

# VIEWPOINTS:

## Applying IFRSs in the Oil and Gas Industry

### CALCULATING DEPLETION—UNITS OF PRODUCTION METHOD

APRIL 2016

## Background

IAS 16 *Property, Plant and Equipment* is the standard that addresses the accounting for property, plant and equipment, including development or production assets (collectively PP&E), and the associated depletion,<sup>1</sup> depreciation and amortization (collectively, DD&A).

IAS 16 does not prescribe a single method of determining DD&A and acknowledges that a variety of depreciation methods can be used to allocate the depreciable amount of an asset on a systematic basis over its useful life. These methods include the straight-line method, the diminishing balance method and the units of production (UoP) method.

This *Viewpoints* focuses on the depletion of upstream assets of an oil and gas company.

This *Viewpoints* has been developed based on the assumption that a Canadian oil and gas company annually prepares a reserves report in accordance with the Society of Petroleum Evaluation Engineers' *Canadian Oil and Gas Evaluation Handbook (COGE Handbook)* as required by National Instrument 51-101 *Standards of Disclosure for Oil and Gas Activities* (NI 51-101) and the report provides information on reserve categories, volumes, and related items (e.g., future development costs).

<sup>1</sup> For the purposes of this *Viewpoints*, the term "depletion" will be used to describe the systematic allocation of the cost of natural resources over their useful life; the term "reserve basis" represents the useful life of an asset.

## Oil and Gas Industry Task Force on IFRSs

International Financial Reporting Standards (IFRSs) create unique challenges for junior oil and gas companies. Financial reporting in the sector is atypical due to significant differences in characteristics between junior oil and gas companies and other types of companies. The Canadian Association of Petroleum Producers (CAPP), the Explorers and Producers Association of Canada (EPAC) and the Chartered Professional Accountants of Canada (CPA Canada) created the Oil and Gas Industry Task Force on IFRSs to share views on IFRS application issues of relevance to junior oil and gas companies. The task force views are provided in a series of papers available through free download. These views are of particular interest to chief financial officers, controllers and auditors.

The views expressed in this series are non-authoritative and have not been formally endorsed by CAPP, EPAC, CPA Canada or the organizations represented by the task force members.

## Issue

How is depletion calculated on the upstream assets of an oil and gas company?

## Viewpoints

### Unit of Production Basis

The UoP method calculates depletion expense as the net cost of PP&E multiplied by the depletion rate. Specifically:

- Costs subject to depletion are the total accumulated PP&E costs to the end of the period, less opening accumulated depletion and impairment, less residual value, plus the relevant future development costs. Refer to the section below entitled “Amounts Subject to UoP Depletion” for more detail.
- Depletion rate is the actual units of production (*not sales*) for the period divided by the total units of production estimated for the total useful life of the asset at the *beginning* of the depletion period.

IFRSs do not prescribe what basis should be used for the UoP calculation. In Canada, the standard definitions for the different bases for determining reserves and values are typically based on the *COGE Handbook* and specified by NI 51-101.

In the experience of the Oil and Gas Industry Task Force on IFRSs and the findings from the January 2013 [CPA Canada Survey of Selected Accounting Policies of Junior Oil and Gas Entities](#), most Canadian junior oil and gas companies apply one of the following two reserve bases to compute depletion:

- total proved reserves
- total proved plus probable reserves.

### Undeveloped reserves

Undeveloped reserves require capital expenditures (usually referred to as estimated “future development costs” or FDCs by independent reserves evaluators and by the Canadian oil and gas industry) to bring those reserves into production.

FDCs generally include all estimated costs incurred to obtain access to reserves and to provide facilities for extracting, treating, gathering and storing the oil and gas from reserves (e.g., drilling, completing, and equipping costs) for those drilling locations to which undeveloped reserves have been assigned by the independent reserves evaluator.

If the undeveloped reserves are included in the reserves for purposes of the depletion calculation, then the FDCs needed to bring the undeveloped reserves on stream should be included in the costs subject to depletion.

As actual development costs are incurred and recognized (i.e., included in the cost basis of PP&E), the corresponding FDCs should be simultaneously reduced (i.e., actual costs incurred are excluded from FDCs) in order to avoid double counting these development costs.

### **Non-producing reserves**

Non-producing reserves may also require FDCs to bring or return them to production.

If non-producing reserves are included in the depletion basis, then the corresponding FDCs should also be included in the costs subject to depletion.

As actual development costs are incurred to bring the non-producing reserves into production, the corresponding FDCs should be simultaneously reduced (i.e., actual costs incurred are excluded from FDCs) in order to avoid double counting these development costs.

