

# **ACCOUNTING FOR OIL AND GAS ENVIRONMENTAL LIABILITIES IN BANKRUPTCY**

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## **Introduction**

This article explains how the well-informed oil and gas bankruptcy practitioner can exploit common misperceptions about the nature and magnitude of environmental liabilities and avoid being exploited by those same misperceptions. More specifically, this chapter explains how accounting principles and practices applicable to reporting environmental liabilities can result in misperceptions of their fair value, how these misperceptions can lead to misjudgments in oil and gas bankruptcy cases, and how well-informed bankruptcy practitioners can overcome these misperceptions and use them to their advantage.

We explain how financial accounting estimates of environmental liability are produced and why estimates recorded in a debtor's financial statements and schedules may significantly understate the fair value of environmental liabilities. We then explain how bankruptcy practitioners can apply generally accepted accounting principles to produce reliable estimates of fair value.

## **Environmental Liabilities**

This section describes several unique characteristics of oil and gas exploration and production (E&P) environmental liabilities that may bear on their relevancy and valuation in a bankruptcy context.

## **Source of Obligation**

Environmental liabilities are legal obligations arising under laws designed to protect human health and the environment. E&P has historically received favorable treatment under U.S. federal and state environmental remediation laws. Wastes generated during the exploration, development, and production of crude oil, natural gas, and geothermal

energy are exempt from federal hazardous waste regulations under the Resource Conservation and Recovery Act (RCRA). The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) specifically excludes petroleum from its statutory provisions and does not impose liability for releases of petroleum (including crude oil or any fraction thereof) natural gas, natural gas liquids, liquefied natural gas, and certain synthetic gas. Although significant liabilities may stem from sudden and accidental releases such as the Gulf Oil Spill, the lion's share of E&P environmental liabilities are decommissioning, plugging and abandonment obligations incurred in the normal course of operations.<sup>1</sup>

### Materiality

The majority of environmental liabilities in the upstream oil and gas industry are related to decommissioning, plugging and abandonment. In accounting terms, such liabilities are known as asset retirement obligations (AROs). As detailed in the chronology below, coping with the end of life of oil & gas wells was initially limited to "abandonment". Later "plugging" was added as a necessary task primarily to insure the integrity of the reservoirs in the strata. As the demand for energy and the complexity of wells, particularly offshore wells, increased exponentially over time the term "decommissioning" became used to include the myriad list of tasks necessary to return the land or sea to its condition prior to drilling. Plugging and Abandonment (P&A) now constitutes less than 10% of the total cost of many large decommissioning projects.<sup>2</sup>

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<sup>1</sup> See C. Gregory Rogers, *Financial Reporting of Environmental Liabilities and Risks after Sarbanes-Oxley* (Wiley, 2005) (hereinafter "Rogers").

<sup>2</sup> Bureau of Safety and Environmental Enforcement Pacific OCS Region Presentation of the 2015 Decommissioning Cost Estimates for POCSR Platforms (February 3, 2015) at p 15. [https://www.icloud.com/attachment/?u=https%3A%2F%2Fcvws.icloud-content.com%2F%2FAfh3BQnwSIkPCBQQcxItp0XHnPvPAeV80xdkcDWLMAMwndRmrhbMgB3y%2F%24%7Bf%7D%3Fo%3DAn5eOfz1vb5\\_Ida3wn0innGiA2-7dy6gBEG6hWZPQE2E%26v%3D1%26x%3D3%26a%3DBWNsmVf2WpB5AwItLQEA\\_wHIAP9tvdsX%26e%3D1439942498%26k%3D%24%7Buk%7D%26f%3D%26r%3D42EE53F8-0673-4B66-9486-65F4364487C8-1%26ckc%3Dcom.apple.largeattachment%26ckz%3D1FD2C7A4-5D9F-4D27-BAD6-89D908EF9E80%26z%3Dhttps%253A%252F%252Fp01-content.icloud.com%253A443%26s%3DNRQVKyTDCqGFAHYb4pmSFpk22qw&uk=KX12E7nx3qb5o6i3JKj7Jg&f=2015%20Pacific%20Decom.Cost.Estimates.pdf&sz=90200847](https://www.icloud.com/attachment/?u=https%3A%2F%2Fcvws.icloud-content.com%2F%2FAfh3BQnwSIkPCBQQcxItp0XHnPvPAeV80xdkcDWLMAMwndRmrhbMgB3y%2F%24%7Bf%7D%3Fo%3DAn5eOfz1vb5_Ida3wn0innGiA2-7dy6gBEG6hWZPQE2E%26v%3D1%26x%3D3%26a%3DBWNsmVf2WpB5AwItLQEA_wHIAP9tvdsX%26e%3D1439942498%26k%3D%24%7Buk%7D%26f%3D%26r%3D42EE53F8-0673-4B66-9486-65F4364487C8-1%26ckc%3Dcom.apple.largeattachment%26ckz%3D1FD2C7A4-5D9F-4D27-BAD6-89D908EF9E80%26z%3Dhttps%253A%252F%252Fp01-content.icloud.com%253A443%26s%3DNRQVKyTDCqGFAHYb4pmSFpk22qw&uk=KX12E7nx3qb5o6i3JKj7Jg&f=2015%20Pacific%20Decom.Cost.Estimates.pdf&sz=90200847).

Downstream oil and gas operations tend to have mainly environmental remediation liabilities (ERLs). In 2006, Standard & Poor's (S&P) found that reported AROs and ERLs combined averaged approximately 50% of reported financial debt in the oil and gas industry.<sup>3</sup>

Credit rating agencies such as S&P treat provisions for AROs as additions to debt. AROs represent a significant part of the financial risk of E&P companies because the majority of cash outflows occur at the end of the life of a producing property.<sup>4</sup>

### **Obligating Events**

An obligating event is an event that results in the existence of liability or increased liability and leaves the obligor little or no discretion to avoid the future transfer or use of assets to settle the obligation.<sup>5</sup> An obligating event giving rise to environmental liability results from a combination of facts and law. For example, an obligating event for an ARO requires certain facts—e.g., the drilling of a new oil and gas well—and certain legal conditions—an existing or enacted law, statute, ordinance, or contract.<sup>6</sup>

Unlike amending a contract between two parties where both parties must consent to the change, governments can unilaterally change environmental laws and thereby create or modify a regulated entity's liability retroactively.<sup>7</sup> Enactment of a new law or a change in the interpretation of existing laws can give rise to new environmental liabilities or change the expected cash outflows required to settle existing environmental liabilities.<sup>8</sup>

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<sup>3</sup> Id.

<sup>4</sup> Id.

<sup>5</sup> See ASC 410-20-55-3.

<sup>6</sup> See ASC 410-20-15-2.

<sup>7</sup> See *Rogers* at p. 34.

<sup>8</sup> *Statement of Financial Accounting Standards No. 143, Accounting for Asset Retirement Obligations* ("SFAS 143"), at ¶ B54.

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For example, the objectives and requirements of the well plugging and financial assurance programs in the State of Texas have evolved over time as shown in the following timeline:

- 1893—First oil well drilled in Texas.
- 1919—The Texas Railroad Commission (RRC) gained authority to promulgate well plugging rules to ensure that “dry or abandoned wells be plugged in such a way as to confine oil, gas, and water in the strata in which they are found and prevent them from escaping into other strata.” Like most regulations at the time, the rules were designed to protect the loss of oil and gas to other strata, not to protect the environment.
- 1934—The RRC issued specific plugging instructions designed to protect the producing formation to the “greatest degree.”
- 1957—New rules for the first time required protection of fresh water sands by a cement plug covering the deepest fresh water zone to at least 50 feet above and below the zone.
- 1965—The State established a well plugging fund to plug abandoned wells that pose a pollution hazard when the responsible owner/operator cannot be located, is insolvent, or is unwilling to plug the well.
- 1966—The RRC adopted specific well plugging requirements, including requirements for the setting of cement plugs to protect fresh water sands.
- 1983—The State of Texas established a new Well Plugging Fund supported primarily by a \$100 per well drilling permit fee.
- 1991—To slow the growth of abandoned wells and oil field sites following the fall in oil prices in the mid-1980s, which put the Well Plugging Program in serious jeopardy, the State established a new Oil Field Cleanup Fund and new financial responsibility requirements that included use of bonds and letters of credit. The fund is financed with drilling permit fees, annual plugging extension fees, and a fee on the production of oil and gas: 5/16 of a cent per barrel of oil and 1/30 of a cent per thousand cubic feet of gas.
- 1992—The RRC amended its well plugging rule to establish requirements for monitoring and testing older, inactive wells.
- 1997—New regulations required mechanical integrity testing every five years of all wells that were both more than 25 years old and

inactive for more than 10 years. These new testing procedures aided in identifying wells that are potential pollution hazards.<sup>9</sup>

It is unlikely that this process of evolution has ended. As one indicator of what may be coming next, a 2014 Princeton University study has found that methane leaks from abandoned oil and gas wellbores pose not only a risk to groundwater, but also a growing threat to the climate. The study found that methane flow rates from plugged wells were not necessarily lower than methane flow rates at unplugged wells.<sup>10</sup> The study recommends new policies to promote reporting and monitoring and new strategies beyond well plugging—e.g., use of vented methane as an alternative energy source—to mitigate climate impacts.<sup>11</sup>

### **Connection to Ongoing Business**

ERLs generally involve cleanup of contaminated sites connected with past activities and are often unconnected to current business operations. AROs are typically connected to current operations and may require substantial funding for the dismantling and removal of production facilities and returning production sites back to their original condition subject to environmental standards in effect at the time of asset retirement.

### **Connection to Assets**

Unlike most other types of liabilities, environmental liabilities are often inextricably linked to a company's assets. AROs, by definition, are legal obligations associated with the retirement of tangible long-lived assets. The legal obligation to retire an asset in accordance with environmental laws cannot be separated from the asset itself. ERLs may exist with respect to either owned or leased properties. The link between a company's

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<sup>9</sup> *Well Plugging Primer*, Railroad Commission of Texas, (January 2000) and *Plugging and Abandonment of Oil and Gas Wells*, National Petroleum Council Paper #2-25 (2011).

<sup>10</sup> Reducing gases emitted to the atmosphere is not one of the goals of plugging and abandonment and venting may even be required. See <http://www.pnas.org/content/111/51/18173.full.pdf> at 18175.

<sup>11</sup> Kang, Mary, CO<sub>2</sub>, Methane, and Brine Leakage through Subsurface Pathways: Exploring Modeling, Measurement, and Policy Options (June 2014) at [http://dataspace.princeton.edu/jspui/bitstream/88435/dsp019s1616326/1/Kang\\_princeton\\_0181D\\_10969.pdf](http://dataspace.princeton.edu/jspui/bitstream/88435/dsp019s1616326/1/Kang_princeton_0181D_10969.pdf).

environmental liabilities and its assets can make such liabilities more difficult to discharge in bankruptcy.<sup>12</sup>

### **Strict, Retroactive, Joint and Several Liability**

The liability scheme under environmental remediation laws, such as CERCLA and the Oil Pollution Act, is dramatically different from traditional common law and statutory liability schemes. Environmental remediation laws are characterized by the way in which they impose strict, joint and several, and sometimes retroactive, liability on persons deemed to be responsible for environmental contamination.<sup>13</sup> Laws governing decommissioning requirements for offshore oil and gas production have adopted similar approaches.<sup>14</sup>

### **Non-financial Obligations**

With certain exceptions, environmental liabilities are non-financial obligations in that the obligation is to deliver goods or services (i.e., clean up contamination or retire production assets such as mines, landfills, wells and buildings in an environmentally protective manner) rather than to deliver cash. In some cases, environmental liabilities can be reduced to a monetary claim, such as where the government performs a cleanup and then seeks a monetary judgment against a responsible party.<sup>15</sup> But where the

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<sup>12</sup> See e.g., *In re CMC Heartland Partners*, 966 F.2d 1143 (7th Cir.1992), in which the debtor owned a hazardous waste site and went through bankruptcy under the Bankruptcy Act of 1898. Subsequently, EPA issued an order pursuant to CERCLA § 106, 42 U.S.C. § 9606, to the debtor, who still owned the site, requiring removal and remediation activity. The Seventh Circuit Court of Appeals held that the order, which was based on ownership of the land, survived reorganization.

<sup>13</sup> See ASC 410-30-05.

<sup>14</sup> See 30 CFR § 250.1701(a) ("Lessees and owners of operating rights are jointly and severally responsible for meeting decommissioning obligations for facilities on leases, including the obligations related to lease-term pipelines, as the obligations accrue and until each obligation is met.").

