Query No. 10

Subject: Capitalisation of cost incurred towards replacement of economizer coil in a boiler of a thermal power plant.[1]

A. Facts of the Case

1. A company is incorporated as a wholly owned Government company under the Companies Act, 1956 during the year 1984 and is engaged in construction and operation of thermal power plants in the State of Odisha. The company had set up two units of 2 x 210 MW (Units I and II, i.e., Stage-1) as its maiden venture in the district of Jharsuguda known as IB Thermal Power Station and the units commenced commercial operation during December 1994 and June 1996 respectively. Power generated from Units I & II is sold to G Ltd., a Govt. of Odisha undertaking at a tariff determined as per Bulk Power Purchase Agreement executed during 1996. During 1999, as a part of power sector reforms, the Government of Odisha divested 49% of the shares in favour of A Corporation, USA, the strategic investor. The company prepares its annual financial statements as per the provisions of the Companies Act, 2013 as amended from time to time. The financial statements are audited by the statutory auditors appointed by the Comptroller and Auditor General (C & AG) of India. The auditors of C & AG of India had also undertaken supplementary audit under section 143(6) of the Companies Act, 2013.

2. The querist has stated that economizer is one of the major component of the boiler in a power plant. The thermal power generating plant, as stated above (2* 210MW) is in operation for about 20 years. During the year 2014-15, the company replaced "economizer coils**"** which is a component of boiler in Unit -2 of the power plant which was rendered un-serviceable due to severe erosion as a result of firing of high ash content coal. The plant is getting coal from C Ltd. *Most of the months, Gross Calorific Value (GCV) of coal received was less than average 2700 kcal/kg (approx.) as against design coal GCV of 3000 kcal/kg (42% ash)* and the ash content was is in the range of 43%-47% majority of the time, which is more than designed range. Firing of such coal with high ash content into the boiler leads to accelerated erosion of the tubes of the coils and dislodging of support clits. (Emphasis supplied by the querist.)

3. The querist has stated that during the year 2014-15, the company incurred an amount of Rs. 4.31 crore for replacement of economizer upper bank coil of Unit-II boiler. While capitalising the replacement cost of economizer, the company also decapitalised the original cost incurred during the year 1995-96. Auditors of C&AG of India while conducting supplementary audit under section 143(6) of the Companies Act, 2013 for the financial year 2014-15, raised draft observations on accounting treatment of capitalisation of economizer coil which are as follows:

> ***"****Equity and Liabilities*
> *Assets: Fixed Assets*
> *Tangible Assets (Note No.12) - Rs. 212.89 crore (Net Block)*
>
> *The above includes Rs. 4.31 crore (net block) being the value of replacement of economizer upper bank coil (50 numbers) of Unit-II boiler and repair of the*

[1] Opinion finalised by the Committee on 7.7. 2016.

remaining coil. As the expenditure was of repair and maintenance nature, the same should have been charged to revenue instead of capitalizing the same as per AS 10. This has resulted in overstatement of Plant & Equipment (Net Block) and understatement of generation and other expenses to the extent of Rs. 4.31 crore. While confirming the facts and figures, the views of the Management on the fact stated above may be furnished."

To above observation, the company submitted its replies. However, the replies submitted by the company were not accepted by the auditors and they retained the same as part of final observation which is as follows:

"Equity and Liabilities

Assets: Fixed Assets

Tangible Assets (Note No.12) - Rs. 212.89 crore (Net Block)

The above includes Rs. 4.31 crore (net block) being the value of 50 nos. of economizer upper bank coil replaced in Unit-II boiler and repair of the remaining coil. As these expenses have not increased the future benefits from the existing assets beyond its previously assessed standard of performance as required under AS 10 for capitalization of the item, these should not have been capitalized. Rather, it should have been charged to revenue. Capitalizing the amount instead of charging to revenue has resulted in overstatement of Plant & Equipment (Net Block), understatement of generation and other expenses and overstatement of profit for the year by Rs. 4.31 crore each."

4. *Reason for replacement of coil in economizer:*

According to the querist, the purpose of the economizer of a boiler in a power plant is to preheat the boiler feed water before it is introduced into the steam drum and to recover some of the heat from the flue gases leaving the boiler. The economizer absorbs heat from the flue gas and adds it mainly as sensible heat to feed water.

