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Guidance Note on Accounting for Oil and Gas Producing Activities

Foreword

The petroleum sector plays a pivotal role in the overall economic development of the country. India is a country where the demand for petroleum products is higher than their production and the shortfall in supply is met through imports. In order to reduce high dependence on imports, the government has opened this sector for private players also, which traditionally was a domain of public sector undertakings. As a result, the number of players operating in the sector is increasing. In the changing scenario, a need was being felt for bringing out a pronouncement to address the industry-specific accounting issues relating to exploration, development and production of oil and gas with a view to bring about establishment of sound accounting principles. It is heartening to note that the Research Committee has formulated this 'Guidance Note on Accounting for Oil and Gas Producing Activities'.

I would like to congratulate Shri Rajkumar S. Adukia, Chairman, Research Committee, other members of the Research Committee, authors of the draft, Officers of the Technical Directorate of the Institute and other interest groups who have made invaluable contributions in the formulation of this Guidance Note.

I hope that this endeavour of the Research Committee will go a long way in establishing sound accounting principles and provide guidance to the members as well as to the others concerned.

New Delhi
February 4, 2003

Ashok Chandak
President

Preface

Oil and gas producing industry (Upstream Petroleum Industry) is a highly capital intensive industry as a huge amount of expenditure is required to be incurred on acquisition, exploration and development activities before the commencement of actual production. At the time of incurrence of expenditure, particularly on exploration activities, the result of the same is not known and a large portion of the expenditure does not normally result in discovery of any oil and gas. In such circumstances, the issue of treatment of the expenditure incurred on various activities assumes greater significance.

The Research Committee has formulated this 'Guidance Note on Accounting for Oil and Gas Producing Activities' to lay down accounting treatment for costs incurred on acquisition of mineral interests in properties, exploration, development and production activities. The Guidance Note, *inter alia*, also lays down accounting treatment for abandonment costs which can be a major amount particularly in case of offshore operations. The Guidance Note recognises that there are two methods of accounting, viz., the Successful Efforts Method and the Full Cost Method. While the Guidance Note recommends the adoption of the Successful Efforts Method as a preferred method of accounting, it also permits the use of the Full Cost Method. The Guidance Note, while recommending that change in the method of accounting from Full Cost Method to Successful Efforts Method should be with retrospective effect, does not permit the change in the method of accounting from Successful Efforts Method to Full Cost Method.

I am glad to place on record our deep appreciation of Shri K.S. Sundara Raman for preparing the basic draft of the Guidance Note. I would also like to acknowledge the invaluable contributions made by the members of the Study Group, viz., Ms. Satyavati Berera (convenor), Shri A.K. Banerjee, Shri Ram Parkash, Shri P.S. Gopal, Shri J.D. Basrur and Shri Mukesh Bhutani, in this endeavour of the Research Committee. I am also thankful to various representatives of industry for giving their invaluable comments and suggestions on the draft Guidance Note.

I would also like to thank all the members of the Research Committee, namely, Shri N. Nityananda (Vice-Chairman), Shri Ashok Chandak (President), Shri R. Bupathy (Vice-President), Shri N.V. Iyer, Shri Shantilal Daga, Shri Niranjan Saha, Shri Sunil Goyal, Dr. Sunil Gulati, Shri Vinod Jain, Shri G.C. Srivastava, Shri Jose Pottokaran, Shri Thomas Mathew, Shri Chandrakant B. Thakar, Shri Subhash Chandra Chawla and Shri Vishnu Anant Mahajan.

Compendium of Guidance Notes - Accounting

I also compliment the invaluable contribution made by Dr. Avinash Chander, Technical Director, Ms. Anuradha Jain, Secretary, Research Committee and Mr. Vishal Bansal, Technical Officer, of the Institute of Chartered Accountants of India, at the various stages of the finalisation of the Guidance Note.

I sincerely believe that this Guidance Note will go a long way in establishing sound accounting and reporting principles in the oil and gas producing industry.

New Delhi
February 4, 2003

Rajkumar S. Adukia
Chairman
Research Committee

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Guidance Note on Accounting for Oil and Gas Producing Activities

(The following is the text of the Guidance Note on Accounting for Oil and Gas Producing Activities, issued by the Council of the Institute of Chartered Accountants of India.)

Introduction

1. Oil and gas producing industry, which is extractive in nature, involves activities relating to acquisition of mineral interests in properties, exploration (including prospecting), development, and production of oil and gas. The aforesaid activities are collectively referred to as upstream operations and form the 'Upstream Petroleum Industry'. The industry is commonly referred to as the 'E&P' industry. The peculiar nature of the industry requires establishment of industry-specific accounting principles in relation to expense recognition, measurement and disclosure.

Objective

2. The objective of this Guidance Note is to provide guidance on accounting for costs incurred on activities relating to acquisition of mineral interests in properties, exploration, development and production of oil and gas.