<sup>15</sup> Because debts are dischargeable in Chapter 11, it is often critical in a bankruptcy case to determine whether the debtor's environmental obligations constitute a "debt" under the bankruptcy code. See *Ohio v. Kovacs*, 469 U.S. 274, 105 S.Ct. 705, 83 L.Ed.2d 649 (1985) (concluding that the state had a "right to payment" and thus possessed a "claim" against the debtor on basis that the debtor no longer had possession of the contaminated site nor control over the cleanup and all the

government retains the ability to exercise its inherent regulatory and police powers to compel performance of cleanup or asset retirement activities, the obligation is non-financial in nature.

Non-financial environmental liabilities differ from financial liabilities in several important respects. For example:

- AROs and ERLs arise from environmental laws and regulations, and governments are free to unilaterally change environmental laws and regulations.
- As laws governing existing environmental remediation and asset retirement obligations become more stringent, a responsible party's compliance costs can increase.
- Environmental liabilities do not have a principal amount and have no monetary cap—it costs whatever it costs to complete the legally required activities.
- Environmental liabilities typically involve negative cash outflows where there is no counterparty to receive the positive cash flows. The debtor must spend money to settle the obligation, but the holder of the obligation (usually the government) generally receives services rather than money.
- Environmental liabilities typically do not have an exchange transaction at the onset of the obligation or an active trading market. An exception is certain types of AROs that are incurred and sometimes estimated in connection with issuance of a permit to construct or operate an asset that is subject to regulated decommissioning obligations such as mine reclamation. However, even in these cases, there is no exchange price.
- Environmental liabilities typically have no fixed payment dates and may call for settlement upon conditional future events, such as the government's incurrence of response costs or the removal of a production asset from service.
- Environmental liabilities do not bear interest.

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state sought from the debtor was money to fund the cleanup); *see also U.S. v. Apex Oil Co., Inc.*, 579 F. 3d 734 (7<sup>th</sup> Cir. 2009) (rejecting the argument that the cost of complying with an equitable decree to perform cleanup should be deemed a money claim, and hence dischargeable); *In re Torwico Electronics, Inc.*, 8 F. 3d 146 (3<sup>rd</sup> Cir. 1993) (state's attempt to force a party to clean up a waste site which poses an ongoing hazard is not a "claim" as defined by the Bankruptcy Code).

- Environmental liabilities are subject to the extraordinary enforcement powers of state and federal governments.

### **Financial Assurance**

A common misperception is that an accounting “provision” (also sometimes called a “reserve”) represents assets set aside to resolve environmental liability. However, accounting provisions for environmental liabilities are not assets at all. Instead, they are simply formal acknowledgements of obligations to be settled in the future. There is no “lock box,” and these accounting entries do not indicate that there is money in a reserve or that assets have been provisioned to settle the company’s environmental obligations.

Federal and state laws may require E&P companies to provide evidence of financial assurance (e.g., letters of credit, insurance policies, bonds, and demonstration of financial wherewithal) that they can satisfy AROs as they come due.<sup>16</sup> However, financial assurance programs may not always prove adequate.<sup>17</sup>

### **Accounting for Environmental Liabilities**

Environmental liabilities and contingencies must be recorded (“recognized”) in a company’s financial statements when certain criteria are met. This section discusses the criteria for recognition and initial measurement of environmental liabilities under U.S. and international accounting standards.

Bankruptcy practitioners can use this section to better understand what can reasonably be inferred from the presence or absence of environmental liability accounting estimates in financial statements.

### **Accounting Authorities**

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<sup>16</sup> See notice of proposed rulemaking to update regulations and program oversight for Outer Continental Shelf (OCS) financial assurance requirements, 70 Fed. Reg. 49027 (August 19, 2014).

<sup>17</sup> See James Boyd, *Financial responsibility for environmental obligations: Are bonding and assurance rules fulfilling their promise?*, Resources for the Future (2001) at <http://core.ac.uk/download/pdf/9307839.pdf>.



Audited financial statements issued by U.S. listed companies must be prepared in accordance with generally accepted accounting principles (U.S. GAAP) established by the Financial Accounting Standards Board (FASB).<sup>18</sup> Financial statements filed with the Securities Exchange Commission (SEC) that are not prepared in accordance with U.S. GAAP are presumed to be misleading or inaccurate, unless the SEC has otherwise provided.<sup>19</sup>

Outside the U.S., most companies adhere to accounting standards established by the International Accounting Standards Board (IASB) in London.<sup>20</sup> Accounting standards issued by the IASB are generally referred to as International Financial Reporting Standards (IFRS).

### **Liabilities and Contingencies**

For accounting purposes, *liabilities* are defined as probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events.<sup>21</sup> *Loss contingencies* are defined as an existing condition, situation, or set of circumstances involving uncertainty as to possible loss to an enterprise that will ultimately be resolved when one or more future events occur or fail to occur. Resolution of the uncertainty may confirm the loss or impairment of an asset or the incurrence of a liability.<sup>22</sup>

### **Environmental Liabilities and Contingencies**

For purposes of U.S. GAAP, there are three types of environmental liability estimates—1) environmental loss contingencies, 2) environmental remediation liabilities (ERLs), and 3) asset retirement obligations (AROs).<sup>23</sup> Under International Financial Reporting Standards (IFRS) issued by the IASB, these are known respectively as 1) contingent environmental

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<sup>18</sup> ASC 105-10-15.

<sup>19</sup> 17 CFR § 240.4-01(a)(1).

<sup>20</sup> See <http://www.ifrs.org/Use-around-the-world> for a current list of countries that have adopted IFRS.

<sup>21</sup> See Statement of Financial Accounting Concepts No. 6 ¶ 35.

<sup>22</sup> ASC 450-20-20.

<sup>23</sup> ASC 410-20.

liabilities, 2) environmental remediation provisions, and 3) decommissioning, restoration and environmental rehabilitation provisions.

Accounting Standards Codification (ASC) Topic 410, *Asset Retirement and Environmental Obligations*, governs accounting for environmental liabilities under U.S. GAAP.<sup>24</sup> Under IFRS, decommissioning (asset retirement) liabilities and environmental obligations are accounted for in accordance with the general principles in IAS 37, *Provisions, Contingent Liabilities and Contingent Assets*, and IFRIC 1, *Changes in Existing Decommissioning, Restoration and Similar Liabilities*. Table 1 provides a high-level simplified summary of accounting terms and treatments of environmental liabilities under U.S. GAAP and IFRS.

**Table 1. Environmental Liabilities**

<b>U.S. GAAP</b>	<b>Environmental loss contingencies</b>	<b>Environmental remediation liabilities</b>	<b>Asset retirement obligations</b>
<b>IFRS</b>	Contingent environmental liabilities	Environmental remediation provisions	Decommissioning, restoration and environmental rehabilitation provisions
<b>Nature of Liability</b>	Contingent	Contingent or Noncontingent	Noncontingent
<b>How Measured</b>	If no best estimate, minimum in range (midpoint of range or expected value under IFRS)	If no best estimate, minimum in range (midpoint of range or expected value under IFRS)	Expected present value <sup>25</sup>

<sup>24</sup> ASC Topic 450-20 governs accounting for loss contingencies.

<sup>25</sup> IFRS requires a decommissioning liability to be measured initially at the best estimate of the expenditure required to settle the obligation. U.S. GAAP requires such liabilities to be measured at fair value. Although there may be differences in the initial measurement of decommissioning liabilities under IFRS and U.S. GAAP, they are generally measured using an expected present value technique under both standards, and the resulting estimates should be reasonably comparable.

<b>Table 1. Environmental Liabilities (cont'd.)</b>			
<b>Discount Rate U.S. GAAP</b>	Market based but no higher than risk free rate if allowed	Market based but no higher than risk free rate if allowed	Credit adjusted risk free rate considering liability-specific risks <sup>26</sup>
<b>Discount Rate IFRS</b>	Pre-tax market rate considering liability-specific risks	Pre-tax market rate considering liability-specific risks	Pre-tax market rate considering liability-specific risks
<b>Claim Value in Bankruptcy</b>	Fair valuation	Fair valuation	Fair valuation

### ***Environmental Loss Contingencies***

Contingent environmental liabilities, also known as environmental loss contingencies, include—(a) *possible obligations* that arise from past events (commonly the release of pollutants to the environment) and whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the debtor (e.g., enforcement of a claim by a regulatory agency); and (b) *present obligations* that arise from past events where it is *not probable* that assets must be transferred to settle them (e.g., an environmental guaranty contained in a property sales contract).<sup>27</sup> With contingent environmental liabilities, there is uncertainty as to whether an obligating event imposing liability on the debtor has occurred or will occur in the future.

<sup>26</sup> Subsequent measurement of a decommissioning obligation is accounted for differently under IFRS and U.S. GAAP with respect to discount rates. Under IFRS, a decommissioning obligation is remeasured each reporting period giving consideration to changes in the amount or timing of cash outflows and changes in the discount rate; whereas, under U.S. GAAP, the obligation is adjusted only for changes in the amount or timing of cash outflows (i.e., the obligation continues to be measured using the rate when the decommissioning obligation was incurred). If incremental cash outflows are required to be included in the measurement of the liability recorded under U.S. GAAP, those cash outflows are included using the current discount rate resulting in a “layering” of a decommissioning obligation at different discount rates if the obligation is incurred or adjusted over time.

<sup>27</sup> See IAS 37 ¶ 10.

A typical example of a contingent environmental liability is a pending legal proceeding against the debtor for cleanup costs and property damage where both liability and damages are contested. Contingent environmental liabilities may also arise from unasserted claims or first-party claims (e.g., where a property owner discovers historical contamination for which it is responsible and which is covered by environmental insurance). Claims for environmental liability may not be brought until years after the obligating event, if at all.

Contingent environmental liabilities are recorded as liabilities in a company's books only after the company concludes that it is probable that an obligating event has occurred and the amount of the liability can be reasonably estimated.<sup>28</sup> Qualitative or quantitative descriptions of contingent environmental liabilities that are not both probable and reasonably estimable may be disclosed in the notes to the financial statements, but point estimates are not recognized and recorded as liabilities.<sup>29</sup>

### ***Environmental Remediation Liabilities***

Environmental remediation liabilities (ERLs) are obligations that arise under environmental remediation laws.<sup>30</sup> A unique characteristic of environmental remediation laws such as CERCLA and corresponding state laws is that they impose strict and joint and several liability.<sup>31</sup> Under the doctrine of joint and several liability, each potentially responsible party (PRP) is potentially liable for the entire cost of cleanup, and it is the responsibility of the PRPs to allocate shares of liability among themselves.<sup>32</sup>

Like environmental loss contingencies, ERLs are recorded as liabilities in a company's books only after the company concludes that it is probable that an obligating event has occurred and the amount of the liability can be reasonably estimated.<sup>33</sup>

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<sup>28</sup> ASC 450-20-25.

<sup>29</sup> ASC 450-20-50.

<sup>30</sup> See ASC 410.30.05.

<sup>31</sup> For a general background on environmental remediation laws as they relate to financial accounting, see ASC 410-30-05-5.

<sup>32</sup> ASC 410-30-05-21 & 22.

<sup>33</sup> ASC 410-30-25-1.

### ***Asset Retirement Obligations***

Asset retirement obligations (AROs) are legal obligations associated with the retirement of a tangible long-lived asset that result from the acquisition, construction, or development and (or) the normal operation of a long-lived asset, including any legal obligations that require disposal of a replaced part that is a component of a tangible long-lived asset.<sup>34</sup>

AROs may arise under 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.<sup>35</sup> Retirement refers to the other-than-temporary removal of a long-lived asset from service and encompasses sale, abandonment, recycling, or disposal in some other manner.<sup>36</sup> Most AROs arise under laws intended to protect human health and the environment—for example, statutes governing plugging and abandonment of wells are intended to prevent contamination of groundwater and surface water. This explains why U.S. GAAP addresses AROs under the heading “Asset Retirement and Environmental Obligations.”

An obligation that would otherwise be considered an ERL, but which results from the normal operation (as opposed to the improper operation) of a long-lived asset and that is associated with the retirement of that asset, is an ARO.<sup>37</sup>

AROs are recorded as liabilities in a company’s books at the time they are incurred unless the fair value of the liability cannot be reasonably estimated. If a reasonable estimate of fair value cannot be made in the period the asset retirement obligation is incurred, the liability must be recognized when a reasonable estimate of fair value can be made.<sup>38</sup> If a tangible long-lived asset with an existing asset retirement obligation is

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<sup>34</sup> ASC 410-20-15-2(a).