The total number of coils present in the economizer is 145. The company has experienced number of economizer coil tube failure events. The findings are as follows:

Event Occurrence- Unit -2	Location	Outage Hrs.
09-4-1997	Eco upper bank coil no 34 & 35 from left	Not available
23-3-1999	Near ECO hanger tube above LTSH coil	45.45
06-1-2009	Eco upper bank 1st coil	38.27
10-11-2012	Eco intermediate header	84.65
07-4-2013	Eco near header EH2C	88.25
17-09-2013	Eco tube no.1 coil 145	27.52

The forced outage of boiler, which was quite frequent due to tube failure having financial loss in terms of generation loss is a concern for the company. To analyse the reason, a technical committee was formed to give suggestions for improving the boiler performance by minimising 'tube failure' incidents. After detailed analysis, the committee finds the following reasons for tube leakage:

(a) From the past records of failure data of tube leakages and failure analysis, it has been noticed that 50% of failures are caused due to flue gas induced accelerated erosion and another prominent reason is due to construction (site welding) weld joint failure. Most of the economizer failures have taken place in the narrow gap between corner tubes of coil and the side wall as the narrow area is affected due to high velocity flue gas containing excessive amount of fly ash leading to accelerated erosion.

(b) The committee recommended for replacement of thinned-out coils with 100% thickness measurement of all tubes of the coils after making access by removing the coils. The committee proposed replacement of economizer coils, which are located on either sides (right and left) out of total 145 numbers of coils in the economiser. After removing the side coils, access can be made and inspection, checking and repair can be done on the other coils depending on the requirement. The tube thickness reduction has happened over a period of time (20 yrs) and has reached to the present stage of 25-30% reduction.

(c) Factors which influence high fly ash erosion are mainly due to:

- The velocity of flue gas
- The temperature of flue gas
- The mineral content in coal
- The arrangement of pressure parts
- Deviation from design condition

After analysing the above facts and looking at the ash content and GCV of coal, it is quite clear that the reduction in tube thickness by 25% to 30% has happened due to firing of lower GCV coal with higher ash content. *Therefore, replacement of coils in economizer is proposed due to accelerated erosion caused while firing higher ash content coal compared to design. It is observed that the weighted monthly GCV of coal for the period 2003-04 to 2012-13 ranges from a lowest level of 1540 kcal/kg to a highest level of 3760 kcal/kg as against the design range of quality of coal 3000 kcal/kg. It is also observed that in most of the months, GCV of coal received was less than average 2700 kcal/kg (approx.) as against design coal GCV of 3000 kcal/kg. It also appears that the failure of economizer tubes was due to the poor quality of coal.*

The committee concluded that accelerated erosion of economizer coil has occurred due to supply of high ash content coal and this has happened over a period of 20 years. *The economizer would have accommodated ash erosion having 3000 GCV (42% ash) of coal. The ash content in the coal during last several years has been observed to vary from 38% to 56% as fired for a typical day. The ash content in the coal as fired has been found to be more than 42% for most of the time. Therefore, the expenditure which would be incurred by replacing coils in economizer to accommodate ash erosion from low GCV coal is in the nature of 'improvement and betterment'.(Emphasis supplied by the querist.)*

5. Accounting Standard and accounting principle in support of capitalisation:

The querist has further stated that Accounting Standard (AS) 10, 'Accounting for Fixed Assets'[2], issued by the Institute of Chartered Accountants of India (ICAI) provides following

[2] The opinion should be read in the context of pre-revised Standard, viz., Accounting Standard (AS) 10, 'Accounting for Fixed Assets'. However, it may be noted that the Standard has been subsequently revised as AS

conditions to be satisfied for capitalisation of subsequent expenditure incurred on a fixed asset already capitalised:

- Paragraph 23 of AS 10 states that ***"Subsequent expenditures related to an item of fixed asset should be added to its book value only if they increase the future benefits from the existing asset beyond its previously assessed standard of performance".*** It is clear from this paragraph that the expenditure incurred, which will increase the future benefit beyond its original standard, will be capitalised. As per the above accounting standard, expenditure on fixed asset subsequent to their installation towards repairs and replacement should be expensed in the year in which such repair / replacement is made. Repairs and replacement means expenditure incurred on a fixed assets for "restoration of a capital asset to its full productive capacity or a contribution thereto, after damage, accident, or prolonged use, without increase in its previously estimated service life or productive capacity". *However, expenditure on fixed assets subsequent to their installation towards improvement or betterment, i.e., "expenditure having the effect of extending the useful life of an existing fixed asset, increasing its normal rate of output, lowering its operating cost, increasing rather than merely maintaining efficiency or otherwise adding to the worth of benefits it can yield" will be capitalised and added to the original cost of the fixed assets.*

