

**BEFORE THE UTTAR PRADESH ELECTRICITY REGULATORY COMMISSION
LUCKNOW**

Petition No. 353/2006

IN THE MATTER OF: Approval of refurbishment scheme for 5X200 MW units
at Obra B TPS.

AND

IN THE MATTER OF:

Petitioner:

UP Rajya Vidyut Utpadan Nigam Ltd., Shakti Bhawan Extn., 14, Ashok Marg,
Lucknow-226001

Respondents :

1. UP Power Corporation Ltd, Shakti Bhawan, 14, Ashok Marg, Lucknow
2. Managing Director, Madhyanchal Vidyut Vitaran Nigam Ltd., Prag Narain Road, Lucknow.
3. Managing Director, Poorvanchal Vidyut Vitaran Nigam Ltd., 132 KV S/s, Bhikari Vidyut Nagar, Varanasi.
4. Managing Director, Paschimanchal Vidyut Vitaran Nigam Ltd., Victoria Park, Meerut.
5. Managing Director, Dakshanchal Vidyut Vitaran Nigam Ltd., Vidyut Bhawan, Gailana Road, Agra
6. Managing Director, Kanpur Electric Supply Co. Ltd., KESA House, Kanpu
7. Chief Executive Officer, Noida Power Company Ltd., Commercial Complex, H-Block, Alpha-II Sector, Greater Noida City.

The following were present:

1. Sri. D.N Bajpai, CE, R&M, UPRVUNL

2. Sri. P.Chaudhary, SE (R&M), UPRVUNL
3. Sri. V.Mandokhot, EE,UPRVUNL
4. Sri. G.S Lal, SE(Tech), DVVNL, Agra

ORDER

(Date of Hearing 19.7.06 & 17.10.06)

- (1) On 19.7.2006 the Commission discussed the proposal with the representative of UPRVUNL and directed, the Petitioner to conform the R&M scheme with directions issued vide Order dt.19.7.06. The Petitioner has submitted reply and the impact on cost due to additional scope of work added pursuant to the directions of the Commission in Order dt. 19.7.06. The matter was again heard on 17.10.06 with their representatives of the Petitioner.

- (2) In light of the oral and the written submissions made by the Petitioner, the scopes of work and costs thereof and other incidental issues are decided as hereunder:
 - (i) **Plant availability:** The Petitioner was directed that the plant availability shall have the same meaning as defined in UPERC(Terms And Conditions of Generation Tariff)Regulations,2004 and demonstration of 80% availability for one complete year shall be for the whole station of 2X500 MW after all units refurbished apart from demonstration in respect of any one unit. The Petitioner has submitted that the plant would be capable of operation at full load of 216 MW consistently after refurbishment of various equipment like boiler, turbine, generator and BOP and BHEL shall demonstrate full load operation and it is anticipated that 80% availability, as referred in UPERC regulation 2004, will be achieved for the whole station of 5x200MW after refurbishment of all five units. Reviewed scope of work under BOP and additional works pertaining to coal handling, ash handling and CW system may cost around Rs. 40.00 Crores

subject to actual cost quoted by BHEL. The essential firefighting works shall be executed under O&M.

The plant capacity after refurbishment shall be considered 5X216 MW for all purposes including demonstration of availability of 80% for one complete year considering cooling water temperature 30° C after all 5 units are commissioned. The estimated additional expenditure of Rs.40 Cr. due to revised scope work in BOP is approved.

- (ii) **Balance of Plant:** It was directed that the refurbishment for the whole station includes all activities required starting from source of fuel supply, source of water supply, CW system, ash handling system, fire fighting system and all other balance of plants and exclusions are only in respect of those items which are found to be healthy for long term sustainability to ensure not less than 80% availability for remaining 15 years of life expected after refurbishment. The Petitioner has stated that as per BHEL, BOP are sufficient for full load operation of all units for 15 years however under reviewed scope of work in Balance of Plant(BOP), certain R&M works have been identified, as listed in Annex-II to the reply, and the same shall be included in BHEL offer at an additional expenditure.

Direction of the Commission at 4(ii) of Order dt.19.7.06 clearly states that additional BOP work shall be considered in respect to such plants and machineries which are not capable of 80% availability for 15 years post refurbishment, therefore, adequate care shall be exercised while dealing with revised scope of work under BOP.

- (iii) **Worst unit for R&M:** The Petitioner agrees to the direction that the R&M work shall start from the worst unit and experience gathered from it may be utilized in subsequent units.