<sup>35</sup> ASC 410-20-55-1; *see* ASC 410-20-20 (defining “Promissory estoppel” by reference to Black’s Law Dictionary as “The principle that a promise made without consideration may nonetheless be enforced to prevent injustice if the promisor should have reasonably expected the promisee to rely on the promise and if the promisee did actually rely on the promise to his or her detriment.”)

<sup>36</sup> ASC 410-20-20.

<sup>37</sup> ASC 410-20-15-2.

<sup>38</sup> ASC 410-20-25-1.

acquired, a liability for that obligation is recognized at the asset's acquisition date as if that obligation were incurred on that date.<sup>39</sup>

### **Estimation of Environmental Liabilities**

The principal challenge in accounting for environmental liabilities is uncertainty. The same is true when valuing environmental liabilities in bankruptcy. Although accounting estimates are not determinative of fair value in a bankruptcy context, accounting estimates and the methodologies by which they are generated may be instructive to bankruptcy practitioners.

As explained below, accounting standards address uncertainty in widely differing and inconsistent ways depending on the type of liability. The accounting standards governing AROs, for example, attempt to value uncertainty in the manner that markets value uncertainty. Conversely, the accounting standards governing ERLs and environmental contingencies largely ignore the valuation of uncertainty in favor of minimum values that are more certain and auditable.

In situations where there is no active market to price uncertainty, valuation of uncertainty necessarily involves subjectivity, judgment and speculation. Today, no active markets exist for the transfer of environmental liabilities. As a result, even where applicable accounting standards call for market valuation of uncertainty, there is wide diversity of practice in how this is done.

This section describes the types of uncertainty associated with environmental liabilities and the various techniques used to value it. Bankruptcy practitioners can use this section to understand why a debtor's accounting estimates should never be accepted at face value and how to go about determining a fair valuation.

### **Transparency**

Environmental liability estimates used for financial accounting purposes tend to be based on management's judgment rather than independent third-party appraisals. This contrasts with pension provisions, where third parties provide significant input as to obligations for future payments. Significant disclosure is required in order for an outside analyst

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<sup>39</sup> ASC 410-20-25-4.

to deconstruct a company's accounting estimates and assess the reasonableness of the embedded assumptions. Sufficient disclosures, however, are often unavailable.

S&P has observed that, "Current disclosure makes comparative assessment difficult as the details on timing and nature of the decommissioning and environmental provisions is opaque"; "poor disclosure is making understanding the basis and reasons for changes in such provisions guesswork"; and "Clearer reporting of decommissioning and environmental provisions would provide greater guidance for analysis."<sup>40</sup>

The U.S. Government Accountability Office (GAO) has reached a similar conclusion:

Little is known about the extent to which companies are disclosing environmental information in their filings with SEC. Determining what companies should be disclosing is extremely challenging without access to company records, considering the flexibility in the disclosure requirements. ...One cannot determine whether a low level of disclosure means that a company does not have existing or potential environmental liabilities, has determined that such liabilities are not material, or is not adequately complying with disclosure requirements.<sup>41</sup>

Because of the high levels of subjectivity and general insufficiency of disclosure, third parties should view a company's reported accounting estimates with skepticism.

### **Uncertainty**

Environmental liabilities are often subject to two basic types of uncertainty—uncertainty as to the existence of liability and uncertainty as to the timing and amount of cash outflows.

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<sup>40</sup> See *S&P Environmental Provisions*.

<sup>41</sup> United States Government Accountability Office, *Environmental Disclosure: SEC Should Explore Ways to Improve Tracking and Transparency of Information* (July 2004).

### ***Existence of Liability***

For accounting purposes, a “liability” is a present obligation arising from past transactions or events.<sup>42</sup> For liability to exist, an obligating event must have occurred. Obligating events are as varied as a release of hazardous substances to the environment, the assumption of ownership of a contaminated site, construction of a new asset, a change in law, or a court judgment. In some instances, such as AROs, existence of liability is clear from the outset. A new ARO is incurred every time a new well is drilled. In other cases, the existence or non-existence of liability may only become evident over time.

Where the existence of liability is contingent on one or more future events or non-events, valuation of the legal uncertainty can be addressed in one of several ways. One way is to conclude that no liability exists at all, or at least not yet; therefore, there is no need to value it until it is certain. Another way is to value the contingency by multiplying the probability that liability has been or will be incurred by the amount of the loss that will be suffered if and when liability is imposed. Yet another way is to value the contingency only when it the existence of liability reaches a subjective probability threshold.

In accounting terms, if the existence of liability is uncertain, the possible, but as yet uncertain, obligation is called a “loss contingency” or a “contingent liability”. Contingent environmental liabilities, are possible obligations where the existence of liability remains uncertain. An example of an E&P environmental loss contingency is a threatened but as yet unasserted environmental lawsuit related to a release of petroleum substances due to a pipeline rupture.

Environmental contingencies are not recorded as “liabilities” for financial accounting purposes until certain criteria are met. Under U.S. GAAP and IFRS, an environmental contingency becomes an environmental liability when the existence of liability becomes *probable* and the amount of the liability becomes reasonably estimable.

Although not recorded as liabilities on the balance sheet, contingent environmental liabilities do have an exit price. In other words, a third party would charge *something* to assume or guaranty the debtor’s possible

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<sup>42</sup> See Statement of Financial Accounting Concepts No. 6 ¶ 35.



obligation, even if the probability of liability is quite low. The theoretical exit price is largely a function of the probability and magnitude of possible loss.

ERLs usually begin as loss contingencies and then gradually mature into liabilities as more information becomes available.

An entity's environmental remediation obligation that results in a liability generally does not become determinable as a distinct event, nor is the amount of the liability generally fixed and determinable at a specific point in time. Rather, the existence of a liability for environmental remediation costs becomes determinable and the amount of the liability becomes estimable over a continuum of events and activities that help to frame, define, and verify the liability.<sup>43</sup>

The evolution of ERLs from contingencies to liabilities may depend on whether the company is contesting liability in ongoing legal proceedings. ERLs are rarely if ever recorded in the financial statements so long as the company is contesting liability. To recognize a liability for accounting purposes at a time when liability remains contested could be deemed a legal admission of liability.<sup>44</sup> Few companies are willing to risk the possible prejudicial effect of recognizing an ERL until the existence of contested liability is virtually certain.

If an ERL is on the books, odds are the company is no longer contesting liability and is already making payments on the debt—incurring cash expenditures for pre-cleanup activities, remediation activities, or post-remediation monitoring activities, which are being charged against the accounting provision created for the liability.

In contrast to early stage ERLs, uncertainty about the existence of liability with respect to AROs is generally quite low from the outset. Although the timing and method of settlement of AROs are often

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<sup>43</sup> “Although environmental remediation liabilities is not one of the examples discussed in paragraph 450-20-05-10, environmental remediation liabilities are loss contingencies.” ASC 410-30-05-25.

<sup>44</sup> See *Disclosure Dilemma: Financial Reporting of Contingent and Environmental Liabilities*, Academic Case Study A200, by Alan D. Jagolinzer, Nathan T. Blair, C. Gregory Rogers (Harvard Business Publishing 2008).

conditional on future events (e.g., the timing of asset retirement), the source and timing of the obligating event are generally clear.

[W]hen an existing law, regulation, or contract requires a company to perform an asset retirement activity, an unambiguous requirement to perform the retirement activity exists, even if that activity can be deferred indefinitely. At some point, deferral is no longer possible, because no tangible asset will last forever (except land). Therefore, the obligation to perform the asset retirement activity is unconditional even though uncertainty exists about the timing and (or) method of settlement.<sup>45</sup>

Although the timing of settlement may be conditional on a future event, liability for E&P-related AROs is typically incurred upon the acquisition or drilling of a new oil or gas well. In the Gulf of Mexico Outer Continental Shelf (OCS), for example, liability for decommissioning is incurred upon—(a) drilling a well; (b) installing a platform, pipeline, or other facility; (c) creating an obstruction to other users of the OCS; (d) becoming a lessee or the owner of operating rights of a lease on which there is a well that has not been permanently plugged, a platform, a lease term pipeline, or other facility, or an obstruction; (e) becoming the holder of a pipeline right-of-way on which there is a pipeline, platform, or other facility, or an obstruction; or (f) re-entering a well that was previously plugged.<sup>46</sup>

The parties responsible for the ARO are designated by the applicable regulations. For example, lessees and owners of operating rights are jointly and severally responsible for meeting decommissioning obligations for facilities in the Gulf of Mexico Outer Continental Shelf.<sup>47</sup> In Texas, the entity designated as the operator of a well specifically identified on the most recent approved operator designation form filed with the Railroad Commission of Texas on or after September 1, 1997, is responsible for properly plugging the well.<sup>48</sup>

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<sup>45</sup> FASB Interpretation No. 47, *Accounting for Conditional Asset Retirement Obligations*.

<sup>46</sup> 30 CFR § 250.1702.

<sup>47</sup> 30 CFR § 250.1701.

<sup>48</sup> 16 Tex. Admin. Code § 3.14(c)(1).

### ***Timing and Amount of Cash Outflows***

Environmental liabilities are almost always subject to uncertainty about the timing and amount of cash outflows necessary to resolve them. Uncertainty often exists with regard to, among other things, the resolution of contractual, technological, regulatory, legislative, and judicial issues, all of which could affect the timing and amount of cash outflows to resolve AROs and ERLs.

A basic principle of accounting is that unliquidated and disputed liabilities should be recorded in the balance sheet only when they can be reasonably, or reliably, estimated.<sup>49</sup> This principle requires companies to answer two questions—(1) when is an uncertain liability reasonably estimable; and how is uncertainty to be addressed in determining a reasonable estimate? Accounting standards answer these questions differently for AROs and ERLs.

The timing of settlement of an ARO may be conditional on the uncertain timing of a future event (e.g., permanent cessation of operations). In some cases, sufficient information about the timing of settlement may not be available to reasonably estimate fair value. Oil companies rarely record AROs for refineries because they believe they cannot reasonably estimate when a refinery will be permanently shuttered. There is uncertainty about the timing of settlement of recorded AROs as well.

Retirement of E&P assets can be accelerated by regulatory, economic, or natural events beyond the debtor's control. For example, in 2010 the U.S. Department of Interior issued an "idle iron" order requiring oil and gas producers operating in the OCS to set permanent plugs in nearly 3,500 nonproducing completed wells and dismantle about 650 production platforms no longer being used.<sup>50</sup> This action by the Department of Interior forced oil companies to permanently retire assets that had been temporarily idled for years and might otherwise have remained so for many years or decades longer. The Fukushima nuclear disaster in Japan is an example of how unforeseen natural disasters can accelerate asset retirement and dramatically increase the cost.

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<sup>49</sup> See ASC ¶¶ 410-20-55-14, 410-30-25-1[b] and 450-20-25-2[b].

<sup>50</sup> United States Department of the Interior, Bureau of Ocean Energy, Management and Regulation, NTL No. 2010-G05 (September 15, 2010).

For accounting purposes, AROs are considered reasonably estimable unless there is insufficient information to reasonably estimate a range of settlement dates, potential methods of settlement, and the probabilities associated with the potential settlement dates and potential methods of settlement. If these factors can be reasonably estimated, uncertainty is factored into the estimate using an expected present value technique described below.<sup>51</sup>

Certainty about the timing and amount of cash outflows for ERLs tends to emerge over time as the remedial process (i.e., investigation, feasibility study, remedial design, operation and maintenance, closure, and post-closure care and monitoring) develops. At the early stages of the remediation process, a responsible party will have varying amounts of information related to the different components. For example, a PRP may be able to estimate the most likely value of the cost of investigation and the low and high end of the range of the possible costs for the feasibility study, but have no reasonable basis to develop a range of possible costs for any of the other components.

For accounting purposes, ERLs are first broken up into their component parts. Individual component parts are considered reasonably estimable if a range of possible costs can be reasonably estimated. If there is an amount that appears to be a better estimate than any other amount within the range, that amount is recorded as a liability. Otherwise, the low end of the range is recorded.<sup>52</sup> Accordingly, the overall liability that is recorded may be based on amounts representing best estimates within ranges of costs of some components of the liability (e.g., investigation), the lower end of a range of costs for other components of the liability (e.g., feasibility study), and zero for other components of the liability.<sup>53</sup> Unlike AROs, ERLs are measured in a way that avoids the use of probabilistic methods to factor uncertainty into the estimate, and early-stage ERL estimates often do not include any cost whatsoever for the most expensive components of the overall liability, including remedial design, operation and maintenance, closure, and post-closure care and monitoring.

