3475; and
- (b) obligations that result from the improper operation of an asset.

DEFINITIONS

.03 The following terms are used in this Section with the meanings specified:

- (a) An **asset retirement obligation** is a legal obligation associated with the retirement of a tangible long-lived asset that an entity is required to settle as a result of an existing or enacted law, statute, ordinance or written or oral contract or by legal construction of a contract under the doctrine of promissory estoppel.
- (b) **Retirement** of a long-lived asset is its other-than-temporary removal from service, including its sale, abandonment, recycling or disposal in some other manner, but not its temporary idling.
- (c) **Fair value** is the amount of the consideration that would be agreed upon in an arm's length transaction between knowledgeable, willing parties who are under no compulsion to act.
- (d) An **asset retirement cost** is the amount that is capitalized and increases the carrying amount of a long-lived asset when a liability for an asset retirement obligation is recognized.
- (e) A **credit-adjusted risk-free rate** is the rate of interest on monetary assets that are essentially free of default risk, adjusted for the effect of an entity's credit standing.
- (f) **Accretion expense** is the increase in the carrying amount of an asset retirement obligation due to the passage of time.

.04 Promissory estoppel is the legal principle that a promise or assurance made without consideration may nonetheless be enforced to prevent injustice when:

- (a) the promise or assurance was intended to affect a contract or other legal relationship between the promisor and the promisee, and to be acted on; and
- (b) the promisee acted on the promise or assurance, or in some way changed its position.

INITIAL RECOGNITION AND MEASUREMENT

.05 ♦ *An entity should recognize the fair value of a liability for an asset retirement obligation in the period in which it is incurred when a reasonable estimate of fair value can be made. If a reasonable estimate of fair value cannot be made in the period the asset retirement obligation is incurred, the liability should be recognized when a reasonable estimate of fair value can be made. [JAN. 2004]*

- .06 FINANCIAL STATEMENT CONCEPTS, Section 1000, defines liabilities as obligations of an entity arising from past transactions or events, the settlement of which may result in the transfer or use of assets, provision of services or other yielding of economic benefits in the future. Liabilities have three essential characteristics:
- (a) they embody a duty or responsibility to others that entails settlement by future transfer or use of assets, provision of services or other yielding of economic benefits, at a specified or determinable date, on occurrence of a specified event, or on demand;
 - (b) the duty or responsibility obligates the entity, leaving it little or no discretion to avoid it; and
 - (c) the transaction or event obligating the entity has already occurred.
- Only a legal obligation associated with the retirement of a tangible long-lived asset, including an obligation created by promissory estoppel, establishes a clear duty or responsibility to another party that justifies recognition of a liability.
- .07 Various accounting standards deal with uncertainty in different ways. CONTINGENCIES, Section 3290, deals with uncertainty about whether a loss has been incurred by setting forth criteria to determine when to recognize a loss contingency. This Section provides a measurement technique to deal with uncertainties about the amount and timing of the future cash flows necessary to settle a liability. This Section requires that all asset retirement obligations within its scope be recognized when a reasonable estimate of fair value can be made.
- .08 The fair value of a liability for an asset retirement obligation can be described as the amount at which that liability could be settled in a current transaction between willing parties, that is, other than in a forced or liquidation transaction. Quoted market prices in active markets are the best evidence of fair value and are used as the basis for measurement, when available. When quoted market prices are not available, the estimate of fair value is based on the best information available in the circumstances, including prices for similar liabilities and the results of present value or other valuation techniques.
- .09 A present value technique is often the best available technique with which to estimate the fair value of a liability. When a present value technique is used to estimate fair value, an entity estimates future cash flows used in that technique on a basis consistent with the objective of measuring fair value. Two common present value techniques are: a traditional approach, in which a single set of estimated cash flows and a single interest rate (a rate commensurate with the risk) are used to estimate fair value; and an expected cash flow approach, in which multiple cash flow scenarios that reflect the range of possible outcomes and a credit-adjusted risk-free rate are used to estimate fair value. Although either present value technique could theoretically be used for a fair value measurement, the expected cash flow approach will usually be the only appropriate technique for an asset retirement obligation. The proper application of a traditional approach entails analysis of at least two liabilities — one that exists in the marketplace and has an observable interest rate, and the liability being measured. The appropriate rate of interest for the cash flows being measured must be inferred from the observable rate of interest of some other liability, and to draw that inference the characteristics of the cash flows must be similar to those of the liability being measured. It would be rare, if ever, that there would be an observable rate of interest for a liability that has cash flows similar to an asset retirement obligation being measured. In addition, an asset retirement

obligation will usually have uncertainties in both timing and amount. In that circumstance, employing a traditional present value technique, in which uncertainty is incorporated into the rate, will be difficult, if not impossible.

- .10 The cash flows used in estimates of fair value incorporate assumptions that marketplace participants would use in their estimates of fair value whenever that information is available without undue cost and effort. Otherwise, an entity uses its own assumptions. Those estimates are based on reasonable and supportable assumptions and consider all available evidence. The weight given to the evidence is commensurate with the extent to which the evidence can be verified objectively. When a range is estimated for the timing or the amount of possible cash flows, the likelihood of possible outcomes is considered. When using the expected cash flow technique, an entity discounts the estimated cash flows using a credit-adjusted risk-free rate. Thus, the effect of the entity's credit standing is reflected in the discount rate rather than in the estimated cash flows.
- .11 A liability for an asset retirement obligation is incurred over more than one reporting period when the events that create the obligation occur over more than one reporting period. Any incremental liability incurred in a subsequent reporting period is considered to be an additional layer of the original liability. Each layer is initially measured at fair value. For example, the liability for decommissioning a nuclear power plant is incurred as contamination occurs. Each period, as contamination increases, a separate layer is measured and recognized.
- .12 When a tangible long-lived asset with an existing asset retirement obligation is acquired, a liability for that obligation is recognized at the asset's acquisition date as if that obligation were incurred on that date.

RECOGNITION AND ALLOCATION OF AN ASSET RETIREMENT COST

- .13 ♦ *Upon initial recognition of a liability for an asset retirement obligation, an entity should recognize an asset retirement cost by increasing the carrying amount of the related long-lived asset by the same amount as the liability. An entity should subsequently allocate that asset retirement cost to expense using a systematic and rational method over its useful life. [JAN. 2004]*
- .14 Application of a systematic and rational allocation method does not preclude an entity from capitalizing an amount of asset retirement cost and allocating an equal amount to expense in the same accounting period. For example, assume an entity acquires a long-lived asset with an estimated life of 10 years. As that asset is operated, the entity incurs additional asset retirement obligations of equal amount each year. Application of a systematic and rational allocation method would not preclude that entity from capitalizing and then expensing the asset retirement costs incurred each year.
- .15 Impairment of asset retirement costs is accounted for in accordance with IMPAIRMENT OF LONG-LIVED ASSETS, Section 3063.