The R&M work shall start from the worst unit and experience gathered from it may be utilized in subsequent units. The criteria for deciding 'worst unit' shall be fixed in discussion with NTPC and BHEL.

- (iv) **Credit of Scrap Value:** As per GOI guidelines, RLA study is to be done simultaneously as such the Petitioner was directed that the equipments, which have residual life and can be used, should not be replaced in an effort to optimize the investment and a mechanism for this purpose may be incorporated. The cost of scrap should be estimated while evaluating the cost of the scheme. The Petitioner has submitted that it is agreed that in case it is decided not to install any specific equipment/component, necessary credit for exclusion of site activities shall be provided after mutual agreement and the cost of scrap shall be estimated and the same will be deducted from the total cost of scheme.

The Commission, while considering tariff of the plant after refurbishment, shall consider adjustment of scrap value of the plant and machinery so replaced.

- (v) **Certainty of Completion of R&M work:** It was observed the Commission has in past approved the R&M of these units but work could not be undertaken. UPRVUNL was directed to ensure that it was not repeated after approval of the Commission is accorded to the scheme. The Petitioner has clarified that there is no possibility that these works are not executed because after approval of Board, Cabinet has also approved it and letter of intent has already been placed on M/s BHEL which has been expected by the BHEL.

The petitioner shall draw a detailed work plan for refurbishment of all units within three month of this order and keep commission informed of the progress made in execution of work. The work plant shall include the schedule of shut down of

all units for refurbishment. The beneficiaries distribution licensees shall be given a copy of such plan to enable them to arrange power to meet the shortfall due to outage of machines.

- (vi) **Interest on Loan:** The project was identified for 10th plan as such the Petitioner was directed to negotiate with PFC to avail soft loan under AG&SP. The Petitioner has stated that an application for sanction of loan under AG&SP has already been sent to PFC and if AG&SP subsidy is not available, the loan will at ordinary lending rate. It was also clarified by the representative of the petitioner that the cost of the scheme has been worked out on the normal rate of the loan.
The petitioner should endeavor to arrange soft loan from PFC or any other lending agency. Existing financial package shall be submitted for information of the Commission within one month of this order.
- (vii) **Turbine Heat Rate :** The Petitioner was directed that after refurbishment the turbine heat rate should be corresponding to a specific load, say 60%, 80% & 100% and demonstrated accordingly during the test. It is submitted by the Petitioner that BHEL has agreed to demonstrate turbine heat rate during the test at various loads as desired by UPERC.
Therefore, as directed earlier, after refurbishment the turbine heat rate should be demonstrated at loads, 60%, 80% & 100%.
- (viii) **Auxiliary Consumption:** It was directed that after refurbishment auxiliary consumption should not be higher than 9% (with cooling tower) when demonstrated at 80% load of the whole station. The petitioner has submitted that BHEL had agreed to demonstrate Auxiliary power consumption at 9% for the equipments covered in the

figures provided by UPRVUNL of which last three years data had been provided.

The petitioner should note that the direction at 4(viii) of order dt.19.7.06 that the auxiliary consumption after refurbishment shall not be more than 9% at 80% load and has no relationship with passed data. Post refurbishment consumption above 9% shall not be considered while determining the tariff.

- (ix) **Specific Oil Consumption**: the Petitioner was directed to ensure that after refurbishment, specific fuel consumption is not higher than 2 ml/kwh as specified in UPERC regulations. It is submitted by UPRVUNL that BHEL is envisaging supply of latest state of the art equipment in the area of fuel firing and C&I and it would be possible to restrict specific oil consumption within 2 ml /kwh as specified in UPERC regulation.

It is reiterated that to meet the target , the petitioner should strive for achieving this consumption much less than 2 ml/Kwh. The oil consumption for determination of tariff shall not be higher than 2 ml/Kwh.

- (x) **Coal mill capacity** : since the turbine is being upgraded with increased mill capacity, it was directed that such increase in mill capacity shall be demonstrated in the performance test. Safeguard shall also be taken that the increased capacity does not cause wearing of the healthy parts of the coal mill, which have not been replaced with provision for free replacement in such contingency. The petitioner has stated that it is agreed with BHEL to demonstrate enhanced mill capacity corresponding to increased rating of turbine. It was also informed that mill upgradation in unit no. 11 of Obra and at other 200 MW units have performed satisfactorily and therefore wearing of the healthy parts of the coal mill is ruled out.