The manner in which accounting standards deal with uncertainty varies significantly from how bankruptcy courts deal with uncertainty.

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<sup>51</sup> ASC ¶ 410-20-25-7.

<sup>52</sup> See ASC ¶¶ 410-30-30-17 and 450-20-30-1.

<sup>53</sup> See ASC ¶ 410-30-25-9.

Bankruptcy courts do not postpone recognition of liability until an amount can be reasonably estimated and they do not value environmental liabilities at the low end of the range of possible outcomes.

[T]he object of a solvency analysis is to assign a "fair valuation" to all debts, with the term "debt" defined as a liability on a claim, and "claim" defined in the "broadest possible sense" to include contingent, unmatured and unliquidated claims. The resulting solvency analysis is often used in connection with a bankruptcy filing, where all debts are accelerated and debtors are obligated to send notice of the requirement of filing a proof of claim to every known potential environmental creditor.<sup>54</sup>

Unwary corporate managers and bankruptcy practitioners may be shocked to learn that the unfunded reserves for environmental liability shown in the debtor's balance sheet do not come close to approximating fair value. For example, in its 10-K for the year ended December 31, 2005, Tronox Inc. reported that, "As of December 31, 2005, we had reserves in the amount of \$223.7 million for environmental matters and receivables for reimbursement for such matters of \$56.7 million."<sup>55</sup> Tronox later argued in bankruptcy that the net present value of its ERLs as of November 2005 was \$278.1, but the court found that a fair valuation of Tronox's ERLs for solvency purposes was \$1.5 billion at November 2005.<sup>56</sup>

When long-term environmental liabilities are estimated for accounting purposes at the low end of the range, if they are recognized at all, the result is often a recorded reserve balance that never decreases, notwithstanding ongoing expenditures to resolve the liability. The court's findings in Tronox are indicative:

[In considering the reasonableness of Tronox's estimate,] it bears recalling that Kerr-McGee's environmental expenditures during the five years prior to the IPO had averaged \$160 million per year, that it had spent \$580 million just at the West Chicago site, that it had received a demand from the EPA for \$179 million for cleanup at a Superfund site in Manville, New Jersey, and that Tronox succeeded to virtually all of the Kerr-McGee sites. It was a common refrain of Defendants that Kerr-McGee's environmental

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<sup>54</sup> *In re Tronox Incorporated*, 503 B.R. 239 (Bankr. S.D. New York 2013).

<sup>55</sup> Available at <http://www.sec.gov/Archives/edgar/data/1328910/000114118506000045/tronox10k2005.htm>.

<sup>56</sup> *In re Tronox Incorporated*, 503 B.R. 239 (Bankr. S.D. New York 2013).

costs were diminishing, but as discussed elsewhere, this contention is not supported by the record.<sup>57</sup>

### **Existing Laws and Interpretations**

Because liabilities, by definition, are current obligations arising from past obligating events, liability estimates cannot consider future changes in law or changes in the interpretation of existing laws.

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.<sup>58</sup>

As environmental and decommissioning regulations change over time, E&P companies must revise their prior liability estimates to reflect new or modified obligations. Environmental liabilities, especially E&P-related AROs, tend to be long-term in nature, often spanning several decades from inception to settlement. Consequently, changes in regulatory requirements over the lifespan of the liability can have a significant impact on the nature of the obligation and the cash outflows ultimately required to settle it.

### **Known Minimum Value**

Under U.S. GAAP, contingent environmental liabilities and ERLS are measured at the low end of the range of possible outcomes unless there is a better estimate (i.e., a more likely outcome).

If some amount within a range of loss appears at the time to be a better estimate than any other amount within the range, that amount shall be accrued. When no amount within the range is a better estimate than any other amount, however, the minimum amount in the range shall be accrued. Even though the minimum amount in the range is not necessarily the amount of loss that will be ultimately determined, it is not likely that the ultimate loss will be less than the minimum amount.<sup>59</sup>

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<sup>57</sup> Id.

<sup>58</sup> ASC 410-20-55-1.

<sup>59</sup> ASC 450-20-30-1.

The minimum in the range of possible liability is also used when there is uncertainty about the timing of expenditures:

The measurement of environmental remediation liabilities shall be based on the reporting entity's estimate of what it will cost to perform each of the elements of the remediation effort when those elements are expected to be performed. Although this approach is sometimes referred to as considering inflation, it does not simply rely on an inflation index (cost estimates submitted to the Environmental Protection Agency usually include a prescribed inflation factor) and should take into account factors such as productivity improvements due to learning from experience with similar sites and similar remedial action plans. In situations in which it is not practicable to estimate inflation and such other factors because of uncertainty about the timing of expenditures, a current cost estimate would be the minimum in the range of the liability to be recorded until such time as these cost effects can be reasonably estimated.<sup>60</sup>

ASTM E 2137-01, *Standard Guide for Estimating Monetary Costs and Liabilities for Environmental Matters*, states that, "When the outcome and cost uncertainties are so great that it is premature to estimate a range of values or a most likely value, then a minimum value including component costs (e.g., contracts entered, initial studies) that are reasonably certain to be incurred should be estimated."<sup>61</sup> Of course, subjective judgment is required to determine "when the outcome and cost uncertainties are so great that it is premature to estimate a range of values or a most likely value."

Like environmental loss contingencies, ERLs are generally subject to uncertainty regarding the amount or timing of cash outflows and are commonly reported at the amount of the company's current budget forecast

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<sup>60</sup> ASC 410-30-30-17.

<sup>61</sup> ASTM E 2137-01 § 5.4.4. This ASTM standard is not authoritative accounting guidance for purposes of U.S. GAAP or IFRS. It states in Section 1.1 that, "it is not intended to supersede accounting and actuarial standards including those by the Financial Accounting Standards Board and the U.S. [Securities Exchange Commission]. This standard does not address the establishment of reserves or disclosure requirements." However, E 2137 is widely regarded by valuation experts in bankruptcy as authoritative for determining the fair valuation of environmental liabilities in bankruptcy. See, e.g., *In re Tronox Incorporated*, 503 B.R. 239 (Bankr. S.D. New York 2013).

for remediation expenditures.<sup>62</sup> This amount may be well below the minimum in the range of reasonably possible outcomes.

### **Midpoint of Range**

Under IFRS, if there is a range of equally likely outcomes, the midpoint of the range, as opposed to the low end of the range, is considered the best estimate. The mid-point between the high and low cost estimates is typically not the most likely value.<sup>63</sup>

### **Most Likely Value**

A most likely value (MLV) estimate represents a technical and regulatory scenario that is most likely to occur. U.S. GAAP and IFRS implicitly assume that a most likely value does not exist “when there is a range of equally likely outcomes” or “when no amount within the range is a better estimate than any other amount.” ASTM E2137 states that:

When an expected value approach is not practical or appropriate, a most likely value could be developed using engineering estimates. This MLV captures the cost of the scenario believed to be most likely to occur (for example, a stated preferred remedy). Typically, the estimator exercises *a priori* judgments (based on experience) about the ranking of likely outcomes, but because of cost or other considerations does not develop a full range of possible outcomes to support an expected value estimate.<sup>64</sup>

### **Expected Value**

Expected value, in statistical terms, is the weighted average of a discrete random variable’s possible values where the respective probabilities are used as weights.<sup>65</sup> The expected value technique starts with a set of cash outflows that, in theory, represents all possible cash outflows (expected cash outflows). Because all possible cash outflows are probability weighted, the resulting expected cash outflow is not conditional

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<sup>62</sup> See Rogers, C. Gregory, *A Board's-Eye View of Environmental Liabilities*, NACD Directorship, Vol. 36 Issue 1, p66 (Feb/Mar 2010).

<sup>63</sup> ASTM E 2137-01 § 5.4.2.

<sup>64</sup> Id.

<sup>65</sup> ASC 820-10-55-13.



upon the occurrence of any specified event.<sup>66</sup> Possible outcomes should be limited to realistic outcomes with statistically significant probabilities to avoid shifting the expected value through the addition of extreme outcomes with insignificant probabilities of occurrence.<sup>67</sup>

Under IFRS, if there is a range of equally likely outcomes, then the midpoint of that range is considered the best estimate.<sup>68</sup> If outcomes within the range differ in likelihood, a probability-weighted expected value is the best estimate.<sup>69</sup>

### **Expected Present Value**

Present value is a tool used to link future amounts (for example, expected cash outflows used to develop an expected value estimate) to a present amount using a discount rate.<sup>70</sup> Expected present value combines probability-weighted cash flow estimates (expected value) with present value discounting. The expected present value approach allows use of present value (discounting) techniques when the timing of cash outflows is uncertain, by developing a probabilistic weighted average of various possible future scenarios.

Expected present value is a starting component in developing an exit price or fair value estimate.

### **Exit Price**

An “exit price” is the price that would be received to sell an asset or paid to transfer a liability. The transaction to sell the asset or transfer the liability is a hypothetical transaction, considered from the perspective of a market participant that holds the asset or owes the liability. An exit price is not necessarily the same as an “entry price,” the price that would be paid to acquire the asset or received to assume the liability.<sup>71</sup>

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<sup>66</sup> *Id.*

<sup>67</sup> ASTM E 2137-01 § 5.4.1.2.

<sup>68</sup> IAS 37 ¶ 39.

<sup>69</sup> *Id.*

<sup>70</sup> ASC 820-10-55-5.

<sup>71</sup> See ASC 820-10-20 and 820-10-15-3a.

### **Fair Value**

Mark-to-market or fair value accounting refers to accounting for the "fair value" of an asset or liability based on the current market price, or for similar assets and liabilities, or based on a hypothetical market valuation. Fair value accounting has long been viewed in academia as the gold standard for preparing financial statements, and has been a part of U.S. GAAP since the early 1990s.<sup>72</sup>

#### ***Measurement Objective***

The objective of fair value measurement is to determine an exit price.<sup>73</sup> With respect to the estimation of liabilities, a fair value measurement assumes that the liability is exchanged in an orderly transaction between market participants to transfer the liability at date of the measurement. The hypothetical transaction assumes that the liability to the counterparty continues. The liability is transferred, but not settled, and the nonperformance risk relating to the liability is the same before and after its transfer.<sup>74</sup>

The transaction assumes time to allow for marketing activities that are usual and customary for transactions involving such liabilities; it is not a forced liquidation or distress sale. The transaction is viewed from the perspective of a market participant that owes the liability. Therefore, the objective of a fair value measurement is to determine the price that would be paid to transfer the liability.

#### ***Unbundled Liabilities***

A fair value estimate of a liability implicitly assumes that the liability is transferred by itself, unbundled from any accompanying assets. So, for example, the fair value of an ERL would not include the value of the contaminated real estate associated with the cleanup liability, and the fair value of a well decommissioning obligation would not include the value of the related oil and gas production.

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<sup>72</sup> See Mark-to-Market Accounts Signal Caution for Investors. *Bloomberg*. May 2, 2012.

<sup>73</sup> *Id.*

<sup>74</sup> ASC 820-10-55-5f.

***No Active Market***

Environmental liabilities are routinely transferred in business combinations involving the negotiated sale or transfer of part or all of the assets and liabilities of a business. Also, there is a negotiated market for the transfer of ERLs, often along with the contaminated real estate. However, there is no active market with quoted prices for the transfer of environmental liabilities. Consequently, it is not possible to determine the fair value of environmental liabilities based on current market prices for the same or similar liabilities.

***Applicability***

Under U.S. GAAP, AROs are measured at fair value, but contingent environmental liabilities and ERLs are not. The FASB adopted a standard that would have applied fair value to contingent environmental liabilities and ERLs assumed in a business combination, but later reversed its decision when preparers, auditors, and members of the legal profession expressed concerns, including the following:

- Determining the fair value of litigation-related contingencies.
- Supporting the recognition and measurement of liabilities arising from legal contingencies when supporting information may be subject to attorney-client privilege.
- Disclosing potentially prejudicial information in financial statements.

The FASB has since made no effort to expand the scope of fair value measurement to include environmental liabilities other than AROs. As a result, different types of environmental liabilities are measured in fundamentally different ways under U.S. GAAP, with AROs measured at fair value and ERLs measured at the low end of the range or most likely value.