SUBSEQUENT RECOGNITION AND MEASUREMENT

- .16 ♦ *In periods subsequent to initial measurement, an entity should recognize period-to-period changes in the liability for an asset retirement obligation resulting from:*
 - (a) *the passage of time; and*
 - (b) *revisions to either the timing or the amount of the original estimate of undiscounted cash flows.*

An entity should measure and incorporate changes due to the passage of time into the carrying amount of the liability before measuring changes resulting from a revision

to either the timing or the amount of estimated cash flows. [JAN. 2004]

- .17 An entity measures changes in the liability for an asset retirement obligation due to passage of time by applying an interest method of allocation to the amount of the liability at the beginning of the period. The interest rate used to measure that change is the credit-adjusted risk-free rate that existed when the liability, or portion thereof, was initially measured. That amount is recognized as an increase in the carrying amount of the liability and an expense. The expense is classified as an operating item in the income statement, not as interest expense. It is referred to in this Section as "accretion expense", but an entity may use any descriptor as long as it conveys the underlying nature of the expense.
- .18 The subsequent measurement provisions require an entity to identify undiscounted estimated cash flows associated with the initial measurement of a liability. Therefore, an entity that obtains an initial measurement of fair value from a market price or from a technique other than the expected cash flow approach in the Illustrative Examples must determine the undiscounted cash flows and estimated timing of those cash flows that are embodied in that fair value amount for purposes of applying the subsequent measurement provisions. The Illustrative Examples demonstrate the subsequent measurement of a liability that is initially obtained from a market price.
- .19 Changes resulting from revisions to the timing or the amount of the original estimate of undiscounted cash flows are recognized as an increase or a decrease in the carrying amount of the liability for an asset retirement obligation, and the related asset retirement cost capitalized as part of the carrying amount of the related long-lived asset. Upward revisions in the amount of undiscounted estimated cash flows are discounted using the current credit-adjusted risk-free rate. Downward revisions in the amount of undiscounted estimated cash flows are discounted using the credit-adjusted risk-free rate that existed when the original liability was recognized. When an entity cannot identify the prior period to which the downward revision relates, it uses a weighted average credit-adjusted risk-free rate to discount the downward revision to estimated future cash flows. When asset retirement costs change as a result of a revision to estimated cash flows, an entity adjusts the amount of asset retirement cost allocated to expense in the period of change if the change affects that period only, or in the period of change and future periods if the change affects more than one period, as required by ACCOUNTING CHANGES, Section 1506, for a change in estimate.

Effects of funding and assurance provisions

- .20 Providing assurance that an entity will be able to satisfy its asset retirement obligation does not satisfy or extinguish the related liability. Methods of providing assurance include surety bonds, insurance policies, letters of credit, guarantees by other entities, and establishment of trust funds or identification of other assets dedicated to satisfy the asset retirement obligation. Setting assets aside to satisfy an asset retirement obligation does not satisfy the criteria for offsetting the assets and the liability on the balance sheet. The existence of funding and assurance provisions may affect the determination of the credit-adjusted risk-free rate. For a previously recognized asset retirement obligation, changes in funding and assurance provisions have no effect on the initial measurement or accretion of that liability, but may affect the credit-adjusted risk-free rate used to discount upward revisions in undiscounted cash flows for that obligation. Costs associated with complying with funding or assurance provisions are accounted for separately from

the asset retirement obligation.

DISCLOSURES

- .21 ♦ *An entity should disclose the following information about its asset retirement obligations:*
- (a) *a general description of the asset retirement obligations and the associated long-lived assets;*
 - (b) *the fair value of assets that are legally restricted for purposes of settling asset retirement obligations;*
 - (c) *a reconciliation of the beginning and ending aggregate carrying amount of asset retirement obligations showing separately the changes attributable to:*
 - (i) *liabilities incurred in the current period;*
 - (ii) *liabilities settled in the current period;*
 - (iii) *accretion expense; and*
 - (iv) *revisions in estimated cash flows;**whenever one or more of those four components is significant during the reporting period; and*
 - (d) *the key assumptions on which the carrying amount of the asset retirement obligations is based, including:*
 - (i) *the total undiscounted amount of the estimated cash flows required to settle the obligations, or a range of amounts when there is uncertainty as to the amount required;*
 - (ii) *the expected timing of payment of the cash flows required to settle the obligations, or a range when there is uncertainty as to the timing of settlement; and*
 - (iii) *the credit-adjusted risk-free rate or rates at which the estimated cash flows have been discounted.*

When the fair value of an asset retirement obligation cannot be reasonably estimated, that fact and the reasons therefor should be disclosed. [JAN. 2004]

- .22 *Uncertainties affecting the measurement of a liability for asset retirement obligations are disclosed in accordance with MEASUREMENT UNCERTAINTY, Section 1508.*

TRANSITIONAL PROVISIONS

- .23 *This Section applies to fiscal years beginning on or after January 1, 2004. Earlier adoption is encouraged.*
- .24 *As of the beginning of the fiscal year in which an entity first applies this Section, the entity removes from its balance sheet any provision for future removal and site restoration costs or other amount previously recognized as a liability for asset retirement, and recognizes:*
- (a) *a liability for any existing asset retirement obligations, adjusted for accumulated accretion to that date;*
 - (b) *an asset retirement cost capitalized as an increase to the carrying amount of the associated long-lived assets; and*
 - (c) *accumulated depreciation on that capitalized cost.*

Those amounts are measured using information, assumptions and interest rates that are current at the beginning of the fiscal year in which this Section is first applied. The

amount recognized as an asset retirement cost is measured as of the date the asset retirement obligation was incurred. Accumulated accretion and depreciation are measured for the period from the date the liability would have been recognized had the provisions of this Section been in effect to the date as of which this Section is first applied. The Illustrative Examples demonstrate the application of the transitional provisions of this Section.

- .25 An entity may have accounted for its liability for asset retirement obligations and the related asset retirement cost in accordance with the requirements of this Section but based on information, assumptions and interest rates as of a date prior to its initial application of this Section. These circumstances may have arisen, for example, as a result of a business combination. In such circumstances, the entity may use that information, updated as necessary, to determine the amount of the liability, the asset retirement cost and the accumulated depreciation thereon as of the beginning of the fiscal year in which this Section is first applied.
- .26 An entity recognizes the effect of initially applying this Section as a change in accounting policy in accordance with ACCOUNTING CHANGES, Section 1506.
- .27 Lease classification tests performed in accordance with the requirements of LEASES, Section 3065, at, or subsequent to, the date of initial application of this Section incorporate the requirements of this Section to the extent applicable. For example, the recorded cost of an asset leased by a lessor may be affected by the requirements of this Section and would potentially affect the application of the classification criteria in Section 3065. However, leases existing at the date of initial application of this Section are not reclassified to reflect the effects of the requirements of this Section on the lease classification tests previously performed in accordance with the requirements of Section 3065.

APPENDIX

This Appendix is an integral part of this Section.

This Appendix provides additional guidance on the application of certain aspects of the Section. This Appendix discusses generalized situations. The facts and circumstances of each asset retirement obligation need to be considered carefully in applying the Section.

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SCOPE

Legal obligation

- A1 This Section applies to legal obligations associated with the retirement of a tangible long-lived asset. For purposes of this Section, a legal obligation can result from:
- (a) a government action, such as a law, statute or ordinance;
 - (b) an agreement between entities, such as a written or oral contract; or
 - (c) a promise conveyed to a third party that imposes a reasonable expectation of performance upon the promisor under the doctrine of promissory estoppel.

An asset retirement obligation is a requirement to perform certain procedures rather than a promise to pay cash or other financial assets to the party to whom the obligation is owed. Accordingly, an asset retirement obligation is not a financial liability and is not subject to FINANCIAL INSTRUMENTS — RECOGNITION AND MEASUREMENT, Section 3855, FINANCIAL INSTRUMENTS — DISCLOSURE AND PRESENTATION, Section 3861, FINANCIAL INSTRUMENTS — DISCLOSURES, Section 3862, or FINANCIAL INSTRUMENTS — PRESENTATION, Section 3863.

- A2 The Supreme Court of Canada has described promissory estoppel as follows.

The principles of promissory estoppel are well settled. The party relying on the doctrine must establish that the other party has, by words or conduct, made a promise or assurance which was intended to affect their legal relationship and to be acted on. Furthermore, the representee must establish that, in reliance on the representation, he acted on it or in some way changed his position.

[Supreme Court of Canada judgment in Travellers Indemnity Company of Canada v. Maracle (1991) 2 S.C.R. 50, page 57]

The Quebec Civil Code does not recognize the doctrine of promissory estoppel but Quebec courts have developed a similar concept known as "la fin de non-recevoir".