Scope

3. This Guidance Note applies to costs incurred on acquisition of mineral interests in properties, exploration, development and production of oil and gas activities, i.e., upstream operations. This Guidance Note also deals with other accounting aspects such as accounting for abandonment costs and impairment of assets that are peculiar to the enterprises carrying on oil and gas producing activities. It does not address accounting and reporting issues

Compendium of Guidance Notes - Accounting

relating to the transporting, refining and marketing of oil and gas. This Guidance Note also does not apply to accounting for:

- (a) activities relating to the production of natural resources other than oil and gas, and
- (b) the production of geothermal steam or the extraction of hydrocarbons as a by-product of the production of geothermal steam or associated geothermal resources.

Definitions

4. For the purpose of this Guidance Note, the following terms are used with the meanings specified:

Cost Centre: Cost centre is a unit identified to capture costs based on suitable criteria such as geographical or geological factors. Cost centre is not larger than a field in case of Successful Efforts Method and under Full Cost Method, the cost centre is not normally smaller than a country except where warranted by major difference in economic, fiscal or other factors in the country.

Depreciation: Depreciation is a measure of the wearing out, consumption or other loss of value of a depreciable asset arising from use, effluxion of time or obsolescence through technology and market changes. Depreciation is allocated so as to charge a fair proportion of the depreciable amount in each accounting period during the expected useful life of the asset. Depreciation includes amortisation of assets whose useful life is predetermined. Depreciation also includes 'depletion' of natural resources through the process of extraction or use.

Development Well: A well drilled, deepened, completed or recompleted within the proved area of an oil or gas reservoir to the depth of a stratigraphic horizon known to be productive.

Exploratory Well: A well drilled for the purpose of searching for undiscovered oil and gas accumulations on any geological prospect. An exploratory well is a well that is not a development well, a service well, or a stratigraphic test well, as those terms are defined separately.

Field: An area consisting of a single reservoir or multiple reservoirs all grouped on or related to the same individual geological structural feature and/or stratigraphic condition. There may be two or more

Accounting for Oil and Gas Producing Activities

reservoirs in a field which are separated vertically by intervening impervious strata, or laterally by local geologic barriers, or by both. Reservoirs that are associated by being in overlapping or adjacent fields may be treated as a single or common operational field. The geological terms 'structural feature' and 'stratigraphic condition' are intended to identify localised geological features as opposed to the broader terms of basins, trends, provinces, plays, areas-of-interest, etc.

Oil and Gas Reserves: Oil and gas reserves are those quantities of oil and gas, which are anticipated to be commercially recoverable from known accumulations from a given date forward. All oil and gas reserve estimates involve some degree of uncertainty. Uncertainty depends chiefly on availability of reliable geological and engineering data at the time of the estimate and interpretation of data.

Based on relative degree of uncertainty, oil and gas reserves can be classified as 'Proved Oil and Gas Reserves' and 'Unproved Oil and Gas Reserves'.

Proved Oil and Gas Reserves: Proved oil and gas reserves are those quantities of mineral oil, natural gas and natural gas liquids which, upon analysis of geological and engineering data, demonstrate with reasonable certainty to be commercially recoverable in future from known oil and gas reservoirs under existing economic and operating conditions.

Establishment of current economic conditions includes relevant historical oil and gas prices and associated costs under existing government regulations, if any. Oil and gas reserves, which can be produced economically through application of advanced recovery techniques, are included in proved classification after successful pilot testing.

Proved oil and gas reserves can be classified as 'Proved developed oil and gas reserves' and 'Proved undeveloped oil and gas reserves'.

Proved Developed Oil and Gas Reserves: Proved developed oil and gas reserves are reserves that can be expected to be recovered through existing wells with existing equipment and operating methods. Additional oil and gas expected to be obtained through the application of advanced recovery techniques

Compendium of Guidance Notes - Accounting

for supplementing the natural forces and mechanisms of primary recovery should be included as *proved developed reserves* only after testing by a pilot project or after the operation of an installed programme has confirmed through production response that increased recovery will be achieved.

Proved Undeveloped Oil and Gas Reserves: Proved undeveloped oil and gas reserves are reserves that are expected to be recovered from new wells on undrilled acreage, or from existing well for which a relatively major expenditure is required for recompletion. Reserves on undrilled acreage should be limited to those drilling units offsetting productive units that are reasonably certain of production when drilled. Proved reserves for other undrilled units can be claimed only if it can be demonstrated with certainty that there is continuity of production from the existing productive formation. Under no circumstances should estimates for proved undeveloped reserves be attributable to any acreage for which an application of advanced recovery technique is contemplated, unless such techniques have been proved effective by actual tests in the area and in the same reservoir.

Reservoir: A porous and permeable underground formation containing a natural accumulation of producible oil or gas that is confined by impermeable rock or water barriers and is individual and separate from other reservoirs.

