ODISHA ELECTRICITY REGULATORY COMMISSION
BIDYUT NIYAMAK BHAWAN
UNIT-VIII, BHUBANESWAR - 751 012
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Present : **Shri S. P. Nanda, Chairperson**
Shri B. K. Misra, Member
Shri S. P. Swain, Member

Case No.31 / 2011

In the matter of: **Application for approval to carry out renovation, modernisation and uprating of 2x37.5 MW units #5 & #6 of Burla Power House.**

The Managing Director,
Odisha Hydro Power Corporation Ltd. …. **Petitioner**

Vrs.

The Managing Director, GRIDCO,
The Chief Executive Officer, WESCO,
The Chief Executive Officer, NESCO,
The Chief Executive Officer SOUTHCO,
The Chief Executive Officer, CESU. …. **Respondent**

For the Petitioner: Shri Sahadev Khatua, Managing Director, OHPC
Shri M. K. Mishra, Director (Operation), OHPC

For the Respondent: Shri S. K. Parida, GM(Elect.) for GIRDCO
Shri Manas Kumar Das, GM (CSO)
for WESCO, NESCO & SOUTHCO
Shri L. R. Padhi, DGM (Comm.) CESU

Date of Hearing: 28.09.2012 **Date of Order: 26.12.2012**

ORDER

1. M/s OHPC filed an application on 15.12.2010 for approval to carry out Renovation, Modernization and Uprating of 2X37.5 MW Units #5 & #6 of Burla Power House with an estimated cost of Rs. 296.83Cr with project completion period 30 months from the zero date of contract.. The said application was registered as Case No.31 of 2011.

2. OHPC has stated the following:

- Unit #5 & #6 of Hirakud Hydro Electric Project (HHEP), Burla have 37.5 MW capacity each and were commissioned in 17.04.1962 and 05.08.1963 respectively. The units have been operating for more than 47 years. Both the units have outlived their useful life and the renovation and modernization of the units were pending since long.

- OHPC has submitted detailed cost benefit analysis along with a copy of the same to all respondents as per direction of the Commission. OHPC submits that, the cost benefit was projected to be greater than 1 (one) so also the IRR of the project is more than the cost of the capital.

- Further, as per order dated 22.6.2011, an International Competitive Bidding (ICB) was invited on 19.11.11 for RM & U of Unit #5 & #6 of HHEP, Burla. Nine (09) Nos. of firms had purchased the tender documents and only two Nos. of firms, namely, M/s Marubeni Corporation & M/s DEC-SSIPL-TAIHE Consortium have submitted their techno–commercial and price offer within the due date of receipt of tender i.e. 22.05.2012. M/s Marubeni Corporation, Japan fulfilled all the requirements of eligibility criteria. The matter was put up before Board of Directors of OHPC to accord approval for opening the price bid. Price-negotiation was done with M/s Marubeni Corporation and the committee recommended to accept the negotiated offer of M/s Marubeni Corporation, Japan at a cost of Rs. 236.71 Crore which would be around Rs.296.83 crore including Taxes & Duties and IDC. The tariff has been proposed at 183.90 p/u for Burla Power Station for FY 2014-15.

- Further, during the hearing OHPC stated that the proposed investment will be Rs. 308.87 Crore in place of Rs. 296.83 Crore and also this cost is exclusive of hedging cost of about Rs.25 crore. Considering the hedging, they have projected the levelised tariff at 207.61 p/u and average tariff at 201.87 p/u of Burla Power Station for the FY 2015-16 (considering loan repayment period of 10 years).

3. The Respondent GRIDCO has submitted the following:

- The proposed projected cost for R M & Up rating of the units is found to be 236.7 Cr.(excluding Taxes and Duties), which is exorbitant.