- A3 In most cases involving an asset retirement obligation, the determination of whether a legal obligation exists is unambiguous. However, when no obligation has been assumed previously but an entity makes a promise to a third party about its intention to perform retirement activities, facts and circumstances need to be considered carefully in determining whether that promise has imposed a legal obligation upon the promisor under the doctrine of promissory estoppel. A legal obligation may exist even though no party has taken any formal action. In assessing whether a legal

obligation exists, an entity is not permitted to forecast changes in the law or changes in the interpretation of existing laws and regulations. However, entities must recognize that laws differ from one jurisdiction to another and evolve from time to time within individual jurisdictions. Preparers and their legal advisors are required to evaluate current circumstances to determine whether a legal obligation exists.

A4 The following examples explain circumstances in which the doctrine of promissory estoppel may apply.

- (a) Assume that a company operates a manufacturing facility on land subject to a 99-year lease. The lease requires the company to restore the land but the obligation is enforceable only if the company ceases to operate the facility before the end of the 25th year of the lease. In the 23rd year of the lease, the company's chief executive officer announces publicly that it plans to retire the facility in five years. In that case, under the terms of the lease, the company would not be required to restore the land. If the announcement also states that the company intends nevertheless to demolish the facility and restore the land, and it is reasonable to expect that the lessor would be aware of the announcement, the Canadian courts might conclude that there has been a promissory estoppel. A promissory estoppel may exist even though no one had relied on the announcement to their detriment. The promissory estoppel would prevent the company later from standing on the letter of the lease by which its obligation would have expired at the end of the 25th year of the lease.
- (b) The doctrine of promissory estoppel may apply differently in other legal jurisdictions. For example, assume a company operates a manufacturing facility in the United States and has plans to retire it within five years. Members of the local press have begun to publicize the fact that when the company ceases operations at the plant, it plans to abandon the site without demolishing the building and restoring the underlying land. Due to the significant negative publicity and demands by the public that the company commit to dismantling the plant upon retirement, the company's chief executive officer holds a press conference at city hall to announce that the company will demolish the building and restore the underlying land when the company ceases operations at the plant. Although no law, statute, or ordinance, or written contract exists requiring the company to perform any demolition or restoration activities and there is no pre-existing legal relationship between the company and the public at large, the promise made by the company's chief executive officer may have created a legal obligation under the doctrine of promissory estoppel.

In each of these circumstances, the company's management (and legal counsel, if necessary) would have to evaluate the particular facts and circumstances to determine whether a legal obligation exists.

A5 Contracts between entities may contain an option or a provision that requires one party to the contract to perform retirement activities when an asset is retired. The other party may decide in the future not to exercise the option or to waive the provision to perform retirement activities, or that party may have a history of waiving similar provisions in other contracts. Even when there is an expectation of a waiver or non-enforcement, the contract still imposes a legal obligation. That obligation is included in the scope of this Section. The likelihood of a waiver or non-enforcement will affect the measurement of the liability.

- A6 In some circumstances, an entity may have doubts as to the existence of an asset retirement obligation because of uncertainty as to the meaning or application of a law, regulation or contract. These circumstances do not involve conditional obligations of the type discussed in paragraphs 3110.A19-.A20 and 3110.A27-.A28. They may arise when, for example, an entity is uncertain whether it has assumed an obligation through the operation of the doctrine of promissory estoppel. The existence of any liability in such cases is contingent on a future determination by a court, a regulator or some other competent authority, or a future determination by the entity that it would be held liable. Any such future determination by the entity would be based on future events or new information coming to light that would remove the current uncertainty, such as the receipt of an opinion from legal counsel. In these circumstances, the guidance in CONTINGENCIES, Section 3290, applies in determining whether to recognize an asset retirement obligation.

Issues associated with the retirement of a tangible long-lived asset

- A7 In this Section, the term "retirement" is defined as the other-than-temporary removal of a long-lived asset from service. As used in this Section, that term encompasses sale, abandonment, or disposal in some other manner. However, it does not encompass the temporary idling of a long-lived asset. After an entity retires an asset, that asset is no longer under the control of that entity, no longer in existence, or no longer capable of being used in the manner for which the asset was originally acquired, constructed, or developed. Activities necessary to prepare an asset for an alternative use are not associated with the retirement of the asset and are not within the scope of this Section.
- A8 Typically, settlement of an asset retirement obligation is not required until the associated asset is retired. However, certain circumstances may exist in which partial settlement of an asset retirement obligation is required or performed before the asset is fully retired. The fact that partial settlement of an obligation is required or performed prior to full retirement of an asset does not remove that obligation from the scope of this Section.
- A9 For example, consider an entity that owns and operates a landfill. Regulations require that the entity perform capping, closure and post-closure activities. Capping activities involve covering the land with topsoil and planting vegetation. Closure activities include drainage, engineering and demolition and must be performed prior to commencing the post-closure activities. Post-closure activities, the final retirement activities, include maintaining the landfill once final certification of closure has been received and monitoring the ground and surface water, gas emissions and air quality. Closure and post-closure activities are performed after the entire landfill ceases receiving waste (that is, after the landfill is retired). However, capping activities are performed as sections of the landfill become full and are effectively retired. The fact that some of the capping activities are performed while the landfill continues to accept waste does not remove the obligation to perform those intermediate capping activities from the scope of this Section.
- A10 Obligations associated with maintenance, rather than retirement, of a long-lived asset are excluded from the scope of this Section. The cost of a replacement part that is a component of a long-lived asset is not within the scope of this Section. Any legal obligations that require disposal of the replaced part are within the scope of this Section.

Obligations resulting from the acquisition, construction, development or normal operation of an asset

- A11 Paragraph 3110.02 limits the scope of this Section to those legal obligations that result from the acquisition, construction, development or normal operation of a long-lived asset.
- A12 Whether an obligation results from the acquisition, construction, or development of a long-lived asset is, in most circumstances, clear. For example, if an entity acquires a landfill that is already in operation, an obligation to perform capping, closure and post-closure activities results from the acquisition and assumption of obligations related to past normal operations of the landfill. Additional obligations will likely be incurred as a result of future operations of the landfill.
- A13 Whether an obligation results from the normal operation of a long-lived asset may require judgment. Obligations that result from the normal operation of an asset are predictable and likely to occur. For example, consider a company that owns and operates a nuclear power plant. That company has a legal obligation to perform decontamination activities when the plant ceases operations. Contamination, which gives rise to the obligation, is predictable and likely to occur and is unavoidable as a result of operating the plant. Therefore, the obligation to perform decontamination activities at that plant results from the normal operation of the plant.
- A14 An environmental remediation liability that results from the improper operation of a long-lived asset does not fall within the scope of this Section. Obligations resulting from improper operations do not represent costs that are an integral part of the tangible long-lived asset and therefore are not accounted for as part of the cost basis of the asset. For example, a certain amount of spillage may be inherent in the normal operations of a fuel storage facility, but a catastrophic accident caused by non-compliance with a company's safety procedures is not. The obligation to clean up after the catastrophic accident does not result from the normal operation of the facility and is not within the scope of this Section. An environmental remediation liability that results from the normal operation of a long-lived asset and that is associated with the retirement of that asset is accounted for under the provisions of this Section.

Asset retirement obligations with indeterminate settlement dates

- A15 An asset retirement obligation may result from the acquisition, construction, development or normal operation of a long-lived asset that has an indeterminate useful life and thereby an indeterminate settlement date for the asset retirement obligation. Uncertainty about the timing of settlement of the asset retirement obligation does not remove that obligation from the scope of this Section but will affect the measurement of a liability for that obligation and possibly the timing of recognition of the liability (see paragraph 3110.A18).