Service Well: A service well is a well drilled or completed for the purpose of supporting production in an existing field. Wells in this class are drilled for the following specific purposes: gas injection (natural gas, propane, butane, or flue gas), water injection, steam injection, air injection, polymer injection, salt-water disposal, water supply for injection, observation, or injection for combustion.

Stratigraphic Test Well: A stratigraphic test is a drilling effort, geologically directed, to obtain information pertaining to a specific geologic condition. Such wells customarily are drilled without the intention of being completed for hydrocarbon production. This classification also includes tests identified as core tests and all types of expendable holes related to hydrocarbon exploration. Stratigraphic test wells (sometimes called expendable wells) are classified as follows:

Accounting for Oil and Gas Producing Activities

- (a) *Exploratory-type stratigraphic test well:*
stratigraphic test well not drilled in a proved area.

- (b) *Development-type stratigraphic test well:*
stratigraphic test well drilled in a proved area.

Unit of Production (UOP) method: The method of depreciation (depletion) under which depreciation (depletion) is calculated on the basis of the number of production or similar units expected to be obtained from the asset by the enterprise.

5. The definitions of certain other terms relevant for the Guidance Note are given in Appendix.

Classification of E&P Activities and Related Costs

Acquisition Activities

6. Activities carried out by an E&P enterprise towards the acquisition of right(s) to explore, develop and produce oil and gas constitute acquisition activities. Once the areas of oil and gas finds are identified, the E&P enterprise approaches the owner who owns the rights for the exploration, development and production of the underground minerals in respect of the property or area. In order to undertake surveys and exploration activities in India, an E&P enterprise has to first obtain a Petroleum Exploration License (PEL) or Letter of Authority (LOA). For engaging in development and production activities, an enterprise has to obtain a Mining Lease (ML). At present, the PEL/LOA and the ML for onshore E&P activities are granted by the State Governments upon recommendation of the Central Government and for offshore E&P activities by the Central Government.

Acquisition Costs

7. Acquisition costs cover all costs incurred to purchase, lease or otherwise acquire a property or mineral right. These include lease bonus, brokers' fees, legal costs, cost of temporary occupation of the land including crop compensation paid to farmers and all other costs incurred in acquiring these rights. These are costs incurred in acquiring the right to explore, drill and produce oil and gas including the initial costs incurred for obtaining the PEL/LOA and ML. Annual licence fees are excluded.

Exploration Activities

8. Exploration activities cover the prospecting activities conducted in the search for oil and gas. In the course of an appraisal programme these activities include but are not limited to aerial, geological, geophysical, geochemical, palaeontological, palynological, topographical and seismic surveys, analysis, studies and their interpretation, investigations relating to the subsurface geology including structural test drilling, exploratory type stratigraphic test drilling, drilling of exploration and appraisal wells and other related activities such as surveying, drill site preparation and all work necessarily connected therewith for the purpose of oil and gas exploration.

Exploration Costs

9. Principal types of exploration costs cover all direct and allocated indirect expenditure which include depreciation and applicable operating costs of related support equipment and facilities and other costs of exploration activities that are:

- (i) costs of surveys and studies mentioned in paragraph 8 above, rights of access to properties to conduct those studies (e.g., costs incurred for environment clearance, defence clearance, etc.), and salaries and other expenses of geologists, geophysical crews and other personnel conducting those studies. Collectively, these are referred to as geological and geophysical or 'G&G' costs;
- (ii) costs of carrying and retaining undeveloped properties, such as delay rental, *ad valorem* taxes on properties, legal costs for title defence, maintenance of land and lease records and annual licence fees in respect of Petroleum Exploration License;
- (iii) dry hole contributions and bottom hole contributions;
- (iv) costs of drilling and equipping exploratory and appraisal wells; and
- (v) costs of drilling exploratory-type stratigraphic test wells.

Development Activities

10. Development activities for extraction of oil and gas include, but are not limited to the purchase, shipment or storage of equipment and materials used

Accounting for Oil and Gas Producing Activities

in developing oil and gas accumulations, completion of successful exploration wells, the drilling, completion, re-completion and testing of development wells, the drilling, completion and re-completion of service wells, the laying of gathering lines, the construction of offshore platforms and installations, the installation of separators, tankages, pumps, artificial lift and other producing and injection facilities required to produce, process and transport oil or gas into main oil storage or gas processing facilities, either onshore or offshore, including laying of infield pipelines, the installation of the said storage or gas processing facilities.

Development Costs

11. Development costs cover all the direct and allocated indirect expenditure incurred in respect of the development activities including costs incurred to:

- (i) gain access to and prepare well locations for drilling, including surveying well locations for the purpose of determining specific development drilling sites, clearing ground, draining, road building and relocating public roads, gas lines and power lines to the extent necessary in developing the proved oil and gas reserves;
- (ii) drill and equip development wells, development-type stratigraphic test wells and service wells including the cost of platforms and of well equipment such as casing, tubing, pumping equipment and the wellhead assembly;
- (iii) acquire, construct and install production facilities such as lease flow lines, separators, treaters, heaters, manifolds, measuring devices and production storage tanks, natural gas cycling and processing plants and utility and waste disposal systems; and
- (iv) provide advanced recovery system.