- As stated above, *the economizer eroded due to use of the high-ash coal during last several years which was observed to vary from 38% to 56% as fired for a typical day. Moreover, this has been the case during most part of the year. Therefore, expenditure that is incurred by replacing the coils in economizer to accommodate ash erosion from low GCV coal is in the nature of improvement and betterment. Hence, the expenditure has been capitalsed accordingly.*

(Emphasis supplied by the querist.)

6. *Observations of the auditors of C & AG of India:*

The draft observations of C & AG of India while conducting supplementary audit under section 143(6) of the Companies Act for the financial year 2014-15 and replies submitted by the company are as follows:

Comments of C & AG of India	Management Reply
Equity and Liabilities *Assets* *Fixed Assets* *Tangible Assets (Note No.12) - Rs. 212.89 crore (Net Block)* The above includes Rs. 4.31 crore (net block) being the value of replacement of	Paragraph 23 of Accounting Standard 10 states that *"Subsequent expenditures related to an item of fixed assets should be added to its book value only if they increase the future benefits from the existing asset beyond its previously assessed standard of performance."* As per the above Accounting Standard, expenditure on fixed assets subsequent to their installation may be categorised into (i) repair (ii) improvement or betterment. Repair means expenditure incurred on a fixed asset for "restoration of a capital asset to its full productive capacity or a contribution

10, 'Property, Plant and Equipment' by the Companies (Accounting Standards) Amendment Rules, 2016 vide Ministry of Corporate Affairs (MCA) Notification No. G.S.R. 364(E) dated 30.03.2016.

economizer upper bank coil (50 numbers) of Unit-II boiler and repair of the remaining coil. As the expenditure was of repair and maintenance nature, the same should have been charged to revenue instead of capitalizing the same as per AS 10. This has resulted in overstatement of Plant & Equipment (Net Block) and understatement of generation and other expenses to the extent of Rs. 4.31 crore. While confirming the facts and figures, the views of the Management on the fact stated above may be furnished.	thereto, after damage, accident, or prolonged use, without increase in its previously estimated service life or productive capacity". On the other hand, betterment is defined as *"expenditure having effect of extending useful life of a fixed asset, increasing its normal rate of output, lowering its operating cost, or otherwise adding to the worth of benefit it can yield".* An expenditure that has the effect of improving the previously assessed standard of performance, i.e., extension of asset's useful life, increase in its capacity, or subsequent improvement in quality of output or a reduction in previously assessed operating cost is capitalised**.** The Expert Advisory Committee of the ICAI is of the view that "previously assessed standard of performance is not the actual performance of asset at the time of repair / improvement etc, but the standard performance of the same machine in its original state". In the present case, the expenditure incurred is the replacement and the same has been capitalised in the accounts for the year 2014-15. *A Technical Committee has been constituted by the company and the report of the Committee has studied the replacement (replacement of 25 number of coils) and concluded that it an improvement and betterment with following facts.* The weighted monthly GCV of coal for the period 2003-04 to 2012-13 ranges from a lowest level of 1540 kcal/kg to a highest level of 3760 kcal/kg as against the *design range of quality* of coal 3000 kcal/kg. Most of the months, GCV of coal received was less than average 2700 kcal/kg (appx.) as against design coal GCV of 3000 kcal/kg. The failure of economizer tubes was not on account of design deficiency but due to the poor quality of coal. The economizer was originally designed to accommodate ash erosion having 3000 GCV (42% ash) of coal. The ash content in the coal during last several years has been observed to vary from 38% to 56% as fired for a typical day. The ash content in the coal as fired has been found to be above the design range of ash of 42% for most of time. *Therefore, expenditure which has been incurred by replacing coils in economizer to accommodate ash erosion from low GCV coal is in the nature of improvement and betterment.* In support of capitalisation, it is submitted that CERC while approving tariff of another company has allowed the replacement of economizer as capital expenditure. However, while capitalising the expenses of Rs. 4.49 crore for replacement and improvement of economizer, the decapitalisation estimated amounting to Rs. 11.96 lakh has not been accounted for due to omission which will be rectified during 2015-16.