Asset retirement obligations related to component parts of larger systems

- A16 An asset retirement obligation may exist for component parts of a larger system. In some circumstances, the retirement of the component parts may be required before the retirement of the larger system to which the component parts belong. For example, consider an aluminum smelter that owns and operates several kilns lined with a special type of brick. The kilns have a long useful life, but the bricks wear out after approximately five years of use and are replaced on a periodic basis to maintain optimal efficiency of the kilns. Because the bricks become contaminated with hazardous chemicals while in the kiln, a law requires that when the bricks are removed, they must be disposed of at a special hazardous waste site. The obligation to dispose of those bricks is within the scope of this Section. The cost of the replacement bricks and their installation are not part of that obligation.

Obligations associated with an unrecognized tangible long-lived asset

- A17 An asset retirement obligation may arise in connection with a tangible long-lived asset that is not recognized on an entity's balance sheet. For example, a lessee that has acquired a plant under an operating lease may, by statute or regulation or by the terms of its contract with the lessor, incur an obligation to dispose of hazardous waste and remediate any environmental damage upon the termination of the lease. That obligation is within the scope of this Section. Accordingly, the obligation and related asset retirement cost are recognized even though the asset itself is not recognized.

LIABILITY RECOGNITION

Asset retirement obligations with indeterminate settlement dates

- A18 Instances may occur in which sufficient information to estimate the fair value of an asset retirement obligation is not available. For example, when an asset has an indeterminate useful life, sufficient information to estimate a range of potential settlement dates for the obligation might not be available. In such cases, the liability is initially recognized in the period in which sufficient information exists to estimate a range of potential settlement dates that is needed to employ a present value technique to estimate fair value.

Conditional obligations

- A19 A conditional obligation to perform a retirement activity is within the scope of this Section. For example, if a government unit retains the right (an option) to decide whether to require a retirement activity, there is some uncertainty about whether that retirement activity will be required or waived. Regardless of the uncertainty attributable to the option, a legal obligation to stand ready to perform a retirement activity still exists, and the governmental unit might require it to be performed. Uncertainty about whether performance will be required does not defer the recognition of a retirement obligation; rather, that uncertainty is factored into the measurement of the fair value of the liability through assignment of probabilities to cash flows. Uncertainty about performance of conditional obligations does not prevent the determination of a reasonable estimate of fair value.
- A20 A past history of non-enforcement of an unambiguous obligation does not defer recognition of a liability, but its measurement is affected by the uncertainty over the requirement to perform retirement activities. Uncertainty about the requirement to perform retirement activities does not prevent the determination of a reasonable estimate of fair value. Guidance on how to estimate a liability in the presence of uncertainty about a requirement to perform retirement activities is provided in the Illustrative Examples.

Obligations created by new statutory or regulatory requirements

- A21 A newly enacted statute or new regulation may impose a new asset retirement obligation on an entity as a result of its past activities. In such circumstances, the liability and related asset retirement cost are recognized when the obligation is first imposed, and the financial statements of prior periods presented for comparative purposes are not restated.

Recoveries of asset retirement costs

- A22 An entity may be entitled to recover asset retirement costs from another party. In such circumstances, the asset retirement obligation is accounted for without regard to the recovery.

INITIAL MEASUREMENT OF A LIABILITY FOR AN ASSET RETIREMENT

OBLIGATION

- A23 The objective of the initial measurement of a liability for an asset retirement obligation is fair value. Quoted market prices are the best representation of fair value. When market prices are not available, the amount of the liability must be estimated using some other measurement technique.
- A24 In estimating the fair value of a liability for an asset retirement obligation using an expected present value technique, an entity begins by estimating cash flows that reflect, to the extent possible, a marketplace assessment of the cost and timing of performing the required retirement activities. The measurement objective is to determine the amount a third party would demand to assume the obligation. In this context, a third party is meant to encompass participants (or hypothetical participants) that provide settlement of asset retirement obligations in a market. Considerations in estimating those cash flows include developing and incorporating explicit assumptions, to the extent possible, about:
- (a) the costs that a third party would incur in performing the tasks necessary to retire the asset;
 - (b) other amounts that a third party would include in determining the price of settlement, including, for example, inflation, overhead, equipment charges, profit margin and advances in technology;
 - (c) the extent to which the amount of a third party's costs or the timing of its costs would vary under different future scenarios and the relative probabilities of those scenarios; and
 - (d) the price that a third party would demand and could expect to receive for bearing the uncertainties and unforeseeable circumstances inherent in the obligation, sometimes referred to as a "market-risk premium".
- Uncertainties about the amount and timing of future cash flows can usually be accommodated by using the expected cash flow technique, and therefore will not prevent the determination of a reasonable estimate of fair value.
- A25 An entity discounts estimates of future cash flows using an interest rate that equates to a risk-free interest rate adjusted for the effect of its credit standing (a credit-adjusted risk-free rate). The risk-free interest rate is the interest rate on monetary assets that are essentially risk free and that have maturity dates that coincide with the expected timing of the estimated cash flows required to satisfy the asset retirement obligation. In Canada, the risk-free rate is the yield rate for Government of Canada instruments. The risk-free interest rate can be adjusted to reflect the credit standing of an entity, but adjustments for default risk can also be reflected in estimated cash flows. In most situations, an entity will know the adjustment required to the risk-free interest rate to reflect its credit standing. Consequently, it would be easier and less complex to reflect that adjustment in the discount rate. In addition, because of the requirements in paragraph 3110.19 relating to upward and downward adjustments in cash flow estimates, it is essential to the operation of this Section that the credit standing of the entity be reflected in the interest rate. For those reasons, the risk-free rate is adjusted for the credit standing of the entity to determine the discount rate. In determining the adjustment for the effect of its credit standing, an entity considers the effects of all terms, collateral and existing guarantees that would affect the amount required to settle the liability.
- A26 When assets with asset retirement obligations are components of a larger group of assets (for example, a number of oil wells that make up an entire oil field operation),

aggregation techniques may be necessary to derive a collective asset retirement obligation. This Section does not preclude the use of estimates and computational shortcuts that are consistent with the fair value measurement objective when computing an aggregate asset retirement obligation for assets that are components of a larger group of assets.

- A27 This Section requires recognition of the fair value of a conditional asset retirement obligation before the event that either requires or waives performance occurs. Uncertainty surrounding conditional performance of the retirement obligation is factored into its measurement by assessing the likelihood that performance will be required. When the conditional aspect has only two outcomes and there is no information about which outcome is more probable, a 50 percent likelihood for each outcome is used until additional information is available. As the time for notification approaches, more information and a better perspective about the ultimate outcome will likely be obtained. Consequently, reassessment of the timing, amount and probabilities associated with the expected cash flows may change the amount of the liability recognized. When, as time progresses, it becomes apparent that retirement activities will not be required, the liability and the remaining unamortized asset retirement cost are reduced to zero.
- A28 In summary, an unambiguous requirement that gives rise to an asset retirement obligation coupled with a low likelihood of required performance still requires recognition of a liability. Uncertainty about the conditional outcome of the obligation is incorporated into the measurement of the fair value of that liability, not the recognition decision.