Development costs also include depreciation and applicable operating cost of related support equipment and facilities in connection with development activities, and annual license fees in respect of Mining Lease.

Production Activities

12. Production activities consist of pre-wellhead (e.g., lifting the oil and gas to the surface, operation and maintenance of wells, extraction rights,

etc.) and post-wellhead (e.g., gathering, treating, field transportation, field processing, etc., upto the outlet valve on the lease or field production storage tank, etc.) activities for producing oil and/or gas.

Production Costs

13. Production costs consist of direct and indirect costs incurred to operate and maintain an enterprise's wells and related equipment and facilities, including depreciation and applicable operating costs of support equipment and facilities. Examples of production costs are:

(a) Pre-wellhead costs:

Costs of labour, repairs and maintenance, materials, supplies, fuel and power, property taxes, insurance, severance taxes, royalty, etc., in respect of lifting the oil and gas to the surface, operation and maintenance including servicing and work-over of wells.

(b) Post-wellhead costs:

Costs of labour, repairs and maintenance, materials, supplies, fuel and power, property taxes, insurance, etc., in respect of gathering, treating, field transportation, field processing, including cess upto the outlet valve on the lease or field production storage tank, etc.

Accounting for Acquisition, Exploration and Development Costs

14. There are two alternative methods for accounting for acquisition, exploration and development costs, viz.,

(i) Successful Efforts Method (SEM)

(ii) Full Cost Method (FCM)

Successful Efforts Method

Description

15. Under the successful efforts method, generally only those costs that lead directly to the discovery, acquisition, or development of specific, discrete oil and gas reserves are capitalised and become part of the capitalised costs of the cost centre. Costs that are known at the time of incurrence to fail to

Accounting for Oil and Gas Producing Activities

meet this criterion are generally charged to expense in the period they are incurred. When the outcome of such costs is unknown at the time they are incurred, they are recorded as capital work-in-progress and written off when the costs are determined to be non-productive.

Arguments in favour of the Successful Efforts Method

16. *Successful efforts costing reflects the normal concept of an asset.* An asset is an economic resource expected to provide future benefits. The 'Framework for the Preparation and Presentation of Financial Statements', in paragraph 49, defines an 'asset' as follows:

"An asset is a resource controlled by the enterprise as a result of past events from which future economic benefits are expected to flow to the enterprise."

17. Paragraphs 88 and 89 of the Framework reproduced below describe, respectively, when an asset is and is not to be recognised in the balance sheet:

88. An asset is recognised in the balance sheet when it is probable that the future economic benefits associated with it will flow to the enterprise and the asset has a cost or value that can be measured reliably.

89. An asset is not recognised in the balance sheet when expenditure has been incurred for which it is considered improbable that economic benefits will flow to the enterprise beyond the current accounting period. Instead, such a transaction results in the recognition of an expense in the statement of profit and loss. This treatment does not imply either that the intention of management in incurring expenditure was other than to generate future economic benefits for the enterprise or that management was misguided. The only implication is that the degree of certainty that economic benefits will flow to the enterprise beyond the current accounting period is insufficient to warrant the recognition of an asset."

18. The Framework defines income (revenue) and expenses in terms of increases or decreases in assets and liabilities. The Framework does not provide for deferrals or accruals of costs or income based on an independently defined notion of profit or loss. Stated another way, the Framework does not provide for smoothing or normalising of earnings by deferring costs that do not meet the definition of an asset. Under the

Compendium of Guidance Notes - Accounting

successful efforts method, those costs that clearly do not relate to future benefits are not capitalised.

19. *The successful efforts method reflects the volatility that is inherent in exploring for oil and gas reserves.* Those favouring successful efforts accounting argue that this method reflects the inherent risks and volatility that exist in the extractive industries because costs of unsuccessful efforts are charged to expense as they occur. They maintain that the capitalisation of unsuccessful exploratory efforts and their subsequent depreciation as unrelated reserves are produced would result in income smoothing that hides that volatility. Such capitalisation not only distorts the balance sheet by including as assets costs that have no future benefits, it also distorts the statement of profit and loss by deferring to future periods expenses that are incurred in the current period. Income smoothing results in the reporting of an artificial income both when the costs are deferred and throughout the periods of depreciation.

20. *The successful efforts method is consistent with the concept of matching* according to which expenses are recognised in the statement of profit and loss on the basis of a direct association between the costs incurred and the earning of specific items of income. However, the application of the matching concept does not allow the recognition of items in the balance sheet, which do not meet the definition of assets and liabilities.