- The offer of M/s Marubeni Corp., Japan was as per the exchange rate calculated based on foreign currency conversion rate as on 24.04.2012 and there may be further escalation in the project cost due to devaluation of INR as time progresses.
- Due to RM & U of units 5 & 6, there will be a capacity addition of 11 MW. As calculated by OHPC, the additional benefit of secondary generation of 32.5 MU is not correct in the present condition. The secondary generation is not for 4 months, but could be for maximum of 3 to 3 ½ months (i.e. 25-28 MU).
- Even if the desired additional secondary energy as estimated by OHPC is achieved, the extra expenditure are to be paid in ARR every year and the per- unit cost of the extra generation will be unreasonably high.
- Hirakud is a low-head power house, the rated generation will be achieved only after the Reservoir Level is 610 ft. or above, which normally remains in the month of August as per the Rule curve.
- Earlier, units 1, 2, 3 & 4 have been renovated for which the per-unit tariff has gone up to 92.87 paise from the then project rate of around 49 p/u. But it is observed that none of the above units are able to generate to their full capacity ultimately giving rise to doubts for generating additional energy during rainy reason by units 5 & 6 basing on which return on investment is calculated.
- The cost of the extra generated units will be more than Rs.5.00 is not justified. The increase in rate of energy by more than Rs.1.00/unit above the existing rate of 92.87 paise per unit will be a huge burden on the consumers and hence may not be accepted.
- Rengali Power House and Balimela Power House though more than 40 years old are able to generate their full capacity. However, even after renovation of several units, HHEP is not able to generate to its full rated capacity.
- The capacity loss for existing units 5 & 6 for periods during renovation will be around 60 MW for each monsoon period. After renovation with addition of extra 11 MW capacity for both the units, it may require 15-

16 years to compensate the generation loss provided there are good monsoon period.

- However, ancillary system like, excitation, AVR and electromechanical relays can be replaced by modern static system and other route repair work can be taken up to the extent that the units are available to run at the present capacity as the expenditure so incurred when passed on to the consumers will not be high.
- In summary, GRIDCO has submitted that since the RM&U works of Units 5 & 6 of Burla Power House involves huge cost and adversely affects the consumers, the submission of OHPC for total renovation and uprating of Units No.5 & 6 may be rejected and modernization of the existing auxiliary system and other works needed for running the Units 5 & 6 at its rated capacity may be considered.

4. The Commission observed that as per the cost benefit analysis by OHPC, the benefit-cost ratio was projected to be greater than one, so also the IRR of the project is more than the cost of the capital with various assumptions. The Commission could not accept the same as there was no unanimity between the petitioner and respondents on the assumptions of the study. The Commission would like to consider the matter on the basis of the following three different scenarios.

In case the proposed RM & U of the two generating units is allowed.

5. The original installed capacity of both the units 5 & 6 of Burla Power Station is 75 MW (37.5 MW each). After RM & U of these units, it is proposed that the installed capacity will be increased by 11 MW i.e. each unit will be up-rated to 43 MW from 37.5 MW with the existing discharge of water resulting in enhancement of design energy. Considering the existing Design Energy (DE) of 684 MU and installed capacity of 275.5 MW, the design plant load factor comes to 28.34% and at this plant load factor the up-rated capacity of 11 MW would generate 27 MU. Hence Design Energy of the power station may be enhanced to a level of 711 MU on account of up-rating of the said units. Thus with RM&U of Unit 5 & 6 of Burla Power House, the Design Energy of Hirakud HPS could be 711 MU, as against the present Design Energy of 684 MU. Even if, the Unit 5 & 6 are retired, then also the Design

Energy of Hirakud HPS will remain at 684 MU at 40% to 50% availability of remaining units.

6. Further, it is observed that, the spillage of water from Hirakud Reservoir has occurred for about 235 days during last five years i.e. an average of 47 days per year. These two machines with up-rated capacity of 86 MW would generate extra secondary energy of maximum of 97 MU during the monsoon period considering an average of 47 days of spillage in a year.

7. This extra secondary energy could be considered only if all other units are also generating at its full capacity during monsoon period. But, from the track record of OHPC, it is observed that the generating unit of Burla Power House are not running at its full capacity most of the times even during monsoon period. However, let it be considered that all units are generating at full capacity, hence the secondary generation on account of these two units would be 97 MU during the monsoon period resulting in total the maximum additional energy availability of 124 MU (27 MU+ 97 MU) from the enhanced Design Energy and secondary generation.