SUBSEQUENT RECOGNITION AND MEASUREMENT

- A29 In periods subsequent to initial measurement, an entity recognizes the effect of the passage of time on the amount of a liability for an asset retirement obligation. A period-to-period increase in the carrying amount of the liability is recognized as an operating item (accretion expense) in the income statement. An equivalent amount is added to the carrying amount of the liability. To calculate accretion expense, an entity multiplies the beginning of the period liability balance by the credit-adjusted risk-free rate that existed when the liability was initially measured. The liability is adjusted for accretion prior to adjusting for revisions in estimated cash flows.
- A30 Revisions to a previously recognized asset retirement obligation will result from changes in the assumptions used to estimate the cash flows required to settle the obligation, including changes in estimated probabilities, amounts and timing of settlement, as well as changes in the legal requirements of the obligation. Any changes that result in upward revisions to the undiscounted estimated cash flows are treated as a new liability and discounted at the current rate. Any downward revisions to the undiscounted estimated cash flows will result in a reduction of the asset retirement obligation. For downward revisions, the amount of the liability to be removed from the existing accrual is discounted at the rate that was used at the time the obligation to which the downward revision relates was originally recorded, or the historical weighted average rate when the year or years to which the downward revision applies cannot be determined.
- A31 Revisions to the asset retirement obligation result in adjustments of capitalized asset retirement costs and will affect subsequent depreciation of the related asset. Such adjustments are depreciated on a prospective basis.

PRESENTATION OF CASH FLOWS — SETTLEMENT OF A LIABILITY

- A32 Cash payments made to settle an asset retirement obligation are classified in the

statement of cash flows as an operating cash flow.

ILLUSTRATIVE EXAMPLES

This material is illustrative only.

These examples illustrate how the accounting treatment specified in this Section might be applied in particular situations. Matters of principle relating to particular situations should be decided in the context of this Section.

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RECOGNITION AND MEASUREMENT PROVISIONS

- B1 The following four examples illustrate the recognition and measurement provisions of this Section (see paragraphs 3110.09-.10). Example 1 illustrates initial measurement of a liability for an asset retirement obligation using an expected present value technique, subsequent measurement assuming that there are no changes in estimated cash flows, and settlement of the asset retirement obligation liability (ARO liability) at the end of its term. Example 2 is similar to Example 1. However, Example 2 illustrates subsequent measurement of an ARO liability after a change in estimated cash flows. Example 3 highlights the recognition and measurement provisions of this Section for an ARO liability that is incurred over more than one reporting period. Example 4 illustrates accounting for asset retirement obligations that are conditional and that have a low likelihood of enforcement.
- B2 These examples incorporate simplified assumptions to provide guidance in implementing this Section. For instance, Examples 1 and 2 relate to the asset retirement obligation associated with an offshore production platform that also would likely have individual wells and production facilities with separate asset retirement obligations. Those examples also assume straight-line depreciation, even though, in practice, depreciation would likely be applied using a units-of-production method. Other simplifying assumptions are used throughout the examples.
- Example 1 — Basic case**
- B3 Example 1 depicts an entity that completes construction of and places into service an offshore oil platform on January 1, 2X04. The entity is legally required to dismantle and remove the platform at the end of its useful life, which is estimated to be 10 years. Based on the requirements of this Section, on January 1, 2X04, the entity recognizes a liability for an asset retirement obligation and capitalizes an amount for an asset retirement cost. The entity estimates the initial fair value of the liability using an expected present value technique. The significant assumptions used in

that estimate of fair value are as follows.

- (a) Labour costs are based on current marketplace wages required to hire contractors to dismantle and remove offshore oil platforms. The entity assigns probability assessments to a range of cash flow estimates as follows:

<u>Cash flow estimate</u>	<u>Probability assessment</u>	<u>Expected cash flows</u>
\$100,000	25%	\$25,000
125,000	50	62,500
175,000	25	<u>43,750</u>
		\$131,250
		=====

- (b) The entity estimates allocated overhead and equipment charges using the rate it applies to labour costs for transfer pricing (80 percent). The entity has no reason to believe that its overhead rate differs from those used by contractors in the industry.
- (c) A contractor typically adds a markup on labour and allocated internal costs to provide a profit margin on the job. The rate used (20 percent) represents the entity's understanding of the profit that contractors in the industry generally earn to dismantle and remove offshore oil platforms.
- (d) A contractor would typically demand and receive a premium (market risk premium) for bearing the uncertainty and unforeseeable circumstances inherent in "locking in" today's price for a project that will not occur for 10 years. The entity estimates the amount of that premium to be five percent of the estimated inflation-adjusted cash flows.
- (e) The risk-free rate of interest on January 1, 2X04 is five percent. The entity adjusts that rate by 3.5 percent to reflect the effect of its credit standing. Therefore, the credit-adjusted risk-free rate used to compute expected present value is 8.5 percent.
- (f) The entity assumes a rate of inflation of four percent over the 10-year period.
- B4 On December 31, 2X13, the entity settles its asset retirement obligation by using its internal work force at a cost of \$351,000. Assuming no changes during the 10-year period in the cash flows used to estimate the obligation, the entity would recognize a gain of \$89,619 on settlement of the obligation:

Labour	\$195,000
Allocated overhead and equipment charges (80% of labour)	<u>156,000</u>
Total costs incurred	351,000
ARO liability	<u>440,619</u>
Gain on settlement of obligation	\$89,619
	=====

Initial Measurement of the ARO Liability

	<u>Expected cash flows</u>
At January 1, 2X04	
Expected labour costs	\$131,250
Allocated overhead and equipment charges (0.80 x \$131,250)	105,000
Contractor's markup [0.20 x (\$131,250 + \$105,000)]	<u>47,250</u>
Expected cash flows before inflation adjustment	283,500
Inflation factor assuming 4% rate for 10 years	<u>1.4802</u>
Expected cash flows adjusted for inflation	419,637
Market-risk premium (0.05 x \$419,637)	<u>20,982</u>
Expected cash flows adjusted for market risk	\$440,619
	=====
Present value using credit-adjusted risk-free rate of 8.5% for 10 years	\$194,879
	=====

Interest Method of Allocation

<u>Year</u>	<u>Liability balance Jan. 1</u>	<u>Accretion</u>	<u>Liability balance Dec. 31</u>
2X04	\$194,879	\$16,565	\$211,444
2X05	211,444	17,973	229,417
2X06	229,417	19,500	248,917
2X07	248,917	21,158	270,075
2X08	270,075	22,956	293,031
2X09	293,031	24,908	317,939
2X10	317,939	27,025	344,964
2X11	344,964	29,322	374,286
2X12	374,286	31,814	406,100
2X13	406,100	34,519	440,619

Schedule of Expenses

<u>Year end</u>	<u>Accretion expense</u>	<u>Depreciation expense</u>	<u>Total expense</u>
2X04	\$16,565	\$19,488	\$36,053
2X05	17,973	19,488	37,461
2X06	19,500	19,488	38,988

2X07	21,158	19,488	40,646
2X08	22,956	19,488	42,444
2X09	24,908	19,488	44,396
2X10	27,025	19,488	46,513
2X11	29,322	19,488	48,810
2X12	31,814	19,488	51,302
2X13	34,519	19,488	54,007

Journal entries

January 1, 2X04:

Dr. Long-lived asset (asset retirement cost)	194,879	
Cr. ARO liability		194,879
To record the initial fair value of the ARO liability		

December 31, 2X04-2X13:

Dr. Depreciation expense (asset retirement cost)	19,488	
Cr. Accumulated depreciation		19,488
To record straight-line depreciation on the asset retirement cost		

Dr. Accretion expense	Per schedule	
Cr. ARO liability		Per schedule
To record accretion expense on the ARO liability		

December 31, 2X13:

Dr. ARO liability	440,619	
Cr. Wages payable		195,000
Cr. Allocated overhead and equipment charges (0.80 x \$195,000)		156,000
Cr. Gain on settlement of ARO liability		89,619
To record settlement of the ARO liability		

Example 2 — Changes in credit standing and expected future cash flows

- B5 Example 2 is the same as Example 1 with respect to initial measurement of the ARO liability. In this example, the entity's credit standing improves over time, causing the credit-adjusted risk-free rate to decrease by 0.5 per cent to eight percent at December 31, 2X05.
- B6 On December 31, 2X05, the entity revises its estimate of labour costs to reflect an increase of 10 percent in the marketplace. In addition, it revises the probability assessments related to those labour costs. The change in labour costs results in an upward revision to the undiscounted cash flows; consequently, the incremental cash flows are discounted at the current rate of eight percent. All other assumptions

remain unchanged. The revised estimate of expected cash flows for labour costs is as follows:

<u>Cash flow estimate</u>	<u>Probability assessment</u>	<u>Expected cash flows</u>
\$110,000	30%	\$33,000
137,500	45	61,875
192,500	25	<u>48,125</u>
		\$143,000
		=====

B7 On December 31, 2X13, the entity settles its asset retirement obligation by using an outside contractor. It incurs costs of \$463,000, resulting in the recognition of a \$14,091 gain on settlement of the obligation:

ARO liability	\$477,091
Outside contractor	<u>463,000</u>
Gain on settlement of obligation	\$14,091
	=====

Initial Measurement of the ARO Liability

	<u>Expected cash flows</u>
At January 1, 2X04	
Expected labour costs	\$131,250
Allocated overhead and equipment charges (0.80 x \$131,250)	105,000
Contractor's markup [0.20 x (\$131,250 + \$105,000)]	<u>47,250</u>
Expected cash flows before inflation adjustment	283,500
Inflation factor assuming 4% rate for 10 years	<u>1.4802</u>
Expected cash flows adjusted for inflation	419,637
Market-risk premium (0.05 x \$419,637)	<u>20,982</u>
Expected cash flows for market risk	\$440,619
	=====
Present value using credit-adjusted risk-free rate of 8.5% for 10 years	\$194,879
	=====

Subsequent Measurement of the ARO Liability Reflecting a Change in Labour Cost Estimate

	<u>Revised expected cash flows</u>
As of December 31, 2X05	

Incremental expected labour costs (\$143,000 – \$131,250)	\$11,750
Allocated overhead and equipment charges (0.80 x \$11,750)	9,400
Contractor's markup [0.20 x (\$11,750 + \$9,400)]	<u>4,230</u>
Expected cash flows before inflation adjustment	25,380
Inflation factor assuming 4% rate for 8 years	<u>1.3686</u>
Expected cash flows adjusted for inflation	34,735
Market-risk premium (0.05 x \$34,735)	<u>1,737</u>
Expected cash flows adjusted for market risk	\$36,472
	=====
Present value of incremental liability using credit-adjusted risk-free rate of 8% for 8 years	\$19,704
	=====

Interest Method of Allocation

<u>Year</u>	<u>Liability balance Jan. 1</u>	<u>Accretion</u>	<u>Change in cash flow estimate</u>	<u>Liability balance Dec. 31</u>
2X04	\$194,879	\$16,565	—	\$211,444
2X05	211,444	17,973	\$19,704	249,121 *
2X06	249,121	21,078	—	270,199
2X07	270,199	22,862	—	293,061
2X08	293,061	24,796	—	317,857
2X09	317,857	26,894	—	344,751
2X10	344,751	29,170	—	373,921
2X11	373,921	31,638	—	405,559
2X12	405,559	34,315	—	439,874
2X13	439,874	37,217	—	477,091

* The remainder of this table is an aggregation of two layers: the original liability, which is accreted at a rate of 8.5%, and the new incremental liability, which is accreted at a rate of 8.0%.

Schedule of Expenses

<u>Year end</u>	<u>Accretion expense</u>	<u>Depreciation expense</u>	<u>Total expense</u>
2X04	\$16,565	\$19,488	\$36,053
2X05	17,973	19,488	37,461
2X06	21,078	21,951	43,029
2X07	22,862	21,951	44,813
2X08	24,796	21,951	46,747

2X09	26,894	21,951	48,845
2X10	29,170	21,951	51,121
2X11	31,638	21,951	53,589
2X12	34,315	21,951	56,266
2X13	37,217	21,951	59,168

Journal entries

January 1, 2X04:

Dr. Long-lived asset (asset retirement cost)	194,879	
Cr. ARO liability		194,879
To record the initial fair value of the ARO liability		

December 31, 2X04:

Dr. Depreciation expense (asset retirement cost)	19,488	
Cr. Accumulated depreciation		19,488
To record straight-line depreciation on the asset retirement cost		
Dr. Accretion expense	16,565	
Cr. ARO liability		16,565
To record accretion expense on the ARO liability		

December 31, 2X05:

Dr. Depreciation expense (asset retirement cost)	19,488	
Cr. Accumulated depreciation		19,488
To record straight-line depreciation on the asset retirement cost		
Dr. Accretion expense	17,973	
Cr. ARO liability		17,973
To record accretion expense on the ARO liability		
Dr. Long-lived asset (asset retirement cost)	19,704	
Cr. ARO liability		19,704
To record the change in estimated cash flows		

December 31, 2X06-2X13:

Dr. Depreciation expense (asset retirement cost)	21,951	
Cr. Accumulated depreciation		21,951
To record straight-line depreciation on the asset retirement cost adjusted for the change in cash flow estimate		

Dr. Accretion expense	Per schedule	
Cr. ARO liability		Per schedule
To record accretion expense on the ARO liability		
December 31, 2X13:		
Dr. ARO liability	477,091	
Cr. Gain on settlement of ARO liability		14,091
Cr. Accounts payable (outside contractor)		463,000
To record settlement of the ARO liability		

Example 3 — Multiple future cash flows with changes in credit standing and expected cash flows

- B8 Example 3 depicts an entity that places a nuclear utility plant into service on December 31, 2X04. The entity is legally required to decommission the plant at the end of its useful life, which is estimated to be 20 years. Based on the requirements of this Section, the entity recognizes a liability for an asset retirement obligation and capitalizes an amount for an asset retirement cost over the life of the plant as contamination occurs. The following schedule reflects the undiscounted expected cash flows and respective credit-adjusted risk-free rates used to measure each portion of the liability up to December 31, 2X06, at which time the plant is 90 percent contaminated.

<u>Date</u>	Undiscounted expected cash flows adjusted for market risk	Credit-adjusted risk-free rate
Dec. 31, 2X04	\$23,000	9.0%
Dec. 31, 2X05	\$1,150	8.5%
Dec. 31, 2X06	\$1,900	9.2%

- B9 On December 31, 2X06, the entity increases by 10 percent its estimate of undiscounted expected cash flows that were used to measure those portions of the liability recognized on December 31, 2X04 and December 31, 2X05. Because the change results in an upward revision to the undiscounted expected cash flows, the incremental expected cash flow is discounted at the current credit-adjusted risk-free rate of 9.2 percent. As a result, \$2,300 (10 percent of \$23,000) plus \$115 (10 percent of \$1,150) plus \$1,900 (resulting from contamination in 2X06), which totals \$4,315 of incremental undiscounted cash flows, are discounted at the then-current credit-adjusted risk-free rate of 9.2 percent and recorded as a liability on December 31, 2X06.