21. Under the successful efforts method, the propriety of carrying forward costs incurred and subsequently matching them against future revenues depends on whether a specific cost can be identified with specific reserves. If this direct relationship does not exist, the cost should be charged to expense. If a direct association does not exist between a non-productive cost and reserves found and developed, the cost should not be classified as an asset because it is deemed to not provide future benefits in the form of cash flows. Charging non-productive costs to expense is consistent with the Framework – costs that do not result directly in future benefits are properly charged to expense. If costs related to unsuccessful ventures are not charged to expense, both current and future financial statements are distorted because those costs must eventually be removed from the balance sheet and reported in the statement of profit and loss even though they contribute nothing to future revenues.

22. *Successful efforts accounting comes closer than other cost-based accounting methods to reflecting management's successes or failures in its efforts to find new oil and gas reserves.* If costs of unsuccessful exploration

Accounting for Oil and Gas Producing Activities

and development activities are capitalised rather than expensed, and carried forward and combined with costs incurred in prior years and with costs of the current year's successful activities, the efficiency and effectiveness of management is not evaluated in the statement of profit and loss because of the income smoothing that results. Under successful efforts accounting, this income smoothing is greatly reduced or eliminated.

Arguments against the Successful Efforts Method

23. *Under the successful efforts method, the statement of profit and loss can give a false impression of performance in terms of success in finding new oil and gas reserves because of the effect of decisions to expand or curtail exploration expenditure.* A reduction in exploration expense resulting from the curtailment of likely exploration would increase reported net profit in the years in which the exploration is cut back, even though because of the cutback in exploration few or no new reserves are added. The cutback in reserve additions and the continuation of production results in a depletion of the enterprise's reserves, the source of its future profits and its long-run success. On the other hand, an enterprise with an outstanding exploration programme may increase its expenditures for exploration. This would almost certainly increase the current charges to expense for unsuccessful exploration efforts, reducing reported profit, even though the increased exploration may result in the addition of many new reserves that will produce future profits. Those who favour successful efforts accounting reply to this argument by observing that the goal of accounting is to reflect faithfully economic events. If management curtails exploration, this will be reflected in the financial statements under successful efforts accounting. Proponents of successful efforts accounting argue that perhaps, supplemental information about reserve quantities and value is needed to indicate success or failure of exploration activity.

24. *Because of the charge-off of unsuccessful pre-production costs, successful efforts accounting often results in an understatement of assets and net income of a growing enterprise that has a successful and increasing exploration programme.* In future years, when the exploration programme has stabilised or is actually decreasing, the deductions for unsuccessful projects will decrease or will become stable, resulting in higher reported net income. The understatement of income during the early years of the enterprise's activities may make it difficult to secure funds from either equity issues or borrowings.

Compendium of Guidance Notes - Accounting

25. *The successful efforts method assesses success or failure too early in a project.* Success or failure of exploration projects usually cannot be measured until the exploration activities are completed, which may involve many years. In the intervening years, decisions must be made about costs to be charged to expense and costs to be capitalised. These decisions are often subjective until the ultimate outcome is known, and different individuals will assess the same circumstances differently. This subjectivity from incomplete knowledge will result in different reported net income depending on the judgement of those making the assessment.

26. *The successful efforts method fails to recognise that in an E&P enterprise, management makes its plans and allocates resources to its search for new reserves on an enterprise-wide basis.* The successful efforts method forces the costs of unsuccessful projects to be expensed even though they are an expected part of an exploration programme. The goal of exploration is to add new reserves and management knows that there will be failures in the process of attaining this goal. Management realises that costs of the failures must be offset by the results from successful ventures. Thus, they argue, costs of unsuccessful pre-production projects should be viewed as part of the cost of reserves obtained through successful exploration projects. Some argue that successful efforts accounting fails to recognise that all pre-production costs are incurred to find and develop whatever reserves result from pre-production activities.

Full Cost Method

Description

27. Under the full cost method, all costs incurred in prospecting, acquiring mineral interests, exploration, and development, are accumulated in large cost centres that may not be related to geological factors. The cost centre, under this method, is not normally smaller than a country except where warranted by major difference in economic, fiscal or other factors in the country. The capitalised costs of each cost centre are depreciated as the reserves in each cost centre are produced.

Arguments in favour of the Full Cost Method

28. *The full cost method reflects the way in which enterprises search for, acquire, and develop mineral resources.* These activities are carried out in diverse locations, using various techniques and it is accepted that some projects will not result directly in the addition of reserves. However, it is

Accounting for Oil and Gas Producing Activities

planned that the value added by the successful ventures in a cost centre will be greater than the losses resulting from unsuccessful ventures in that cost centre and will result in an overall profit in the long term. Under the full cost method, all costs incurred at any time and at any place in a cost centre in an attempt to add commercial reserves are an essential part of the cost of any reserves added in that cost centre. As a result they are directly associated with the enterprise's reserves in that centre and all the costs should be treated as part of the cost of the mineral assets in the cost centre.