***Methodology***

Valuation techniques consistent with the market approach, income approach, and/or cost approach are used to measure fair value.<sup>75</sup> The market approach uses prices and other relevant information generated by

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<sup>75</sup> ASC 820-10-55-3.

market transactions involving identical or comparable assets or liabilities (including a business).<sup>76</sup>

The income approach uses valuation techniques, such as present value, option-pricing models, and binomial models, to convert future amounts (for example, cash outflows or earnings) to a single discounted present value amount. The measurement is based on the value indicated by current market expectations about those future amounts.<sup>77</sup>

The cost approach is based on the amount that currently would be required to replace the service capacity of an asset (often referred to as current replacement cost).<sup>78</sup>

Because there is no active market for the transfer of environmental liabilities, an expected present value technique (an income approach) is most often the only feasible means by which to estimate the fair value of these obligations.<sup>79</sup>

### ***Inputs***

Inputs refer broadly to the assumptions that market participants would use in pricing the liability, including assumptions about risk. Such risks might include, for example, the risk inherent in the inputs to the valuation technique. Inputs may be observable or unobservable.

Observable inputs are inputs that reflect the assumptions market participants would use in pricing the asset or liability developed based on market data obtained from sources independent of the reporting entity. Unobservable inputs are inputs that reflect the reporting entity's own assumptions about the assumptions market participants would use in pricing the asset or liability developed based on the best information available in the circumstances.<sup>80</sup> Estimation of environmental liabilities generally must rely on unobservable inputs because there are no active markets for identical or similar liabilities.

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<sup>76</sup> Id.

<sup>77</sup> Id.

<sup>78</sup> Id.

<sup>79</sup> See ASC 410.20.30-1.

<sup>80</sup> ASC 820-10-20.

Inputs to fair value estimates of AROs should include all of the following elements:

- An estimate of future cash outflows to settle the obligation.
- Expectations about possible variations in the amount and timing of the cash outflows representing the uncertainty inherent in the cash outflows.
- The time value of money, represented by the rate on risk-free monetary assets that have maturity dates or durations that coincide with the period covered by the cash outflows and pose neither uncertainty in timing nor risk of default to the holder (that is, a risk-free interest rate).<sup>81</sup>
- The price for bearing the uncertainty inherent in the cash outflows (that is, a market risk premium).
- Other factors that market participants would take into account in the circumstances.
- The nonperformance risk relating to that liability, including but not limited to the debtor's own credit risk.<sup>82</sup>

Cash flows and discount rates should reflect assumptions that market participants would use when pricing the liability and should take into account only the factors attributable to the specific liability being measured.<sup>83</sup>

#### ***Market Risk Premium***

Fair value estimates of environmental liabilities should include a market risk premium. U.S. GAAP defines market risk premium as the price that a third party would demand and could expect to receive for bearing the uncertainties and unforeseeable circumstances inherent in the obligation.<sup>84</sup>

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<sup>81</sup> For present value computations denominated in nominal U.S. dollars, the yield curve for U.S. Treasury securities determines the appropriate risk-free interest rate.

<sup>82</sup> ASC 820-10-55-5.

<sup>83</sup> ASC 820-10-55-6.

<sup>84</sup> ASC 410-20-55-13(d).

Pricing market risk premium for purposes of fair value measurement might be difficult. However, the degree of difficulty alone is not a sufficient reason to exclude a risk premium.<sup>85</sup>

Market risks associated with environmental liabilities include uncertainty about the amount and timing of future cash outflows and lack of liquidity, or stated differently, the inability to easily transfer such obligations to other market participants.

***Uncertainty in Expected Cash Outflows.*** The risk premium for bearing the uncertainty in the amount and timing of the cash outflows required to settle an environmental obligation can be measured by comparison to a certainty-equivalent cash flow.

A certainty-equivalent cash flow refers to an expected cash flow (as defined), adjusted for risk such that one is indifferent to trading a certain cash flow for an expected cash flow. For example, if one were willing to trade an expected cash flow of \$1,200 for a certain cash flow of \$1,000, the \$1,000 is the certainty equivalent of the \$1,200 (the \$200 would represent the cash risk premium). In that case, one would be indifferent as to the asset held.<sup>86</sup>

The example above can be changed slightly to address the expected cash outflows to settle a liability. For example, consider the price at which one would be indifferent as to the assumption of two different obligations where the transferee agrees to assume the obligation to make future cash payments in exchange for receipt of a single lump sum payment today. Obligation A has an expected value of \$1,000 with a fat tail (i.e., low probabilities of cash outflows far in excess of \$1,000), no cost ceiling and an uncertain settlement date. Obligation B is a fixed certain amount with a fixed settlement date. At what fixed certain amount of Obligation B would one be indifferent between assuming it or the uncertain amount of Obligation A? The difference between that price and \$1,000 reflects a market risk premium.

Environmental liabilities typically involve high levels of uncertainty in the amount and timing of future cash outflows. In addition, unlike financial debt instruments, environmental liabilities typically have no cost ceiling.

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<sup>85</sup> ASC 820-10-55-8.

<sup>86</sup> SFAS 157 ¶ E14.

The responsible party must complete the required activities regardless of their cost.

Experienced environmental practitioners understand that environmental regulators rarely if ever agree to completely release responsible parties prior to completion of all legally mandated activities, even in exchange for a cost premium, which most responsible parties would happily pay in exchange for certainty. Regulators know that the market risk premium for environmental liabilities can be high due to high levels of uncertainty about the amount and timing of the required cash outflows.

**Liquidity Risk** is the risk stemming from the lack of marketability of an investment that cannot be bought or sold quickly enough to prevent or minimize a loss.<sup>87</sup> There is no active market for the transfer of environmental liabilities. As a result, these obligations are highly illiquid. A market participant accepting payment in exchange for the assumption of environmental liabilities would reasonably assume that it would have to pay a premium on estimated value or pay high transactions costs to liquidate its liability position or transfer the obligation, if it is indeed possible to do so at any price. Accordingly, it will demand a payment amount that is higher than its estimated cost of the liability to be assumed.

To illustrate this point, consider two scenarios. In the first scenario, Party B agrees to assume financial responsibility for Party A's decommissioning obligations due in 30 years but receives a risk-free option to transfer the obligations back to Party A at any time prior to settlement at 100 percent of their current estimated cost with no penalty. In the second scenario, Party B receives no similar put option. All other things being equal, the price that the Party B will charge is less in the first scenario than the second scenario because there is less liquidity risk and the value of that liquidity risk is the negotiated price of the put option.

### **Discounting**

Discounting is the process of determining the present value of future cash outflows, either in the form of a lump sum payment or a stream of cash outflows, which may be either constant or variable. Discounting requires three basic inputs—the amount of expected future cash outflows, the time

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<sup>87</sup> See Investopedia definition at <http://www.investopedia.com/terms/l/liquidityrisk.asp>.

period over which these cash outflows are expected to occur, and an interest rate, or discount rate.

Under U.S. GAAP, the discount rate used to estimate the fair value of decommissioning liabilities is the reporting entity's credit adjusted risk free rate after taking into consideration the effects of all terms, collateral, and existing guarantees that would affect the amount required to settle the liability.<sup>88</sup> A credit adjusted risk free rate includes three subcomponents:

- The estimated *real* risk free rate
- The estimated rate of inflation
- The estimated credit risk

**Risk Free Rate.** The real risk free rate is the theoretical rate of return of an investment with absolutely zero default risk and no premium to offset the effect of inflation. The nominal risk free rate is the real risk free rate plus the inflation rate premium.

In the United States, the Treasury Bond rate is usually considered to be the appropriate indicator of the nominal risk free rate and the Treasury Inflation Protected Security (TIPS) rate is usually chosen as the real risk free rate. When choosing an indicative real risk free rate, care must be given to choosing a risk free security of the same maturity and duration of the obligation to be discounted that has no currency or reinvestment rate risk. For example, in the United States if an E&P company had a lump sum ARO due in 30 years, the 30 year zero coupon TIPS rate would be used as an indicator of the real risk free rate as it has no reinvestment rate risk (as Treasury Bonds do) or currency risk.<sup>89</sup>

**Inflation.** The estimated rate of inflation is the expected loss in the purchasing power of money over the discount period expressed as an annual percentage. Assumptions about cash outflows and discount rates should be internally consistent with respect to inflation. For example, nominal cash outflows, which include the effect of inflation, should be discounted at a

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<sup>88</sup> "An entity shall discount expected cash outflows 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). In determining the adjustment for the effect of its credit standing, an entity should consider the effects of all terms, collateral, and existing guarantees on the fair value of the liability. ASC 410-20-55-15.

<sup>89</sup> See <http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=realyield>



rate that includes the effect of inflation. The nominal risk-free interest rate includes the effect of inflation. Real cash outflows, which exclude the effect of inflation, should be discounted at a rate that excludes the effect of inflation.<sup>90</sup>

**Credit Risk.** Credit risk premium, or default premium, is the premium charged to compensate a creditor for the risk of loss of principal or loss of a financial reward stemming from a debtor's failure to repay a loan or otherwise meet a contractual obligation.<sup>91</sup>

Few issues in accounting generate the kind of gut-level reaction that this issue seems to provoke. The principal arguments against incorporating credit risk in accounting estimates of liabilities are that doing so can mask impending bankruptcy for an extended period by depressing the value of recorded liabilities and when actual bankruptcy intervenes the liability may be marked down even to zero on an accounting basis if it, in fact, becomes worthless in the marketplace.

To these arguments, comes this response from the accounting standards board:

Some argue that incorporating credit standing produces counterintuitive reporting. They observe that a decrease in an entity's credit standing would, if incorporated in measurement, produce a decrease in the recorded liability. The offsetting credit to this debit would be a gain. The entity would appear to be profiting from its deteriorating financial condition. On the other hand, an increase in an entity's credit standing would produce an increase in the recorded liability. The entity would appear to be worse off as a result of the improvement. Those results are certainly unfamiliar, but are they really counterintuitive? A balance sheet is composed of three classes of elements—the entity's economic resources (assets), claims against those resources held by non-owners (liabilities) and the residual claims of owners (equity). In a corporation, the value of owners' residual claims cannot decline below zero; a shareholder cannot be compelled to contribute additional assets. When an entity's credit standing changes, the relative values of claims against the assets change. The residual

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<sup>90</sup> ASC 820-10-55-6(d).

<sup>91</sup> See definition of "default premium" at Investopedia at <http://www.investopedia.com/terms/d/defaultpremium.asp>.

interest—the stockholders’ equity—can approach, but cannot go below, zero. The value of creditors’ claims can approach, but probably can never reach, default risk free. Traditional financial statements have ignored those economic and legal truisms, so any measurement more consistent with real world relationships will necessarily be unfamiliar.<sup>92</sup>

FASB’s official position on incorporating credit risk in the fair value measurement of liabilities, including AROs, is based on the Statement of Financial Accounting Concepts No. 7.<sup>93</sup> According to FASB:

The most relevant measure of a liability always reflects the credit standing of the entity obligated to pay. Those who hold the entity’s obligations as assets incorporate the entity’s credit standing in determining the prices they are willing to pay. When an entity incurs a liability in exchange for cash, the role of its credit standing is easy to observe. An entity with a strong credit standing will receive more cash, relative to a fixed promise to pay, than an entity with a weak credit standing.

The effect of an entity’s credit standing on the fair value of particular liabilities depends on the ability of the entity to pay and on liability provisions that protect holders. Liabilities that are guaranteed by governmental bodies (for example, many bank deposit liabilities in the United States) may pose little risk of default to the holder. Other liabilities may include sinking-fund requirements or significant collateral. All of those aspects must be considered in estimating the extent to which the entity’s credit standing affects the fair value of its liabilities.

Both U.S. GAAP and IFRS call for consideration of the risks specific to the liability when determining the appropriate discount rate.<sup>94</sup> IFRS provides that the discount rate should include only those “risks specific to the liability”.<sup>95</sup> U.S. GAAP provides that estimated credit risk should take

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<sup>92</sup> *Understanding the Issues*: “Credit Standing and Liability Measurement,” by Michael Crooch, FASB Member, and Wayne S. Upton, FASB Senior Project Manager.

<sup>93</sup> See paragraphs 78-88.

<sup>94</sup> IFRS instructs the debtor to consider only those risks specific to the liability.