Initial Measurement of the ARO Liability

	<u>Date incurred</u>		
	<u>Dec. 31, 2X04</u>	<u>Dec. 31, 2X05</u>	<u>Dec. 31, 2X06</u>
Undiscounted expected cash flows adjusted for market risk	\$23,000	\$1,150	\$1,900
Credit-adjusted risk-free rate	9.00%	8.50%	9.20%

Discount period in years	20	19	18
Expected present value	\$4,104	\$244	\$390

Measurement of Revision in Expected Cash Flows Occurring

On December 31, 2X06

Revision in expected cash flows (increase of 10%) [(\$23,000 x 10%) + (\$1,150 x 10%)]	\$2,415
Credit-adjusted risk-free rate at December 31, 2X06	9.20%
Discount period remaining in years	18
Expected present value	\$495

Carrying Amount of Liability Incurred in 2X04

<u>Year</u>	<u>Liability balance Jan. 1</u>	<u>Accretion (9.0%)</u>	<u>New liability</u>	<u>Liability balance Dec. 31</u>
2X04	\$—	\$—	\$4,104	\$4,104
2X05	4,104	369	—	4,473
2X06	4,473	403	—	4,876

Carrying Amount of Liability Incurred in 2X05

<u>Year</u>	<u>Liability balance Jan. 1</u>	<u>Accretion (8.5%)</u>	<u>New liability</u>	<u>Liability balance Dec. 31</u>
2X05	\$—	\$—	\$244	\$244
2X06	244	21	—	265

Carrying Amount of Liability Incurred in 2X06 plus Effect of Change in Estimated Cash Flows

<u>Year</u>	<u>Liability balance Jan. 1</u>	<u>Accretion (9.2%)</u>	<u>Change in cash flow estimate</u>	<u>New liability</u>	<u>Liability balance Dec. 31</u>
2X06	\$—	\$—	\$495	\$390	\$885

Carrying Amount of Total Liability

<u>Year</u>	<u>Liability balance Jan. 1</u>	<u>Accretion</u>	<u>Change in cash flow estimate</u>	<u>New liability</u>	<u>Total carrying amount Dec. 31</u>
-------------	-------------------------------------	------------------	---	--------------------------	--

2X04	\$—	\$—	\$—	\$4,104	\$4,104
2X05	4,104	369	—	244	4,717
2X06	4,717	424	495	390	6,026

Journal entries

December 31, 2X04:

Dr. Long-lived asset (asset retirement cost)	4,104	
Cr. ARO liability		4,104
To record the initial fair value of the ARO liability incurred this period		

December 31, 2X05:

Dr. Depreciation expense ($\$4,104 \div 20$)	205	
Cr. Accumulated depreciation		205
To record straight-line depreciation on the asset retirement cost		
Dr. Accretion expense	369	
Cr. ARO liability		369
To record accretion expense on the ARO liability		
Dr. Long-lived asset (asset retirement cost)	244	
Cr. ARO liability		244
To record the initial fair value of the ARO liability incurred this period		

December 31, 2X06:

Dr. Depreciation expense [$(\$4,104 \div 20) + (\$244 \div 19)$]	218	
Cr. Accumulated depreciation		218
To record straight-line depreciation on the asset retirement cost		
Dr. Accretion expense	424	
Cr. ARO liability		424
To record accretion expense on the ARO liability		
Dr. Long-lived asset (asset retirement cost)	495	
Cr. ARO liability		495
To record the change in liability resulting from a revision in expected cash flow		
Dr. Long-lived asset (asset retirement cost)	390	

To record the initial fair value of the ARO liability incurred this period

Example 4 — Change in probability assessment

- B10 Example 4 illustrates a timber lease wherein the lessor has an option to require the lessee to settle an asset retirement obligation (LEASES, Section 3065, excludes from its scope "leasing agreements pertaining to the rights to explore for or to exploit natural resources"; accordingly, a timber lease is not excluded from the scope of this Section by paragraph 3110.02). Assume an entity enters into a five-year lease agreement that grants it the right to harvest timber on a tract of land and that agreement grants the lessor an option to require that the lessee reforest the underlying land at the end of the lease term. The lessee has an obligation associated with the land, a tangible long-lived asset. Recognition of that obligation does not depend on whether the asset is recognized (see paragraph 3110.A17). Based on past history, the lessee believes that the likelihood that the lessor will exercise that option is low. Rather, at the end of the lease, the lessor will likely accept the land without requiring reforestation. The lessee estimates that there is only a 10 percent probability that the lessor will elect to enforce reforestation.
- B11 At the end of the first year, 20 percent of the timber has been harvested. The lessee estimates that the fair value of performing reforestation activities in four years for the portion of the land that has been harvested will be \$300,000. When estimating the fair value of the ARO liability to be recorded, the lessee incorporates the probability that the restoration provisions will not be enforced:

<u>Cash flow estimate</u>	<u>Probability assessment</u>	<u>Expected cash flows</u>
\$300,000	10%	\$30,000
—	90	—
		<u>\$30,000</u>
		=====
Present value using credit-adjusted risk-free rate of 8.5% for 4 years		\$21,647
		=====

- B12 During the term of the lease, the lessee reassesses the likelihood that the lessor will require reforestation. For example, if the lessee subsequently determines that the likelihood of the lessor electing the reforestation option has increased, that change will result in a change in the estimate of future cash flows and be accounted for as illustrated in Example 2.

TRANSITIONAL PROVISIONS

- B13 The following example illustrates application of the transitional provisions assuming that this Section is adopted on January 1, 2004 (calendar year ends 2002 and 2003 are shown for illustration purposes). Therefore, for measurement purposes, the example uses information and assumptions to derive cash flow estimates related to an asset retirement obligation at January 1, 2004. Additionally, the January 1, 2004 risk-free rate adjusted for the effect of the entity's credit standing is 8.5 percent.
- B14 This example depicts an entity that has been recognizing amounts related to an

asset retirement obligation under the former provisions of PROPERTY, PLANT AND EQUIPMENT, Section 3061, applied retroactively. The entity incurs 90 percent, eight percent and two percent of the asset retirement obligation over the first three years of the life of the asset, respectively.

B15 Significant assumptions in the example are as follows:

- (a) The long-lived asset to which the asset retirement obligation relates was acquired on January 1, 1987, and is estimated to have a useful life of 20 years.
- (b) Upon initial application of this Section, the entity had incurred 100 percent of the asset retirement obligation. However, as discussed in paragraph 3110.B14, that obligation was incurred over the first three years of the life of the asset.
- (c) The entity uses straight-line depreciation.
- (d) At January 1, 2004, undiscounted expected cash flows that will be required to satisfy the ARO liability in 2X07 are \$250 million. Discounting at an 8.5 percent credit-adjusted risk-free rate, the present value of the ARO liability at January 1, 2004, is \$195.726 million.
- (e) The total estimated (undiscounted) retirement obligation under the former provisions of PROPERTY, PLANT AND EQUIPMENT, Section 3061, was \$220 million. As of January 1, 2004, \$186.785 million of that amount had been accrued.

B16 The following table shows by year the undiscounted expected cash flows incurred under the provisions of this Section and the amounts estimated under the former provisions of PROPERTY, PLANT AND EQUIPMENT, Section 3061.

<u>Date</u>	<u>Percentage of total costs incurred</u>	<u>Undiscounted expected cash flows</u>	<u>Estimated retirement costs</u>
(\$ thousands)			
Jan. 1, 1987	90%	\$225,000	\$198,000
Jan. 1, 1988	8	20,000	17,600
Jan. 1, 1989	<u>2</u>	<u>5,000</u>	<u>4,400</u>
	100%	\$250,000	\$220,000
	====	=====	=====

B17 The interest allocation table, amounts measured under the provisions of this Section, amounts recognized and measured under the former provisions of PROPERTY, PLANT AND EQUIPMENT, Section 3061, and journal entries to record the transitional amounts are shown below.

Interest Allocation Table (8.5% Credit-Adjusted Risk-Free Rate)

<u>Year</u>	<u>Liability balance Jan. 1</u>	<u>Accretion</u>	<u>Liability balance Dec. 31</u>
(\$ thousands)			

2001	\$153,236	*	\$13,025	\$166,261
2002	166,261		14,132	180,393
2003	180,393		15,333	195,726
2004	195,726		16,637	212,363
2005	212,363		18,051	230,414
2006	230,414		19,586	250,000

* \$153,236 = present value of \$250,000, 8.5%, 6 years.