29. *The full cost method provides better matching of income and expenses.* It is argued that there is a better matching of income and expenses if total costs are depreciated on a pro-rata basis as the total reserves in a large cost centre are produced than there would be if reserves and costs are matched in many small cost centres. In periods when an enterprise using successful efforts accounting incurs large pre-production expenditures in seeking new reserves, those costs that do not result in new reserves will be charged to expense, reducing profit and possibly resulting in a loss. The variability in profit resulting from changes in the expensing of pre-production costs are eliminated under the full cost method.

30. *The full cost method is like absorption costing for manufactured inventories.* Oil and gas reserves are similar to a long-term inventory item. Generally, inventories are accounted for on an absorption cost basis. The costs related to unsuccessful efforts are very similar to normal recurring spoilage occurring in manufacturing operations. It is customary to treat normal spoilage costs as part of the cost of the good units manufactured.

31. *The full cost method avoids distortions of reported earnings.* Users of financial statements in the E&P industry are interested primarily in earnings and changes in earnings from year to year. It is argued that, if successful efforts accounting is used, distortions are caused by expensing unsuccessful efforts to find and develop new reserves, which may vary widely from year to year. Under the full cost method, these annual 'distortions' of income resulting from expensing the charges for unsuccessful pre-production activities are eliminated.

Arguments against the Full Cost Method

32. *Under the full cost method, many costs that are capitalised fail to meet the definition of 'asset' under the 'Framework for the Preparation and Presentation of Financial Statements'.* Unsuccessful prospecting costs, unsuccessful exploration costs, the costs of properties that contain no oil and

Compendium of Guidance Notes - Accounting

gas reserves, and many other costs that will be capitalised are known to provide no future economic benefits. They will not contribute to the production of goods or services to be sold by the enterprise, they cannot be exchanged for other assets, they cannot be used to settle a liability, and they cannot be distributed to the owners of the enterprise. Further, Accounting Standard (AS) 2, 'Valuation of Inventories', requires that "abnormal amounts of wasted materials, labour, or other production costs" should be excluded from the cost of inventories and recognised as expenses in the period in which they are incurred (paragraph 13).

33. *The full cost method delays loss recognition.* Expenses should be reported on a timely basis. Costs that do not result directly in future benefits are costs that are properly charged to expense. Capitalising such costs results in deferring the effects of expenses.

34. *The full cost method impedes measurement of the efficiency and effectiveness of the enterprise's exploration and development activities.* Costs of unsuccessful activities are treated in the same way as successful activities and are matched against future revenues from all of the enterprise's successful exploration and development activities. In any given year, management may conduct exploration and development activities that are completely unsuccessful, yet the statement of profit and loss would not reveal this fact.

Recommendation

35. On an overall consideration, the advantages of the successful efforts method far outweigh its disadvantages particularly keeping in view its conceptual superiority over the full cost method. Accordingly, the successful efforts method is recommended to be the preferred method, though an enterprise is permitted to follow the full cost method. The application of these methods is discussed hereinafter.

Application of Successful Efforts Method

36. Under the successful efforts method, in respect of a cost centre, the following costs should be treated as capital work-in-progress when incurred:

- (i) All acquisition costs;
- (ii) Exploration costs referred to in paragraph 9 (iv) and (v); and
- (iii) All development costs.

Accounting for Oil and Gas Producing Activities

37. All costs other than the above should be charged as expense when incurred.

38. When a well is ready to commence commercial production, the costs referred to in paragraph 36 (ii) and (iii) corresponding to proved developed oil and gas reserves should be capitalised as 'completed wells' from capital work-in-progress to the gross block of assets. With respect to costs referred to in paragraph 36 (i), the entire cost should be capitalised from capital work-in-progress to the gross block of assets. There is a rebuttable presumption that a well is ready to commence commercial production within two years from the establishment of proved developed oil and gas reserves. If the well is not ready for commercial production within the aforesaid period, the relevant costs included in capital work-in-progress should be capitalised on the expiry of the aforesaid period of two years.

39. If the cost of drilling exploratory well relates to a well that is determined to have no proved reserves, then such costs net of any salvage value are transferred from capital work-in-progress and charged as expense as and when its status is decided as dry or of no further use. Costs of exploratory wells-in-progress should not be carried over for more than a period of two years from the date of completion of drilling unless it could be reasonably demonstrated that the well has proved reserves and development of the field in which the well is located has been planned with required capital investment such as development wells, pipelines, etc., in which case the costs of the exploratory well can be carried forward without any time limit.

Depreciation (Depletion)

40. Depreciation (Depletion) is calculated, using the unit of production method. The application of this method results in oil and gas assets being written off at the same rate as the quantitative depletion of the related reserve. For the properties or groups of properties containing both oil reserves and gas reserves, the units of oil and gas used to compute depletion are converted to a common unit of measure on the basis of their approximate relative energy content, without considering their relative sales values (general approximation is 1000 cubic meters of gas is equivalent to 1 metric tonne of oil). Unit-of-production depletion rates are revised whenever there is an indication of the need for revision but at least once a year. These revisions are accounted for prospectively as changes in accounting estimates, i.e., a change in the estimate affects the current and future periods, but no adjustment is made in the accumulated depletion applicable to prior periods.