<sup>95</sup> IAS 37 ¶ IN6 and ¶ 47.

into consideration “the effects of all terms, collateral, and existing guarantees that would affect the amount required to settle the liability”.<sup>96</sup>

In determining the adjustment for the effect of its credit standing, an E&P company should consider “the effects of all terms, collateral, and existing guarantees on the fair value of the liability.”<sup>97</sup> Our research shows that E&P companies frequently estimate the fair value of AROs using a credit risk adjustment based on their incremental unsecured borrowing rate above a risk free rate (credit spread) on debt of similar maturity. For example, if the interest rate on a 30-year U.S. Treasury is 2.5 percent and the interest rate on the reporting entity’s 30-year unsecured bonds is 6.5 percent, the credit spread is 4.0 percent.

Use of the entity’s credit spread in estimating the fair value of environmental liabilities implicitly assumes that the “terms, collateral, and existing guarantees” applicable to a company’s unsecured corporate bonds are the same as those applicable to its environmental liabilities. However, this assumption is not valid.

The following example illustrates how default risks specific to environmental liabilities are quite different from the standard reference point of a long-term unsecured corporate bond.

Assume that the U.S. government holds a 30-year corporate unsecured zero coupon debenture<sup>98</sup> issued by an E&P company and the same company has an ARO arising under federal law that is expected to be settled in 30 years. What are the comparative risks of default from the perspective of the holder specific to each of these two different obligations and how do these

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<sup>96</sup> “An entity shall discount expected cash outflows 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). In determining the adjustment for the effect of its credit standing, an entity should consider the effects of all terms, collateral, and existing guarantees on the fair value of the liability.” ASC 410-20-55-15.

<sup>97</sup> *Id.*

<sup>98</sup> A debenture is a type of debt instrument that is not secured by physical assets or collateral. Debentures are backed only by the general creditworthiness and reputation of the issuer. See <http://www.investopedia.com/terms/d/debenture.asp#ixzz3cX0wYeX6>.

risks affect the appropriate credit risk adjustment to the discount rate used to value them?<sup>99</sup>

**Table 2. Comparison of Default Risks for Corporate Debenture and AROs**

<b>Terms</b>	<b>Corporate Debenture</b>	<b>Asset Retirement Obligation</b>
<b>Principal amount</b>	Fixed amount	Indeterminate amount
<b>Due date</b>	Fixed date	Indeterminate due date
<b>Interest rate</b>	Fixed or adjustable	No interest
<b>Collateral</b>	None	Secured by related asset
<b>Other security</b>	None	Regulatory financial assurance
<b>Tax effects</b>	Principal payments not tax deductible	Principal payments are tax deductible
<b>Priority in Bankruptcy</b>	Lowest priority	Possibly highest priority
<b>Obligors</b>	Issuer only	Other jointly and severally liable parties

With respect to the ARO, there are several terms and conditions that protect the holder (the U.S. government) against default by the debtor. Examples of such terms and conditions are summarized in Table 2 and described more fully below.

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<sup>99</sup>The terms and conditions of a bond are usually set forth in a bond's indenture. A bond indenture is a legal and binding contract between a bond issuer and the bondholders, and it specifies all of the important terms and conditions of a bond such as its principal amount, its maturity date, the timing of interest payments, the rate of interest, whether the bond may be called by the issuer or put back to the issuer by the holder and if so, upon what terms and conditions. Other critical terms and conditions include covenants made by the issuer.

- *Due Date*—AROs have an indeterminate due date that is subject to acceleration due to unilateral government action. As observed by S&P with respect to AROs:

Uncertainties inherent in their estimation include ... The timing of asset retirement, which is subject to assumptions that can change materially. For example, in extractive projects, future price expectations for hydrocarbon or minerals affect the economic life of the assets. For power generators, asset-retirement timing depends notably on local regulatory decisions. Their impact might be favorable (i.e., in the case of an operating license extension) or unfavorable (i.e., in the case of an early mandated closure).<sup>100</sup>

The government's ability to accelerate maturity of AROs through discretionary enforcement reduces its default risk.

- *Interest Rate*—AROs do not carry interest. Accordingly, there is no risk of default on accrued but unpaid interest on the debt as would be the case with a corporate bond. Therefore, the risk of default is lower.

- *Collateral*—The related asset secures the ARO. If the value of an oil and gas lease exceeds the value of the related decommissioning obligations, as can always be reasonably assumed at the time the AROs are incurred, the obligations are fully secured. The lease can be sold to a third party who will then assume the obligations. In this case the holder of the ARO (the government) may now have the security of the new owner, the prior owner and the property and equipment (see "Strict and Joint and Several Liability" below).

In addition, the ARO may be effectively cross-collateralized by other assets of the debtor, such as the privilege to operate on other government property as was seen immediately following the BP Oil Spill when the U.S. government effectively threatened to revoke BP's license to do business in the United States until it committed to put \$20B into a trust fund to pay for damages. Finally, at the end of the asset's useful life, there may still be significant salvage value that can be used to offset asset retirement costs.

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<sup>100</sup> Standard & Poor's Encyclopedia of Analytical Adjustments for Corporate Entities.

- *Other Forms of Security*—Many of the regulatory schemes under which AROs arise require the debtor to provide financial assurance in the form of trust funds, surety bonds, letters of credit, insurance, corporate guarantees, or some combination thereof.<sup>101</sup> In some cases, debtors may establish financial assurance based on an unsecured financial test (sometimes called “self-bonding”); however, these tests are specifically designed to ensure that the debtor poses an acceptably small default risk.<sup>102</sup>

- *Tax Effects*—Asset retirement costs are tax deductible. Thus, tax savings, which are not considered in the estimated cash outflows used to estimate the ARO, should be deducted from the principal amount of the obligation when calculating the amount of the debt. Because the principal amount of the debt is smaller relative to the debtor’s assets, default risk is reduced.

- *Priority in Bankruptcy*—Pursuant to Section 507 of the Bankruptcy Code, administrative expenses allowed under Section 503(b) of the Code are entitled to priority.<sup>103</sup> Section 503(b) includes, in relevant part, “the actual, necessary costs and expenses of preserving the estate, including wages, salaries, or commissions for services rendered after commencement of the case.”<sup>104</sup> In the context of environmental claims, the meaning of “preserving the estate” under Section 503 of the Bankruptcy Code has been expanded to encompass protection of the environment and public health.

Bankruptcy courts in oil and gas cases have held that post-petition costs to perform retirement activities necessary to protect the environment and public health, such as decommissioning, plugging and abandoning oil and gas wells and preparing an offshore oil platform for decommissioning are

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<sup>101</sup> See e.g., Railroad Commission of Texas Rule § 3.78 (Fees and Financial Security Requirements), 16 Tex. Admin. Code § 3.78.

<sup>102</sup> Currently, approximately 90 percent of OCS decommissioning obligations are self-insured meaning that leases do not require an additional bond or supplemental financial assurance because at least one record title owner has been determined to meet these criteria. Notice of proposed rulemaking to update regulations and program oversight for Outer Continental Shelf (OCS) financial assurance requirements, 70 Fed. Reg. 49027, 49030 (August 19, 2014).

<sup>103</sup> 11 U.S.C. § 507.

<sup>104</sup> 11 U.S.C. § 503(b)(1)(A).

administrative expenses.<sup>105</sup> Administrative "expenses" may also include funds that will have to be expended in the future to correct existing environmental violations and comply with asset retirement obligations.<sup>106</sup> In some cases, such as oil and gas leases, settlement of mature AROs related to non-economic wells may be necessary to preserve the debtor's contractual right to continue production from economically viable wells. Priority status in bankruptcy reduces the government's default risk.

- *Joint and Several Liability*—Strict liability and joint and several liability are hallmarks of environmental law. AROs that arise under environmental protection laws may be subject to strict liability and joint and several liability. For example, under regulations governing decommissioning of offshore wells in the Gulf of Mexico, lessees and owners of operating rights are jointly and severally responsible for meeting decommissioning obligations for facilities on leases, including the obligations related to lease-term pipelines, as the obligations accrue and until each obligation is met.<sup>107</sup>

The ability of a creditor to pursue predecessors and successors in interest if the debtor cannot satisfy its obligation reduces default risk. In effect, other entities have guaranteed the debtor's obligation.<sup>108</sup> Parties that pay decommissioning costs may be subrogated to the economic rights of the United States in claims against other jointly and severally liable parties.<sup>109</sup>

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<sup>105</sup>See *In re American Coastal Energy Inc.*, 399 B.R. 805 (Bankr. S.D. Texas 2009) and *In re ATP Oil & Gas Corporation*, Case No. 12-36187, (Bankr. S.D. Tex. 2014).

<sup>106</sup>*In re Appalachian Fuels, LLC, et al.*, Case No. 09-10343 (Bankr. E.D. Kentucky 2014).

<sup>107</sup> 30 CFR § 250.1701.

<sup>108</sup>See *In re ATP Oil & Gas Corporation*, Case No. 12-36187, (Bankr. S.D. Tex. 2013) (finding that "Anadarko E & P Onshore LLC is a predecessor-in-interest to ATP with respect to a portion of the Gomez Properties. As a predecessor-in-interest, Anadarko has potential liability for all or a portion of the decommissioning costs. ATP's abandonment of the property prior to decommissioning may force Anadarko to absorb all or a portion of the more than \$100,000,000 cost.").

<sup>109</sup> See *In re Tri-Union Development Corp.*, 314 B.R. 611 (Bankr. S.D. Tex. 2004).

- *Direct and Derivative Liability of Owners*—Under statutory and case law governing environmental protection, a corporate parent that actively participates in, and exercises control over, the operations of its subsidiary's assets and asset retirement activities might be held directly liable for its subsidiary's AROs.<sup>110</sup> Moreover, courts have shown a greater willingness in environmental protection cases to “pierce the corporate veil”—overriding an accepted principle of corporate law that shareholders are not liable for the actions of the corporation—when the corporate form would otherwise be misused to accomplish certain wrongful purposes, most notably fraud, on the shareholders' behalf.<sup>111</sup>

Such arguments may be particularly persuasive in instances where the debtor has paid dividends or engaged in stock buy-backs at a time when it could not meet its asset retirement obligations. The possibility that the value of owners' residual claims could decline below zero reduces the debtor's ARO default risk.

- *Non-abandonment*—Under section 554(a) of the Bankruptcy Code, after notice and a hearing, the trustee may abandon any property of the estate that is burdensome to the estate or that is of inconsequential value and benefit to the estate.<sup>112</sup> However, the U.S. Supreme Court has ruled that a trustee in bankruptcy may not allow abandonment in derogation of state and local law “without formulating conditions that will adequately protect the public's health and safety.”<sup>113</sup> Debtor's cannot abandon assets and thereby avoid AROs associated with those assets absent conditions that will adequately protect the public's health and safety, such as the existence of a

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<sup>110</sup>See *In re Appalachian Fuels, LLC, et al.*, Case No. 09-10343 (Bankr. E.D. Kentucky 2014).

<sup>111</sup>See *U.S. v. Bestfoods*, 524 U.S. 51, at 63-64 (stating that when (but only when) the corporate veil may be pierced, may a parent corporation be charged with derivative CERCLA liability for its subsidiary's actions); and n.9 (stating that veil-piercing can subject a parent corporation to derivative liability as both owner and operator).

<sup>112</sup>11 U.S.C. § 544(a).

<sup>113</sup>*Midlantic Nat'l. Bank v. New Jersey Dept. of Environmental Protection*, 474 U.S. 494, 507 (1986) (holding that contaminated property could not be abandoned prior to its decontamination, as abandonment in a contaminated state would be in contravention of a state statute or regulation that is reasonably designed to protect the public health or safety from identified hazards.)



jointly and severally liable predecessor-in-interest or the assumption of liability by a buyer.<sup>114</sup>

- *Extraordinary Powers of Governments*—Governments face many challenges in promulgating appropriate financial assurance requirements, including the need to balance environmental and economic objectives.<sup>115</sup> However, governments have extraordinary resources at their disposal to enforce environmental obligations. If governments fail to ensure full settlement of environmental debts, it is in part due to their failure to fully exercise their power to require adequate financial assurance or exercise their enforcement authority, or both.

Taking fully into account the factors affecting credit risk on environmental liabilities may reduce credit risk essentially to zero. As described below, this is consistent with the positions of the IASB, the SEC, environmental regulatory agencies, and bankruptcy courts.