	In view of above, there is no overstatement of Plant & Equipment (Net Block) and understatement of generation and other expenses to the extent of Rs. 4.31 crore. The para may be dropped.

7. Final comments of C & AG of India and replies submitted by the management are as follows:

Comments of C & AG of India	Management Reply
Equity and Liabilities *Assets* *Fixed Assets* *Tangible Assets (Note No.12) - Rs.212.89 crore (Net Block)* The above includes Rs.4.31 crore (net block) being the value of 50 nos. of economizer upper bank coil replaced in Unit-II boiler and repair of the remaining coil. As these expenses have not increased the future benefits from the existing assets beyond its previously assessed standard of performance as required under AS 10 for capitalisation of the item, these should not have been capitalised. Rather, these should have been charged to revenue. Capitalising the amount instead of charging to revenue has resulted in overstatement of Plant & Equipment (Net Block), understatement of generation and other expenses and overstatement of profit for the year by Rs.4.31 crore each.	The weighted monthly GCV of coal for the period 2003-04 to 2012-13 ranges from a lowest level of 1540 kcal/kg to a highest level of 3760 kcal / kg as against the design range of quality of coal 3000 kcal/kg. Most of the months, GCV of coal received was less than average 2700 kcal/kg (appx.) as against design coal GCV of 3000 kcal/kg. The failure of economiser tubes was not on account of design deficiency but due to the poor quality of coal. The economizer was originally designed to accommodate ash erosion having 3000 GCV (42% ash) of coal. The ash content in the coal during last several years has been observed to vary from 38% to 56% as fired for a typical day. The ash content in the coal as fired has been found to be above the design range of ash of 42% for most of time. Therefore, the expenditure incurred by replacing coils in economizer to accommodate ash erosion from low GCV coal is in the nature of improvement and betterment and satisfying the conditions of capitalisation as per Accounting Standard 10. However, the company will make further review during the year 2015-16.

8. *The company's view on capitalisation*:

Elaborate justification in support of reason of replacement and capitalisation has been given at paragraphs 3 and 4 above. Further, the company is of the view that replacement of economiser coils has enhanced the efficiency of the boiler and minimised the tube leakages in economiser area, which has resulted in reduction in operating cost and has helped in bringing the said boiler into more stable working condition and satisfied the requirements under AS 10 on capitalisation. So, the accounting treatment made by the company, as stated above, is in consonance with generally accepted accounting principles and Accounting Standards.

9. The querist has separately clarified that the power plant as stated above was capitalised during the year 1994-95 (Unit-1) and 1996-97 (Unit-2) in compliance with AS 10. Total cost of asset was capitalised under accounting head 'Boiler and Turbine Generator' in the books of account and shown in the fixed assets under plant and machinery. Upto 2015-16, if any component of an asset (including boiler and turbo generator) was replaced, the cost of component capitalised as part of boiler and turbo generator was decapitalised and replaced cost was added to the cost of asset.

B. Query

10. In view of above facts and accounting requirements, the company seeks the opinion of the Expert Advisory Committee as to whether the accounting treatment made in the accounts for 'capitalisation of Rs. 4.31 crore towards replacement of economizer coil' is in consonance with generally accepted accounting principles and Accounting Standards. If not, suggest the correct treatment.

C. Points considered by the Committee

11. The Committee notes that the basic issue raised in the query relates to capitalisation of expenditure of Rs. 4.31 crore towards repairs and replacement of economizer coils incurred in the financial year 2014-15. The Committee has, therefore, considered only this issue and has not examined any other issue that may arise from the Facts of the Case, such as, whether or not such expenditure shall be allowed for tariff fixation by the CERC, etc.

12. At the outset, the Committee wishes to point out that since the query refers to the financial year 2014-15, the opinion expressed hereinafter is from the perspective of accounting requirements contained in the Companies (Accounting Standards) Rules, 2006 (hereinafter referred to as the 'Rules') and without considering the application of Accounting Standards amended by MCA vide Notification dated March 30, 2016, which should be applied for the accounting periods commencing on or after the date of such Notification.