Compendium of Guidance Notes - Accounting

41. The depreciation charge or the UOP charge for the acquisition cost within a cost centre is calculated as under:

$$\text{UOP charge for the period} = \text{UOP rate} \times \text{Production for the period}$$

$$\text{UOP rate} = \frac{\text{Acquisition cost of the cost centre}}{\text{Proved Oil and Gas Reserves}}$$

42. The depreciation charge or the Unit of Production (UOP) charge for all capitalised costs excluding acquisition cost within a cost centre is calculated as under:

$$\text{UOP charge for the period} = \text{UOP rate} \times \text{Production for the period}$$

$$\text{UOP rate} = \frac{\text{Depreciation base of the cost centre}}{\text{Proved Developed Oil and Gas Reserves}}$$

43. Depreciation base of the cost centre should include

- (a) Gross block of the cost centre (excluding acquisition costs)
- (b) Estimated dismantlement and abandonment costs net of estimated salvage values pertaining to proved developed oil and gas reserves

and should be reduced by the accumulated depreciation and any accumulated impairment charge of the cost centre.

44. 'Proved Oil and Gas Reserves' for the purpose of paragraph 41 comprise proved oil and gas reserves estimated at the end of the period as increased by the production during the period. 'Proved Developed Oil and Gas Reserves' for the purpose of paragraph 42 comprise proved developed oil and gas reserves estimated at the end of the period as increased by the production during the period. Additional reserves from advanced recovery techniques are to be considered as proved developed oil and gas reserves only after the required investments have been capitalised.

Application of Full Cost Method

45. Under the full cost method, in respect of a cost centre, the following costs should be treated as capital work-in-progress when incurred:

- (i) All acquisition costs;

Accounting for Oil and Gas Producing Activities

- (ii) All exploration costs; and
- (iii) All development costs.

46. All costs other than the above should be charged as expense when incurred.

47. When any well in a cost centre is ready to commence commercial production, the costs referred to in paragraph 45 above corresponding to all the proved oil and gas reserves in that cost centre should be capitalised from capital work-in-progress to the gross block of assets. In respect of oil and gas reserves proved subsequently, the capital work-in-progress corresponding to such reserves should be capitalised at the time when the said reserves are proved. The expenditure which does not result in discovery of proved oil and gas reserves should be transferred from capital work-in-progress to the gross block of assets as and when so determined.

Depreciation (Depletion)

48. The depreciation should be calculated on the capitalised cost according to the unit of production method as explained in paragraph 40 above. In case of full cost method, the depreciation charge or the unit of production (UOP) charge for all costs within a cost centre is calculated as under:

$$\text{UOP charge for the period} = \text{UOP rate} \times \text{Production for the period}$$

$$\text{UOP rate} = \frac{\text{Depreciation base of the cost centre}}{\text{Proved Oil and Gas Reserves}}$$

49. The depreciation base of the cost centre should include

- (a) Gross block of the cost centre;
- (b) The estimated future expenditure (based on current costs) to be incurred in developing the proved oil and gas reserves referred to in paragraph 50;
- (c) Estimated dismantlement and abandonment costs net of estimated salvage values for facilities set up for developing the proved oil and gas reserves referred to in paragraph 50;

and should be reduced by the accumulated depreciation and any accumulated impairment charge of the cost centre.

50. 'Proved Oil and Gas Reserves' for this purpose comprise developed and undeveloped oil and gas reserves estimated at the end of the period as increased by the production during the period.

Accounting for Production Costs

51. Production costs, mentioned in paragraph 13 above, become part of the cost of oil and gas produced, along with depreciation (depletion) of capitalised acquisition, exploration and development costs.

Accounting for Cost of Support Equipment and Facilities

52. The cost of acquiring or constructing support equipment and facilities used in E&P activities should be capitalised in accordance with Accounting Standard (AS) 10, 'Accounting for Fixed Assets'. Depreciation on such equipment and facilities should be arrived at in accordance with Accounting Standard (AS) 6, 'Depreciation Accounting', and accounted for as exploration cost, development cost or production cost, as may be appropriate.

Accounting for Abandonment Costs

53. Abandonment costs are the costs incurred on discontinuation of all operations and surrendering the property back to the owner. These costs relate to plugging and abandoning of wells, dismantling of wellheads, production and transport facilities and to restoration of producing areas in accordance with license requirements and the relevant legislation.

54. The full eventual liability for abandonment cost net of salvage values should be recognised at the outset on the ground that a liability to remove an installation exists the moment it is installed. Thus, an enterprise should capitalise as part of the cost centre the amount of provision required to be created for subsequent abandonment. Charge for abandonment costs should not be discounted to its present value. The provision for estimated abandonment costs should be made at current prices considering the environment and social obligations, terms of mining lease agreement, industry practice, etc.