- *SEC Guidance*—Under U.S. GAAP, estimated future cash outflows for ERLs may be discounted to reflect the time value of money only if the amount and timing of cash payments are fixed or reliably determinable.<sup>116</sup>

The measurement of the remediation liability should not have been discounted at any point during the period under discussion because the amount of the obligation and the amount and timing of cash payments were not fixed or reliably determinable.<sup>117</sup>

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<sup>114</sup>See *In re ATP Oil & Gas Corporation*, Case No. 12-36187, (Bankr. S.D. Tex. 2013) (allowing debtor to abandon offshore oil and gas leases and avoid related AROs with consent of the United States government which could look to predecessor-in-interest for settlement of the ARO).

<sup>115</sup>See e.g., Advance notice of proposed rulemaking on Risk Management, Financial Assurance and Loss Prevention by the Bureau of Ocean Energy Management, 79 Fed. Reg. 160 at 49027, (August 19, 2014) (“Due to increasingly complex business, functional, organizational and financial issues and vast differences in costs associated with expanded and varied offshore activities, BOEM has recognized the need to develop a comprehensive program to assist in identifying, prioritizing, and managing the risks associated with industry activities on the OCS.”).

<sup>116</sup>ASC 410-30-35-12.

<sup>117</sup>ASC 410-30-55-51.

If an ERL meets the conditions for recognition on a discounted basis in the paragraph above, the SEC has stated that the rate used to discount the estimated future cash outflows should be “the rate that will produce an amount at which the liability could be settled in an arm's-length transaction with a third party and should not exceed the interest rate on monetary assets that are essentially risk free and have maturities comparable to that of the liability.”<sup>118</sup>

In practice, estimated future cash outflows for ERLs are rarely discounted under U.S. GAAP, but if discounted, they are to be discounted at a rate equal to or less than the estimated risk free rate without adjustment for the debtor's estimated credit risk.

• *IASB Guidance*—Under the provisions of IAS 37, estimated future cash outflows for AROs and ERLs are discounted, “where the effect of the time value of money is material, using a pre-tax discount rate (or rates) that reflect(s) current market assessments of the time value of money and those ‘risks specific to the liability’ that have not been reflected in the best estimate of the expenditure.”<sup>119</sup> The IASB has specifically considered whether the ‘risks specific to the liability’ include an adjustment for the entity's own credit risk, finding that—

- There is diversity of practice under IFRS regarding whether ‘risks specific to the liability’ include credit risk.
- Some reporting entities believe that credit risk is a ‘risk specific to the liability’ and either the cash outflows or the discount rate should be adjusted for this risk, and these entities find it practically simpler to adjust the cash outflows for risk, instead of the discount rate.
- The predominant view is that credit risk is not a ‘risk specific to the liability’, and therefore the measurement of (non-financial) liabilities should not include an adjustment for credit risk. Proponents of this view think that non-financial liabilities are quite different to financial liabilities, so including credit risk in the measurement of the latter has little bearing on the same treatment for non-financial liabilities.

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<sup>118</sup>SAB Topic 5.Y, Accounting and Disclosures Relating to Loss Contingencies, ASC 450-20-S99-1.

<sup>119</sup> IAS 37 ¶ IN6 and ¶ 47

- The issue is both more significant and more urgent for oil and gas entities, for which a credit risk adjustment can increase ARO estimates by 100% to 125%.<sup>120</sup>

The IASB ultimately determined that objections were not persuasive to overturn the predominant practice to exclude the debtor's own credit risk from 'risks specific to the liability' in IAS 37 paragraph 47.

- *Financial Assurance*—Environmental regulatory agencies do not consider the regulated entity's own credit risk in determining the amounts required for financial assurance to demonstrate that adequate funds will be readily available to settle environmental AROs.<sup>121</sup>

- *Bankruptcy Courts*—Bankruptcy courts have also addressed the issue of the debtor's own credit risk. Over time, the debtor's credit standing may vary up or down. In the most extreme case, when a debtor faces liquidation, the risk of default on unsecured obligations may rise to 100 percent and market valuations may fall to zero. However, bankruptcy courts do not consider the debtor's current credit standing and its effect on the market valuations of its tradable debt securities:

‘If holders of claims are fully informed of the debtor’s affairs and the asset values are less than the face amount of the claims, they would never value their claims at more than the value of the assets. Likewise, the fully informed debtor would never be willing to pay claimants more than claimants would be willing to take. Thus, the value of the claims would never exceed the value of the assets and insolvency could never occur.’ We agree with this reasoning. If [defendant’s] argument were correct, insolvency could never

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<sup>120</sup>See IFRS Interpretations Committee Meeting Staff Paper on “IAS 37 Provisions, Contingent Liabilities and Contingent Assets - discount rate,” (November 2010) and IFRS Interpretations Committee meeting – 10-11 (March 2011) at [http://www.iasplus.com/en/meeting-notes/ifrs-ic/2011/agenda\\_ifric\\_1103/agenda1775](http://www.iasplus.com/en/meeting-notes/ifrs-ic/2011/agenda_ifric_1103/agenda1775).

<sup>121</sup> See e.g., U.S. Environmental Protection Agency Final Rule on Financial Assurance Mechanisms for Local Government Owners and Operators of Municipal Solid Waste Landfill Facilities 61 Fed. Reg. 60328 (Nov. 27, 1996) (authorizing State Directors to allow discounting at an essentially risk free rate of interest for closure, post- closure care, and corrective action cost estimates under certain conditions).

occur, which is an absurd result. Therefore, we conclude for purposes of determining whether a debtor is insolvent under section 547, the liabilities of the debtor must be valued at face value.<sup>122</sup>

In *In re Tronox Inc.*,<sup>123</sup> the court specifically considered the question of whether the debtor's own credit risk should be included in the discount rate used to calculate the present value of the future response costs of environmental remediation at the debtor's sites and concluded that it should not:

The final step in valuing the environmental liabilities as of the date of the IPO is to reduce the future costs to present value. Prof. Newton used a rate of 2.5% as a risk-free rate, based on the yields of U.S. treasury obligations and high-grade corporate bonds. Mr. Shifrin's colleague, Mr. White, advocated the use of a 5% discount rate on the ground there should be an element of risk built into the rate. There is no question that a risk element is built into an analysis of income to be received in the future, on the ground that the expected income may never be received. However, a valuation of environmental and similar liabilities does not take into account the possibility that the debtor may not be able to pay the obligation; it attempts to arrive at a "fair valuation" of the liability regardless of ability to pay. Accordingly, Newton's discount rate is appropriate, and Defendants 5% rate results in an unduly small present value.<sup>124</sup>

U.S. GAAP might at first appear to be in conflict with other authorities on whether credit risk should be included in the discount rate used to estimate environmental liabilities. However, U.S. GAAP and the other authorities can be reconciled in their application by concluding that the appropriate credit risk adjustment on environmental liabilities is essentially zero for the reasons described above.

In summary, bankruptcy courts, the SEC, the IASB, environmental regulators and U.S. GAAP, when properly applied to consider the effects of all terms, collateral, and existing guarantees on the fair value of the liability,

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<sup>122</sup> *In re ORBCOMM Global, L.P.*, 2003 WL 21362192, at \*3 (citation omitted).

<sup>123</sup> 503 B.R. 239 (S.D. New York 2013).

<sup>124</sup> *Id.*

all reach the same conclusion: estimated credit risk should not be included in the discount rate used to estimate environmental liabilities. Instead, environmental liabilities should be discounted at a rate no higher than the risk free rate.

### **Truth in Accounting**

Accounting estimates may fail to accurately reflect the fair economic value of environmental liabilities. This failure may be due to shortcomings in the applicable accounting standard or in the application of the standard.

### **Incompleteness**

An entity's financial statements may not reflect all of its environmental liabilities, and a debtor's schedules of liabilities may not reflect all of the environmental liabilities recorded in its financial statements.<sup>125</sup> Companies are supposed to record environmental obligations as a liability in their financial statements when certain criteria are met (i.e., when liability is deemed to be probable and reasonably estimable). In addition, to comply with GAAP and U.S. securities laws, companies may be required to disclose certain quantitative and non-quantitative information about environmental liabilities and contingencies. But companies, even public companies with audited financial statements, don't always do what they are supposed to do.

Moreover, environmental laws afford companies a great deal of discretion on whether to look for and acknowledge the existence of unasserted environmental liabilities, especially those impairing its own assets. Charged with preserving corporate assets, management may conclude it is best to let sleeping dogs lie.<sup>126</sup>

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<sup>125</sup>See e.g., *Magnum Hunter Resources Corporation v. Hall, Kistler & Company, LLP*, Civil Action No. 12-70-KSF. (U.S. Distr. Court, E.D. Kentucky 2013) (Following Magnum Hunter's \$124 million acquisition of NGAS, a publicly traded oil and gas exploration and production company, Magnum Hunter sued NGAS's auditor for issuing an unqualified opinion that NGAS' financial statements were in conformity with generally accepted accounting principles when in fact NGAS had failed to record asset retirement obligations associated with the retirement of oil and gas wells in the amount of \$6,677,688 and mine reclamation costs in the amount of \$2,000,000.).

<sup>126</sup>The criteria for disclosing or booking environmental liabilities often allow for significant management discretion. For a review of management incentives, disincentives and policy options, see *Corporate Environmental Disclosure Policy*,

### Measurement Principle

An entity's reported estimates may not accurately reflect the fair value of its environmental liabilities because some or all of the individual estimates were determined using a measurement principle other than fair value measurement. Estimates based on the low end of the range of possible outcomes, for example, do not purport to reflect fair value. Thus, the proper application of accounting standards will not necessarily result in estimates that reflect "truth".

As stated by Standard & Poor's:

[T]he issuer's financial statements (historical or projected) are not necessarily viewed as "Truth"—i.e., the optimal or ultimate depiction of the economic reality of the issuer's financial performance and position. The financial analysis process necessitates making certain analytical adjustments to financial statements, to arrive at measures [S&P believes] are more reflective of creditors' risks, rights, and benefits; enable more meaningful peer and period-over-period comparisons; and facilitate more robust financial forecasts.

Adjusting financials long has been [S&P's] practice, and is an integral part of the rating process. Although such adjustments revise certain amounts reported by issuers under applicable Generally Accepted Accounting Principles (GAAP), that does not imply that [S&P challenges] the application of GAAP by the issuer, the adequacy of its audit or financial reporting process, or the appropriateness of GAAP accounting to fairly depict the issuer's financial position and results for other purposes.

Rather, it reflects a fundamental difference between accounting and analysis. The accountant necessarily must find one number to use in presenting financial data. The analyst, by definition, picks apart the numbers. Good analysis looks at multiple perspectives—and utilizes adjustments as an analytical technique to depict a

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C. Gregory Rogers, ABA Environment, Energy, and Resources Law Summit: 17<sup>th</sup> Section Fall Meeting, September 2009, at <http://www.advancedenvironmental dimensions.com/documents/Corporate%20Environmental%20Disclosure%20Policy.pdf>.

situation differently for a specific purpose or to gain another vantage point.<sup>127</sup>

Even fair value estimates may fall short of the “truth” due to wide “diversity in practice” in the manner in which different companies apply the principles of fair value measurement.

### **Diversity in Practice**

“Diversity in practice” is the term used by an accounting standards board to indicate that companies are applying its standards in significantly different ways. For example, the IASB has identified diversity in practice regarding consideration of credit risk in discount rates.<sup>128</sup> Our research shows that there is also wide diversity in practice under U.S. GAAP on this issue, with a majority of companies including credit risk in the interest rates used to discount AROs and a minority of companies using a risk free rate. Our consulting experience also points to wide diversity in practice in estimating key inputs into fair value measurements, including expected cash outflows, market risk premium and expected settlement dates.

There is also the matter of cost-effectiveness. It is a basic accounting principle that financial reporting should not entail “undue cost and effort”—in other words the cost to preparers should not exceed the value to financial statement users. The level of effort required to produce reliable fair value ARO estimates, for example, can be significant, especially for companies with many thousands of assets. Accounting standards appropriately offer some leeway for process simplification, but this opens the door to more diversity in practice.<sup>129</sup>

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<sup>127</sup> Standard & Poor’s Encyclopedia of Analytical Adjustments for Corporate Entities.

<sup>128</sup> See IFRS Interpretations Committee Meeting Staff Paper on “IAS 37 Provisions, Contingent Liabilities and Contingent Assets - discount rate,” (November 2010) and IFRS Interpretations Committee meeting—10-11 (March 2011) at [http://www.iasplus.com/en/meeting-notes/ifrs-ic/2011/agenda\\_ifric\\_1103/agenda1775](http://www.iasplus.com/en/meeting-notes/ifrs-ic/2011/agenda_ifric_1103/agenda1775).