8. Now, let the impact of investment as proposed by OHPC on the existing tariff of Burla Power Station as a whole be examined. The petitioner has initially submitted a proposal for investment of Rs.296.83 cr with a consequential tariff of 183.90 paise/unit for the same power station for FY 2014-15 after completion of RM & U work whereas the current year approved tariff of the power station is 89.10 P/U only. Subsequently, during the hearing OHPC stated that the proposed investment would be enhanced to Rs.308.87 Crore in place of Rs.296.83 Crore. Therefore, considering this proposed revised investment of Rs.308.84 Cr. and enhanced Design Energy of 711 MU as stated earlier, the average tariff of Burla PH has been calculated to be around 183.58 p/u for the FY 2014-15 after the proposed RM&U work. It would result in an increase of tariff of about 94.48 p/u of Burla Power Station in the FY 2014-15 compared to the present average tariff of 89.10 p/u. Hence, the additional cost of existing saleable energy from Burla Power Station would be about Rs.64 crore, which is to be recovered from the consumers of the State with a hike in Retail Supply Tariff.

In case the proposed RM & U of the two generating units is not allowed and there is a complete shut down of these two machines

9. The Commission observed that the existing design energy of the power station is 684 MU and present installed capacity is 275.5 MW. In case of complete shut-down of these two units of 75 MW, the installed capacity of Burla Power Station will be reduced to 200.5 MW and even at 50% availability of this capacity of 200.5 MW, the station could generate about 878 MU annually. That means Burla power station can generate its full Design Energy of 684 MU even in absence of the Units 5 & 6. Since the energy charge rate of a Hydro Station is determined based on the Design Energy and Burla power station can generate its Design Energy with complete shutdown of these two units, there would be hardly any impact on the tariff of Burla Power Station.

10. However, availability to GRIDCO in terms of additional generation by these two units will be reduced by 124 MU of energy per year as indicated at Para 7 above. If this quantum of energy is met from the CGPs @ Rs.2.75/Kwh, additional burden on GIRDCO will be about Rs. 34.10 crore.

In case the proposed RM & U of the two generating units is not allowed and both the generating units run in its existing conditions.

11. The Commission observed that considering average generation of Burla Power House during last 6 years, the power station is running at about 30% load factor. At 30% load factor, these two units (Installed Capacity = 75 MW) would generate about 197 MU in a year. However, it is observed that average generation of these two units during last 6 years is about 217 MU. Further, OHPC has stated that the average generation of these two units is about 161.35 MU during the four months monsoon period. OHPC has stated that these two machines are about 49 years old and presently there is frequent forced shut down of the machines and consequently high level of expenditure on account of operation and maintenance and at any moment there may be a complete shut-down of the machines. Therefore, Commission apprehends that the present generation of these two units may be reduced gradually till complete shut-down.

12. In case the RM&U of these units is carried out, tariff of Burla Power Station will be increased by 94.48 p/u and the additional cost of existing saleable energy from Burla Power Station would be about Rs.64 crore. On the other hand if the RM & U work is not carried out resulting in a complete shut-down of these two machines, the loss of generation could be compensated with an

amount of Rs. 34.10 Cr. by purchasing the lost quantum of power from the CGPs.

Findings of the Commission

13. In view of the above, the Commission is of considered view that the proposal of OHPC for RM&U of Units 5 & 6 of Burla Power Station should be postponed for the present and the units may be operated at its optimal capacity round the clock during the 4 monsoon months. In the other 8 months, the Units may be kept basically as 'Standby' of the other units as well as scheduled for running during the peak hours, if required.

14. Regarding OHPC's submission on excess O & M expenses of these units the Commission is of the view that the subject units No. 5 & 6 may be declared as 'Reserve Stand-by Units' and the O & M work of these units be attended prior to the monsoon period for continuous operation during the monsoon 4 months period at its optimal capacity. In case the actual O & M expenses of Burla power station exceeds the normative O & M allowed in the tariff, they may approach the commission for consideration.

15. The Commission also observes that in tendering process of the aforesaid proposed RM & U project is almost like a single tender contract since all other participants are disqualified because of the non- availability of technical drawings which is only available with the Original Equipment Manufacturer(OEM). Such a position is not acceptable as it vitiates the extant competition Law of the Country. Therefore, it is advised that in future OHPC should invite offer in respect of 5 & 6 units of Burla Power Station for complete new units instead of Renovation and Modernization and life extension of the existing units with existing civil structure so that the tenderer can quote with its own design and capacity of the generating units. The tenders can be evaluated on cost per MW basis.

16. With the above observations the case is disposed of.

Sd/-	Sd/-	Sd/-
(S P Swain)	**(B.K. Misra)**	**(S.P. Nanda)**
Member	**Member**	**Chairperson**