13. In the context of Accounting Standard (AS) 10, 'Accounting for Fixed Assets', notified under the 'Rules' (hereinafter referred to as AS 10 (pre-revised)), the Committee notes paragraphs 12.1 and 23 of Accounting Standard (AS) 10, 'Accounting for Fixed Assets', notified under the 'Rules', which state as below:

> "12.1. Frequently, it is difficult to determine whether subsequent expenditure related to fixed asset represents improvements that ought to be added to the gross book value or repairs that ought to be charged to the profit and loss statement. Only expenditure that increases the future benefits from the existing asset beyond its previously standard of performance is included in the gross book value, e.g., an increase in capacity."
>
> ***"23. Subsequent expenditures related to an item of fixed asset should be added to its book value only if they increase the future benefits from the existing asset beyond its previously assessed standard of performance."***

From the above, the Committee notes that subsequent expenditure related to a fixed asset may be categorised into (i) repairs and (ii) improvements or betterments. The Committee notes that repairs implies, "the restoration of a capital asset to its full productive capacity after damage, accident, or prolonged use, without increase in the previously estimated service life or capacity." It frequently involves replacement of parts. On the other hand, betterment is defined as "… an expenditure having the effect of extending the useful life of an existing fixed asset, increasing its normal rate of output, lowering its operating cost, or otherwise adding to the worth of benefits it can yield. … A betterment is distinguished from an item of repair or maintenance in that the latter has the effect of keeping the asset in its customary state of operating efficiency without the expectation of added future benefits." (These definitions are reproduced from the Dictionary for Accountants by Eric C. Kohler, Sixth Edition.)

14. From the above, the Committee is of the view that normally, expenditure on repairs, including replacement cost necessary to maintain the previously estimated standard of performance, is expensed in the same period and only such expenditures that have the effect of improving the previously assessed standard of performance, e.g., an extension in the asset's useful life, an increase in its capacity, or a substantial improvement in the quality of output or a reduction in previously assessed operating costs are capitalised. The Committee is of the view that 'previously assessed standard of performance' is not the actual performance of the asset at the time of repair/improvement etc., but the standard performance of the same asset in its original state. In this context, the Committee notes from the Facts of the Case that the repairs and replacement was made due to frequent forced outage of the boiler due to tube failure/leakages as the coils of the economiser had eroded because of use of low GCV coal with high ash content as against the design coal GCV. Further, the Committee notes that the querist has stated that the replacement of economiser coils has enhanced the efficiency of the boiler and minimised the tube leakages in economiser area, which has resulted in reduction in operating cost and has helped in bringing the said boiler into more stable working condition. From this, it appears to the Committee that though the replacement of economizer coils result into the increase in efficiency, minimising the tube leakages and reduction of operating cost but the same is only maintaining/stabilising the level of the performance of the concerned equipment(s), viz., the boiler, at the time of such repair/replacement and it cannot be considered to increase the future benefits of the concerned equipments beyond the *previously assessed* standard of performance. Accordingly, the expenditure incurred on replacement should not be capitalized; rather the same should be expensed in the statement of profit and loss.

15. In this regard, the Committee also wishes to point out that if the economizer coil is considered as a major component of the boiler and the same has a different useful life from that of the main asset, viz., boiler, the company may also consider to apply the 'component accounting', as prescribed under Schedule II to the Companies Act, 2013. In this regard, the Committee notes the requirements of Note 4 of Schedule II to the Companies Act, 2013, which provide as follows:

> "Useful life specified in Part C of the Schedule is for whole of the asset and where cost of a part of the asset is significant to total cost of the asset and useful life of that part is different from the useful life of the remaining asset, useful life of that significant part shall be determined separately."

Further, as per the MCA Notification dated August 29, 2014, the said requirement shall be voluntary in respect of the financial year commencing on or after April 1, 2014 and mandatory for financial statements in respect of financial years commencing on or after April 1, 2015. Thus, from the financial year 2015-16, component accounting needs to be followed mandatorily in respect of a part/component of an asset whose cost is significant to the total cost of the asset and where useful life of that part is different from the useful life of the remaining asset. Accordingly, the Committee is of the view that the company may also follow the requirements of 'component accounting' from the financial year 2014-15 voluntarily in the extant case if the economizer coil is considered as a major component of the boiler and the same has a different useful life from the boiler in the extant case.

D. Opinion

16. On the basis of the above, the Committee is of the opinion that the accounting treatment made in the accounts for 'capitalisation of Rs. 4.31 crore towards replacement of economizer coil' is not in consonance with generally accepted accounting principles and Accounting Standards. The expenditure incurred should rather be charged to the statement of profit and loss, as discussed in paragraph 14 above unless the company is following component accounting.

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