Transitional Amounts Required by the Provisions of this Section

	<u>2001</u>	<u>2002</u>	<u>2003</u>
Liability — Jan. 1	\$153,236	\$166,261	\$180,393
Accretion	<u>13,025</u>	<u>14,132</u>	<u>15,333</u>
Liability — Dec. 31	\$166,261	\$180,393	\$195,726
	=====	=====	=====
Asset — Jan. 1:			
Capitalized Jan. 1, 1987 (PV of \$225,000, 8.5%, 20 years)	\$ 44,014	\$ 44,014	\$ 44,014
Capitalized Jan. 1, 1988 (PV of \$20,000, 8.5%, 19 years)	4,245	4,245	4,245
Capitalized Jan. 1, 1989 (PV of \$5,000, 8.5%, 18 years)	<u>1,151</u>	<u>1,151</u>	<u>1,151</u>
Asset — Dec. 31	\$ 49,410	\$ 49,410	\$ 49,410
	=====	=====	=====
Accumulated depreciation — Jan. 1:	\$ —	\$ 36,970	\$ 39,458
Capitalized Jan. 1, 1987 [(\$44,014 ÷ 20) × 14]	30,810	—	—
Capitalized Jan. 1, 1988 [(\$4,245 ÷ 19) × 13]	2,904	—	—
Capitalized Jan. 1, 1989 [(\$1,151 ÷ 18) × 12]	768	—	—
Depreciation expense [((\$44,014 ÷ 20) + (\$4,245 ÷ 19) + (\$1,151 ÷ 18))]	<u>2,488</u>	<u>2,488</u>	<u>2,488</u>
Accumulated depreciation — Dec. 31	\$ 36,970	\$ 39,458	\$ 41,946
	=====	=====	=====

Amounts Recorded Under the Former Provisions of Section 3061

<u>2001</u>	<u>2002</u>	<u>2003</u>
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Provision for future removal and site restoration costs — Jan. 1:	—	\$164,645	\$175,715
Jan. 1, 1987 accrual $[(\$198,000 \div 20) \times 14]$	\$138,600	—	—
Jan. 1, 1988 accrual $[(\$17,600 \div 19) \times 13]$	12,042	—	—
Jan. 1, 1989 accrual $[(\$4,400 \div 18) \times 12]$	2,933	—	—
Accrued expense $[(\$198,000 \div 20) + (\$17,600 \div 19) + (\$4,400 \div 18)]$	<u>11,070</u>	<u>11,070</u>	<u>11,070</u>
Provision for future removal and site restoration costs — Dec. 31	\$164,645	\$175,715	\$186,785
	=====	=====	=====

Journal entry required at transition (January 1, 2004)

Dr. Opening retained earnings	1,477	
Dr. Provision for future removal and site restoration costs (Section 3061)	186,785	
Dr. Long-lived asset (this Section)	49,410	
Cr. Accumulated depreciation (this Section)		41,946
Cr. Liability for an asset retirement obligation (this Section)		195,726

The 2003 year-end balance sheet amounts are adjusted as indicated in the journal entry in providing comparative figures in the 2004 financial statements. Previously reported 2003 income is reduced by \$15,333 of accretion expense and \$2,488 of additional depreciation expense, and increased by the reversal of \$11,070 of provision for future removal and site restoration costs, for a net reduction of \$6,751 in pre-tax income. The opening balance of retained earnings for 2003 is increased by \$5,274. The tax effects of these restatements are not indicated in this example.

SUBSEQUENT MEASUREMENT OF A LIABILITY OBTAINED FROM A MARKET PRICE

- B18 Subsequent to initial measurement, an entity is required to recognize period-to-period changes in an ARO liability resulting from the passage of time (accretion expense) and revisions in cash flow estimates. To apply the subsequent measurement provisions of this Section, an entity must identify undiscounted cash flows related to an ARO liability regardless of how the liability was initially measured. Therefore, if an entity obtains the initial fair value from a market price, it must impute undiscounted cash flows from that price.
- B19 This paragraph provides an example illustrating the subsequent measurement of a liability when the initial liability is based on a market price. The example assumes that the liability is initially recognized at the end of period 0 when the market price is \$300,000 and the entity's credit-adjusted risk-free rate is eight percent. As required

by this Section, revisions in the timing or the amount of estimated cash flows are assumed to occur at the end of the period after accretion on the beginning balance of the liability is calculated. At the end of each period, the following procedure is used to impute cash flows from the end of period market price, compute the change in that price attributable to revisions in estimated cash flows, and calculate accretion expense.

- (a) The market price and the credit-adjusted risk-free interest rate are used to impute the undiscounted cash flows embedded in the market price.
- (b) The undiscounted cash flows from (a) are discounted at the initial credit-adjusted risk-free rate of eight percent to arrive at the ending balance of the ARO liability in accordance with the provisions of this Section.
- (c) The beginning balance of the ARO liability is multiplied by the initial credit-adjusted risk-free rate of eight percent to arrive at the amount of accretion expense in accordance with the provisions of this Section.
- (d) The difference between the undiscounted cash flows at the beginning of the period and the undiscounted cash flows at the end of the period represents the revision in cash flow estimates that occurred during the period. If that change is an upward revision to the undiscounted estimated cash flows, it is discounted at the current credit-adjusted risk-free rate. If that change is a downward revision, it is discounted at the historical weighted average rate because it is not practicable to separately identify the period to which the downward revision relates.

	<u>End of period</u>			
	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>
Market assumptions:				
Market price (includes market risk premium)	\$300,000	\$400,000	\$350,000	\$380,000
Current risk-free rate adjusted for entity's credit standing	8.00%	7.00%	7.50%	7.50%
Time period remaining	3	2	1	—
Imputed undiscounted cash flows (market price discounted at market rate)	\$377,914	\$457,960	\$376,250	\$380,000
Change in undiscounted cash flows	377,914	80,046	(81,710)	3,750
Discount rate:				
Current credit-adjusted risk-free rate (for upward revisions)	8.00%	7.00%		
Historical weighted average credit-adjusted risk-free rate (for downward revisions)			7.83%	

Change in undiscounted cash flows discounted at credit-adjusted risk-free rate (current rate for upward revisions and historical rate for downward revisions)	\$300,000	\$69,916	\$(75,777)	\$3,750
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Measurement of Liability Under Provisions of this Section

<u>Period</u>	<u>Beginning balance</u>	<u>Accretion (8.0%)</u>	<u>Change in cash flows</u>	<u>Ending balance</u>
0	\$ —	\$ —	\$300,000	\$300,000
1	300,000	24,000	—	324,000
2	324,000	25,920	—	349,920
3	349,920	27,994	—	377,914

<u>Period</u>	<u>Beginning balance</u>	<u>Accretion (7.0%)</u>	<u>Change in cash flows</u>	<u>Ending balance</u>
0	\$ —	\$ —	\$ —	\$ —
1	—	—	69,916	69,916
2	69,916	4,894	—	74,810
3	74,810	5,236	—	80,046

<u>Period</u>	<u>Beginning balance</u>	<u>Accretion (7.83%)</u>	<u>Change in cash flows</u>	<u>Ending balance</u>
0	\$ —	\$ —	\$ —	\$ —
1	—	—	—	—
2	—	—	(75,777)	(75,777)
3	(75,777)	(5,933)	—	(81,710)

<u>Period</u>	<u>Beginning balance</u>	<u>Accretion</u>	<u>Change in cash flows</u>	<u>Ending balance</u>
0	—	—	—	—
1	—	—	—	—
2	—	—	—	—
3	—	—	\$3,750	\$3,750

<u>Period</u>	<u>Beginning balance</u>	<u>Total</u>		<u>Ending balance</u>
		<u>Accretion expense</u>	<u>Change in cash flows</u>	
0	\$ —	\$ —	\$300,000	\$300,000
1	300,000	24,000	69,916	393,916
2	393,916	30,814	(75,777)	348,953
3	348,953	27,297	3,750	380,000

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