<sup>129</sup> See e.g., ASC 410-20-55-11 (“If 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 Subtopic does not preclude the use of estimates and computational shortcuts that are consistent with the fair

We believe that fair value measurement offers an appropriate methodology for estimating the true economic value of environmental liabilities. However, because small differences in the application of fair value measurement principles can result in widely differing results, one cannot reasonably assume that reported fair value estimates, even when audited by a reputable public accounting firm, in fact fairly present fair value.

### **Subjectivity**

Because there are no active markets for identical or similar liabilities, environmental liability estimates, including ARO fair value estimates, must largely be developed using unobservable inputs. Accordingly, environmental liability estimates involve high degrees of subjectivity and judgment based on management's own assumptions and biases.

In its description of analytical adjustments to corporate ARO estimates, Standard & Poor's offers the following explanation of uncertainty in the estimation of AROs:

ARO measurement involves a high degree of subjectivity and measurement imprecision. Our starting point is the reported liability amount, which may be adjusted for anticipated reimbursements, asset salvage value, and tax reductions, further adjusted for any assumptions we view as unrealistic.

Most AROs involve obligations to incur costs that may extend well into the future. Uncertainties inherent in their estimation include:

- The amount of the ultimate cost of asset retirement, which will depend on the relevant country's laws and asset-specific environmental regulations at retirement; the condition of the markets for the specific assets' retirement services; possible economies of scale for the operator; and whether the activities ultimately are performed by the operator or by a third party.
- The timing of asset retirement, which is subject to assumptions that can change materially. For example, in extractive projects, future price expectations for hydrocarbon or minerals affect the economic life of the assets. For power

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value measurement objective when computing an aggregate asset retirement obligation for assets that are components of a larger group of assets.”)



generators, asset-retirement timing depends notably on local regulatory decisions. Their impact might be favorable (i.e., in the case of an operating license extension) or unfavorable (i.e., in the case of an early mandated closure).

- The discount rate to be used in the present value calculation. U.S. GAAP requires the use of an entity-specific discount rate. Hence, the stronger the entity's credit, the lower the discount rate—and the higher the liability. Similarly, the periodic accretion rate is lower for stronger credits, and higher for weaker credits. If nothing else, this hinders comparability across companies using U.S. GAAP, as well as to IFRS-reporting companies, which use market-related rates adjusted to risk-specific factors attributable to the liability.<sup>130</sup>

### Valuation of Environmental Liabilities in Bankruptcy

#### Fair Valuation

Valuation of liabilities is of particular importance in proceedings to determine the debtor's solvency. For entities other than partnerships and municipalities, the Bankruptcy Code defines "insolvent" as:

a financial condition such that the sum of such entity's debts is greater than all of such entity's property, at a fair valuation, exclusive of (i) property transferred, concealed, or removed with intent to hinder, delay, or defraud such entity's creditors; and (ii) property that may be exempted from property of the estate under section 522 of [the Bankruptcy Code].<sup>131</sup>

The Bankruptcy Code does not define "fair valuation," but courts have construed the term to refer to the fair market value of the debtor's assets and liabilities within a reasonable time of the transfer.<sup>132</sup>

[F]air value does not mean the amount the property would bring in the worst circumstances or in the best... For example, a forced sale

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<sup>130</sup> Standard & Poor's Encyclopedia of Analytical Adjustments for Corporate Entities.

<sup>131</sup> 11 U.S.C.A. § 101(32)(A).

<sup>132</sup> *In re Ohio Corrugating Co.*, 91 B.R. 430 (Bankr. N.D. Ohio 1988), citing *Briden v. Foley*, 776 F.2d 379, 382 (1st Cir.1985).

price is not fair value though it may be used as evidence on the question of fair value... The general idea of fair value is the amount of money the debtor could raise from its property in a short period of time, but not so short as to approximate a forced sale, if the debtor operated as a reasonably prudent and diligent businessman with his interests in mind, especially a proper concern for the payment of his debts.<sup>133</sup>

### Contingencies

Bankruptcy courts value contingent liabilities by discounting the amount of potential liability by the likelihood that actual liability will (or will not) occur.

[T]o avoid creating the unsettling impression that contingent liabilities must for purposes of determining solvency be treated as definite liabilities even though the contingency has not occurred ... it is necessary to discount [a contingent liability] by the probability that the contingency will occur and the liability become real.<sup>134</sup>

### Asset Retirement Obligations

In certain industries, such as surface mining and nuclear power generation, where state or federal law require companies to obtain a permit before commencing operations, the permittee may be required to provide financial assurance that it can satisfy the amount of pre-determined estimated costs to comply with asset retirement obligations, such as decommissioning, reclamation, cleanup and restoration requirements.<sup>135</sup> The financial assurance may be in the form of trust funds, surety bonds, letters of credit, insurance, corporate guarantees, or some combination thereof.

The face amount of these financial assurance obligations is unlikely to match the debtor's accounting estimates, if for no other reason than because financial assurance estimates are generally not discounted and accounting

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<sup>133</sup>*In re Joe Flynn Rare Coins, Inc.*, 81 B.R. 1009 (Bankr.D.Kan.1988).

<sup>134</sup>*In re Xonics Photochemical, Inc.*, 841 F.2d 198, 200-01 (7th Cir. 1988).

<sup>135</sup>In other cases, such as onshore and offshore oil and gas drilling, laws require companies seeking drilling licenses to demonstrate some form of financial responsibility, but do not require a pre-commencement estimate of closure costs.

estimates for AROs are. When given the choice between a debtor's accounting estimates and a government-approved financial assurance amount, bankruptcy courts have found the latter to be more credible evidence of fair value:

Finally, the bankruptcy court held that the Debtor's [coal mine] reclamation liability, one of the Debtor's most significant liabilities, had a fair value in excess of \$1,000,000. The court again refused to apply the Debtor's book value of \$432,000, stating that "[t]he most credible proof is that the liability is in the amounts required by the governmental entities for the debtor's bonds."<sup>136</sup>

Even when estimated and approved in advance by the government, environmental liability estimates may nonetheless warrant careful review due to changes in conditions or applicable laws and legal interpretations.

#### **Fair Value Measurement**

The fair value of a liability for accounting purposes—i.e., “the price that would be paid to transfer a liability in an orderly transaction between market participants at the measurement date”—is essentially identical to judicial interpretations of “fair valuation” in bankruptcy. Accordingly, we believe that fair value measurement provides an appropriate methodology—if not the best available methodology—for determining the fair valuation of environmental liabilities in bankruptcy.

Although fair value measurement is currently applied only to AROs under U.S. GAAP, we believe the methodology can be applied equally well to ERLs and environmental loss contingencies. Uncertainty about the existence of liability, performance of conditional obligations, or the entity's allocable share of joint and several liability does not prevent the determination of a reasonable estimate of fair value because that uncertainty is factored into the measurement through assignment of probabilities to cash outflows in the same way bankruptcy courts value contingencies.<sup>137</sup>

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<sup>136</sup> *In re Sunset Sales, Inc.*, 220 B.R. 1005 (Bankr. App. Panel 10<sup>th</sup> Cir. 1998).

<sup>137</sup> See ASC 410-20-25-8a (“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 shall not prevent the determination of a reasonable estimate of fair value.”)

We believe fair value measurement, faithfully applied, offers the most robust available methodology for valuing the inherent uncertainty associated with nearly all environmental liabilities. It starts by determining probability-weighted expected cash outflows, but it does not end there. Probability-weighted expected cash outflows alone do not reflect the market value of the uncertainty in the cash outflows (e.g., fat-tailed distributions with no cost ceiling) nor the liquidity risk that exists because there is no active market for environmental liabilities. The market premium associated with these risks can be significant and should be included in a fair valuation of environmental liabilities. Finally, fair value measurement provides a sound and well-articulated methodology for determining the appropriate interest rate to be used in discounting environmental liabilities—that is, a risk free rate.

For the foregoing reasons, we recommend the use of fair value measurement, as proscribed under U.S. GAAP to determine the fair valuation of all environmental liabilities in bankruptcy. We rush to caution, however, that we do not believe that a debtor's reported fair value accounting estimates warrant significant evidentiary value in bankruptcy for the reasons discussed under "Truth in Accounting."

### **Conclusion**

The objective of this chapter is to explain how accounting principles and practices applicable to environmental liabilities can result in misperceptions of fair value, how these misperceptions can lead to misjudgments in bankruptcy, and how well-informed bankruptcy practitioners can overcome these misperceptions and use them to their advantage.

Common misperceptions about accounting estimates of oil and gas environmental liability include:

- Environmental liabilities arise from litigation in which the debtor disputes liability and (or) damages when in fact most oil and gas environmental liabilities are AROs that arise outside of litigation and are uncontested by the debtor.
- Environmental liabilities bear similar characteristics to the debtor's other liabilities when in fact environmental liabilities are unlike any other type of claim.
- Environmental liability provisions (also called "reserves") represent cash or other assets set aside to resolve environmental liabilities when in fact they reflect only the company's management's estimate of future cash outflows.

- Environmental liability provisions recorded in the debtor's financials reflect all of the debtor's known ERLs and contingencies when in fact they reflect only those matters for which management has determined liability is both "probable and reasonably estimable".
- Environmental liability provisions represent the expected cash outflows required to fully settle, resolve or transfer the company's liability when in fact they often represent only the known minimum cost, an amount below even the low end of the range of possible outcomes.
- All environmental liabilities are contingent when in fact most ERLs and all AROs are non-contingent because the existence of liability is certain.
- Past costs incurred to settle environmental liabilities are indicative of future costs when in fact evolving environmental laws, legal interpretations and enforcement tend to drive settlement costs higher over time.
- Audited fair value estimates of AROs reliably reflect the true economic value of these obligations when in fact they may not for the reasons discussed under "Truth in Accounting."

These misperceptions can lead to misjudgments in bankruptcy, such as:

- Bankruptcy practitioners may assume that environmental liabilities are immaterial when in fact they may be highly material to issues of solvency and plan feasibility if properly valued.
- Bankruptcy practitioners may assume that environmental liabilities have the same priority as general unsecured debts when in fact they may be administrative expense priorities.
- Bankruptcy practitioners may assume that environmental liabilities must be paid from the bankruptcy estate when in fact other responsible parties, such as predecessors-in-interest, successors-in-interest, and affiliated entities may be jointly and severally liable.
- Bankruptcy practitioners may assume that environmental liabilities, and especially AROs, are not important now because they have generally passed through bankruptcy without notice or objection in the past when in fact they have often simply been misunderstood in the past.

To exploit common misperceptions about the nature and magnitude of environmental liabilities and avoid being exploited by them, we recommend the following process for oil and gas bankruptcy practitioners

1. Compare the debtor's schedule of liabilities with its audited financial statements to ensure that all reported environmental liability provisions are listed in the schedule.
2. Perform sufficient environmental due diligence to assess the likelihood of significant unreported environmental liabilities and contingencies.<sup>138</sup>
3. Perform a high level forensic analysis of the debtor's financial disclosures pertaining to the development of its environmental liabilities over time to determine whether reported environmental provisions appear reliable.<sup>139</sup>
4. If reported environmental provisions appear unreliable, inquire about the accounting processes followed to generate these estimates, including the processes for identification, assessment, measurement, and reporting of environmental liabilities.
5. Determine which environmental liabilities have fair value estimates and which do not. Assume that non-fair value estimates do not reflect fair value.
6. With respect to fair value estimates, inquire about the methodologies and inputs used to determine expected cash outflows, market risk premium, discount rates and the discount period.
7. Calculate adjusted estimates based on alternative assumptions about inputs (e.g., use of a risk free rate instead of a credit adjusted rate) and assess the materiality of the adjusted estimates to the issues of solvency and plan feasibility.
8. When environmental liabilities appear to be material to the determination of the current or prior solvency of the debtor or to the feasibility of the proposed plan of reorganization, develop ground-up estimates using the principles of fair value measurement described in this chapter.

By following these steps, oil and gas bankruptcy practitioners can better ensure that environmental liabilities are reliably estimated with the objectives of fairly assessing the value of claims and maximizing the value of the debtor upon emergence from bankruptcy.

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<sup>138</sup>See C. Gregory Rogers, *Environmental Disclosure Due Diligence*, Business Law Today, Volume 16, No. 5, May/June 2007.

<sup>139</sup>See C. Gregory Rogers, *A Board's-Eye View of Environmental Liabilities*, NACD Directorship, Vol. 36 Issue 1, p66 (Feb/Mar 2010); see also [www.era-tos-thenes.com](http://www.era-tos-thenes.com).