55. No gain or loss should be recognised if only an individual well or individual item of equipment is abandoned as long as the remainder of the wells in the cost centre continue to produce oil or gas. Instead, the asset

being abandoned be deemed to be fully depreciated. When the last well on the cost centre ceases to produce and the entire cost centre is abandoned, gain or loss should be recognised.

Capitalisation of Borrowing Costs

56. Capitalisation of borrowing costs under the full cost method as well as the successful efforts method should be carried out in accordance with the Accounting Standard (AS) 16, 'Borrowing Costs'. For the purpose of AS 16, all the costs that are classified under capital work-in-progress should be considered as the qualifying asset.

Impairment of Assets

57. Accounting Standard (AS) 28, 'Impairment of Assets', is applicable to E&P enterprises irrespective of the method of accounting used. For the purpose of AS 28, each cost centre used for depreciation (depletion) purposes should be treated as a Cash Generating Unit.

Accounting for Interests in Joint Ventures

58. Many E&P enterprises enter into joint venture agreements for oil and gas exploration, development and production. In case of such arrangements, the accounting principles prescribed in Accounting Standard (AS) 27, 'Financial Reporting of Interests in Joint Ventures', should be applied.

Changes in Accounting Policies

59. An enterprise may change the method of accounting from full cost method to successful efforts method. The change in the method of accounting should be carried out with retrospective effect. Such a change is treated as a change in accounting policy and should be accounted for in accordance with Accounting Standard (AS) 5, 'Net Profit or Loss for the Period, Prior Period Items and Changes in Accounting Policies'.

60. When a change in the method of accounting is made, the effect thereof is calculated in accordance with the new method as if the enterprise was always following the new method. The resulting deficiency/surplus should be charged/credited to the statement of profit and loss in the year in which the method of accounting is changed.

Disclosure

61. An E&P enterprise should disclose the following in its financial statements:

- (i) The method of accounting followed.
- (ii) Net quantities of an enterprise's interests in proved reserves and proved developed reserves of (a) oil (including condensate and natural gas liquids) and (b) gas as at the beginning and additions, deductions, production and closing balance for the year.
- (iii) Net quantities of an enterprise's interest in proved reserves and proved developed reserves of (a) oil and (b) gas should also be disclosed on the geographical basis.
- (iv) The reporting of reserve quantities should be stated in metric tonnes for oil reserves and cubic meters for gas reserves.

Appendix

Glossary

1. Abandon

To discontinue attempts to produce oil and gas from a mining lease area or a well and to plug the reservoir in accordance with regulatory requirements and salvage all recoverable equipments.

2. Appraisal Well

A well drilled as part of an appraisal drilling programme, which is carried out to determine the physical extent of oil and gas reserves and likely production rate of a field.

3. Block

A defined area for purposes of licensing or leasing to an enterprise or enterprises for exploration, development and production rights.

4. Bottom-Hole Contributions

Money or property paid to an operator for use in drilling a well on property in which the payer has no property interest. The contributions are payable when the well reaches a pre-determined depth, regardless of whether the well is productive or non-productive. The payer may receive proprietary information on the well's potential productivity.

5. Condensate

Low vapour pressure hydrocarbons obtained from Natural Gas through condensation or extraction and refer solely to those hydrocarbons that are liquid at normal surface temperature and pressure conditions.

6. Dry Hole

A well, which has proved to be non-productive.

7. Dry Hole Contribution

A contribution made by one enterprise to costs incurred by another enterprise that is drilling a nearby well to obtain information from the

Compendium of Guidance Notes - Accounting

enterprise drilling the well; the contribution is made when the well is complete and is found to be unsuccessful.

8. Geological and Geophysical Studies

Processes which seek surface or subterranean indications of earth structure or formation where experience has shown the possibility of existence of mineral deposits.

9. Geological Survey

An exploratory programme directed to examination of rock and sediments obtained by boring or drilling, or by inspection of surface outcroppings.

10. Geophysical Survey

A study of the configuration of the earth's crust in a given area, as determined by the use of seismic, gravity, magnetic and geo-chemical procedures.

11. Mining Lease

The license issued for offshore and onshore properties for conducting development and production activity.

12. Natural Gas Liquids (NGL)

Hydrocarbons (primarily ethane, propane, butane and natural gasoline) which can be extracted from wet natural gas and become liquid under various combinations of increasing pressure and lower temperature.

13. Petroleum Exploration License

The license issued for offshore and onshore properties for conducting exploration activity.

14. Support Equipment and Facilities

Equipment and facilities of the nature of service units, camp facilities, godowns (for stores and spares), workshops (for equipment repairs), transport services (trucks and helicopters), catering facilities and drilling and seismic equipment.

15. Work-Over

Remedial work to the equipment within a well, the well pipework or relating to attempts to increase the rate of flow.