### **Current vs. forecast pricing**

Companies subject to NI 51-101 prepare a reserves report that includes forecast pricing and costs. FDCs are based on forecast cost estimates (i.e., undiscounted forecast costs). These costs may be founded on current costs, adjusted for future factors such as inflation.

### **Selecting a Reserve Basis**

The reserves basis (such as total proved reserves or total proved plus probable reserves) used in the UoP calculation is an accounting estimate that represents management's best estimate of the future economic benefits embodied in the asset (i.e., useful life).

The useful life definition in IAS 16 mentions the number of production or similar units expected to be obtained from the asset by an entity. In addition, because the IASB's *Conceptual Framework for Financial Reporting* identifies assets on the basis of probable future economic benefits, the inclusion of probable reserves is generally consistent with this approach.

In the experience of the Oil and Gas Industry Task Force on IFRSs, it is common for Canadian junior oil and gas companies to use total proved plus probable reserves as the basis for the UoP depletion calculation. The January 2013 [CPA Canada Survey of Selected Accounting Policies of Junior Oil and Gas Entities](#) found that 90% of companies sampled used proved plus probable reserves as the basis for the calculation of depletion.

### **Changing a Reserve Basis**

The depreciation method, residual value, and the useful life (including life of reserves) of an asset should be reviewed at least at each financial year end and, if expectations differ from previous estimates, any change(s) should be accounted for as a change in an accounting estimate in accordance with IAS 8.

Under IAS 8, an estimate may need revision if changes occur in the circumstances on which the estimate was based or as a result of new information or more experience. In such cases, a change in the reserve basis for the depletion calculation constitutes a change in accounting estimate under IAS 8. The company's policy of depleting its assets on a UoP method is unchanged; they have only changed their estimate of the useful life.

The effect of such a change is recognized prospectively from the period in which the change is made. Entities that change their reserve basis should ensure that any related changes (such as FDCs to complete any undeveloped assets or access probable reserves) are also incorporated into their depletion calculation.

Appropriate disclosure of the change should be made.

Situations may arise when a change in reserve basis results from a change in accounting policy. The analysis of such a change is outside the scope of this document.

## Amounts Subject to UoP Depletion

The following would comprise the amounts to be subject to the UoP depletion expense for the period:

- The aggregate of the following amounts as at the **beginning of the period**<sup>2</sup> for the relevant category of PP&E:
  - (+) all accumulated PP&E (including associated decommissioning, restoration and similar liabilities)
  - (-) accumulated depletion
  - (-) accumulated impairment
  - (-) estimated residual values
  - (+) estimated FDCs for undeveloped or non-producing reserves included in the reserve basis being used for the depletion calculation.
- the aggregate of the following amounts **during the period**<sup>2</sup> for the relevant category of PP&E:
  - (+) all PP&E additions (including associated decommissioning, restoration and similar liabilities)
  - (-) PP&E costs derecognized for disposals or other reasons
  - (+/-) changes in estimated residual values
  - (-) change in FDCs in the period (this would include a reduction due to development work done in the period and any change in the estimate of FDCs for future periods).

## Consistency of Information

If, for a period, the company adds or subtracts reserves (other than for production for the period) in the reserve basis, then it may be necessary for the company to adjust the associated FDCs to be internally consistent with the changes made to the reserve basis. Specifically, if the estimate of reserves is changed, both the numerator and denominator in the UoP calculation are adjusted to reflect this change.

2 The “beginning of a period” refers to the first date of the accounting period under analysis and relates to the opening balances as at that date. “During a period” refers to the activity throughout the accounting period under analysis and relates to the activity within that period.

## **DD&A of Components**

IFRS has a specific requirement for “component” depreciation, as described in IAS 16.

Each significant part of an item of PP&E with a cost that is significant in relation to the total cost of the item is depreciated separately. Significant parts of an item of PP&E that have similar useful lives and patterns of consumption may be grouped together for the purposes of calculating DD&A.

## **DD&A of Related Assets**

PP&E assets with different (shorter or longer) useful lives than the pool, field or area with which they are associated should be depreciated separately from that pool, field or area.

PP&E assets that have a useful life clearly related to the specific pool, field or area, may be depreciated using the UoP method. Since most future economic benefits of these assets are tied to the life of the reserves in the related pool, field or area, the UoP method may reasonably reflect the pattern of consumption.

## **Interim Periods**

When the UoP method is applied, depletion is calculated for each interim period based on the UoP for that period.