After upgrading of coal mills, the 4 mills should be adequate to take full load of the plant (5X216 MW) with normal quality of coal in use. Therefore, at the time of demonstration of mill capacity, the coal of designed calorific value shall be fired and 4 mills should sustain full load of the plant. The capacity of the 6 mills to take full load shall also be demonstrated with worst coal.

(xi) **Shut down** : The Petitioner was directed to ensure that the period of refurbishment of unit be synchronized with the requirement of the grid. The Petitioner has agreed to ensure compliance.

(xii) **Reduction of IDC**: The Petitioner was directed to stagger Supplies of equipments to reduce IDC to which it has agreed.

The direction is reiterated.

(xiii) **Services of NTPC**: to the direction that an expert supervisory team comprising of engineers of NTPC, Anpara TPS & Obra TPS shall be constituted for ensuring that the refurbishment is religiously undertaken to ensure quality aspect of supply, erection and commissioning and to complete the work within the time frame according to the directions of the Commission; the petitioner has stated that it intends to appoint NTPC for supervision to ensure quality aspect of supply, erection and commissioning and completion of the work within a stipulated time at the cost of an additional expenditure of approx. Rs. 12.78 crore.

The estimated additional cost for the services of NTPC is approved. The petitioner should negotiate further to bring down this cost as far as possible. Agreement with NTPC shall accordingly be modified.

(xiv) **Quality standards**: UPRVUNL was directed follow the procedure specified in NTPC in that regard If the scheme involves sub-vendors.

The petitioner has stated that BHEL has mentioned that they will follow their own quality standards and practices, however, a list of sub-vendors for BOP and site execution shall be submitted by BHEL for acceptance of the petitioner. It is also submitted during hearing that additional time shall creep in completion of R&M work if NTPC system is adopted for selection of sub vendors, and BHEL is not agreeing for the same.

The quality of work shall prevail on additional cost time involved in selection of sub vendors. The requirement of additional time shall be envisaged in the said work plan. The cost on this account shall be considered by the Commission as pass through in tariff subject to prudence check. It is to be noted that the petitioner is going for R&M of this nature for the first time and don't have in place the procedure for selection of sub vendors whereas NTPC had undertaken several such projects and have established proven procedure in this regard, therefore, these procedures shall be explicitly brought out in agreement with the BHEL. However the petitioner shall be compensated for cost and time implication at the time of tariff determination.

- (xv) **Impact on tariff:** UPRVUNL was directed to demonstrate that the tariff after the refurbishment shall be lower than the tariff for Obra B calculated on the basis of concerned UPERC Regulation. The petitioner expects 186 paisa /unit as the cost of generation after refurbishment considering the capital cost of Rs.1688 Cr, which includes additional expenditure on BOP and NTPC supervision charges.

The cost of generation after refurbishment is higher by 01 paisa /unit in comparison to tariff of 186 Paisa/unit put up for approval of the Commission for year 2006-07. The petitioner is directed to

ensure quality of R&M work and operational efficiencies thereafter to live up to the expected level of cost of generation.

(3) The expected completion cost shall be as below:

(a) Cost of work as per affidavit dt.27.5.06 including caping amount of Rs.60 Cr.	:	Rs.1118.00 Cr.
(b) Additional cost due to change in scope of work in balance of plant	:	Rs. 40.00 Cr.
(c) Enhanced cost due to services of NTPC	:	Rs. 12.78 Cr.
(d) Cost of ESP	:	Rs. 117.00 Cr.
(e) Total (a to d)	:	Rs.1287.78 Cr.
(f) Tax & duties	:	Rs. 270.00 Cr.
(g) IDC	:	Rs. 130.00 Cr.
(h) Total cost (e to g)	:	Rs. 1687.78 Cr.

The tax & duties in the above cost shall be subject to actuals. For the purposes of tariff, the approved cost of Rs.1687.78 Cr. or the actual cost, whichever is less, shall be considered. However, the additional cost, if any, incurred by the Petitioner on account of direction of the Commission and change in tax and duties etc. shall be allowed in addition to the said approved cost subject to prudence check.

In consideration of above, the proposal for refurbishment of 5X200 MW present Obra 'B' project to increased plant capacity of 5X216 MW as put up on affidavit dt.27.5.06 read with affidavit dt.20.9.06 is hereby approved subject to suitable modifications in the scheme pursuant to the directions of the Commission contained in the order.

(4) The Petition is disposed of.

(R.D. Gupta)
Member
Lucknow; Dated : 7th Nov, 2006

(P.N. Pathak)
Member

(Vijoy Kumar)
Chairman