## **Re-evaluating Reserves**

Management should determine an appropriate point (often in conjunction with the finalization of the NI 51-101 filing) to re-evaluate useful lives (e.g., life of reserves) and adjust the depletion calculation accordingly.

As noted above, this assessment should be conducted at least annually or more frequently if evidence exists that useful lives have changed. If estimates of useful lives are different in an interim period from the previous period because of a change in circumstances, new information, or more experience, the change is accounted for prospectively as a change in estimate.

## Appendix

### Illustrative Example—Depletion

Oil Co. drills a well with the intention of extracting oil from a known high-quality reservoir. It incurs \$570,000 of development costs, which were appropriately recognized as property, plant and equipment.

In addition, Oil Co. estimates that its current decommissioning obligation relating to the site is approximately \$130,000. Therefore, the total cost (i.e., depletion base) of the property is \$700,000 (\$570,000 + \$130,000).

Oil Co.'s qualified reserves evaluator estimates the proven oil reserves of the well are 200,000 barrels (which include proven undeveloped reserves in a lower zone that have not yet been exploited). The total future development costs of accessing the proven undeveloped reserves are estimated to be \$80,000.

The unit depletion charge is therefore \$3.90 per barrel of oil extracted ( $(\$700,000 + \$80,000 \text{ depletion base}) / 200,000 \text{ barrels}$ ).

In the first period, Oil Co. extracts 10,000 barrels of oil from the well, which results in depletion expense of \$39,000 (10,000 barrels × \$3.90 per unit depletion charge).

At the beginning of the second period, Oil Co. incurs \$77,000 of costs to develop the remaining undeveloped reserves. As the \$77,000 of development costs were incurred they were capitalized to the cost of the property and included in the depletion base. As a result, in order to avoid double counting, the related future development costs of \$80,000 are removed from the depletion base. Therefore, the unit depletion charge decreases to \$3.88 per barrel ( $(\$780,000 - \$80,000 + \$77,000 - \$39,000 = \$738,000 \text{ depletion base}) / 190,000 \text{ barrels}$ ). In the second period, 10,000 barrels of oil were extracted, resulting in depletion expense of approximately \$38,800.

# The Oil and Gas Industry Task Force on IFRSs

## Members

**Kevin Hamm, CPA, CA (Chair)**

Canadian Natural Resources Limited  
Calgary, Alberta

**Steve Aubin, CPA, CA**

Deloitte & Touche LLP  
Calgary, Alberta

**Scott Bandura, BMath, MAcc, CPA, CA, CPA (Illinois, USA)**

PricewaterhouseCoopers LLP  
Calgary, Alberta

**Brad Bennett, CPA, CA**

Vermilion Energy Inc.  
Calgary, Alberta

**Dale Brown, CPA, CA**

Grant Thornton LLP  
Calgary, Alberta

**Kerry Clark, CPA, CA**

Ernst & Young LLP  
Calgary, Alberta

**Jeff Dashkin, CPA, CA**

Calgary, Alberta

**Sean Du Plessis, CPA, CA**

MNP LLP  
Calgary, Alberta

**Steven Glover, MBA, FCPA, FCA**

Canmore, Alberta

**Katherine Gomes, CPA, CA**

ARC Resources Ltd.  
Calgary, Alberta

**Imam Hasan, CPA, CA**

KPMG LLP  
Calgary, Alberta

**Adrienne Viala, CPA, CA**

Husky Energy Inc.  
Calgary, Alberta

**Lorraine L. Walker, CPA, CA**

BDO Canada LLP  
Calgary, Alberta

## Observer

**Janice Anderson, CPA, CA**

Alberta Securities Commission  
Calgary, Alberta

## Staff

**Ben Brunnen**

Canadian Association of Petroleum Producers  
Calgary, Alberta

**Gary Leach**

Explorers and Producers Association of Canada  
Calgary, Alberta

**Alex Fisher, CPA, CA**

Chartered Professional Accountants of Canada  
Toronto, Ontario

Comments on this *Viewpoints* or suggestions for future *Viewpoints* should be sent to:

**Alex Fisher, CPA, CA**

*Principal, International Financial Reporting Standards*

Research, Guidance and Support

Chartered Professional Accountants of Canada

277 Wellington Street West

Toronto, Ontario M5V 3H2

For more information on IFRSs visit:

e-mail: [afisher@cpacanada.ca](mailto:afisher@cpacanada.ca)

[www.cpacanada.ca/viewpointsoilgas](http://www.cpacanada.ca/viewpointsoilgas)