



Chhattisgarh State Electricity Regulatory Commission

Civil Lines, G.E. Road, Raipur – 492001

Tel: 0771-4048788, Fax-4073553

Website: www.cserc.gov.in, E-mail: cserc.sec.cg@nic.in

Petition No.20 of 2009 (M)

In the matter of determination of parallel operation charges under Suo-Motu Petition No. 39 of 2006 – Review under section 43 (1) of the CSERC's Conduct of Business Regulations, 2004, thereof.

Chhattisgarh State Power Distribution Company Ltd. Petitioner
(successor to Chhattisgarh State Electricity Board)

V/s

Urla Industries Association and others Respondent
Raipur.

Present: Manoj Dey, Chairman
B.K. Sharma, Member

ORDER

(Passed on 13.10.09)

Chhattisgarh State Power Distribution Company Ltd. (CSPDCL, a successor to Chhattisgarh State Electricity Board) has filed a petition to review the order dated 31.12.08 passed by this Commission in petition No. 39 of 2006(M) for review of parallel operation charges (POC, for short) to the captive power plants (CPPs, for short). The history of the case is as follows:

1. The parallel operation is an activity where one electrical system operates with the connectivity to another system in similar operating conditions. The CPPs opt for parallel operation to seek safety, security and reliability of operation with the support of a much larger and stable system as afforded by the grid. The Hon'ble ATE in their judgement dated 12.09.06 passed in appeal No. 19 of 2006 has directed this Commission to fix the charges for parallel operation on the basis of data, materials and scientific inputs. Enumerating techno-financial co-relation of this service requires detailed technical study of system with quantification in financial terms of the charges to be levied on the CPPs, as such it involves highly technical exercise. Therefore, the Commission seek assistance of a technical consultant to study the various system data and system parameter of some representative CPPs, to suggest the parameters and the rate of POC for which the task

was assigned to M/s Electrical Research and Development Association (ERDA, for short), Baroda an eminent research and testing organization in the field of power accredited by the Government of India. The measurements of various electrical parameters were taken by the consultant under the following conditions:

(a) Grid isolated from load and generator; measure V_{thd} of the grid at point of common coupling.

(b) Grid and generator both feeding the load in parallel; measure all power system parameters simultaneously at the point of common coupling and at generator terminal.

(c) Generator isolated and grid feeding the load; repeat all above measurements at the point of common coupling.

(d) Grid isolated and generator feeding the load; measure all power system parameters at generator terminals.

The ERDA in its report has come to the following conclusion:

(1) The voltage THD (Total harmonic distortion) of CSEB grid is measured at point of common coupling in isolation mode. The voltage THD of CSEB grid is within the limit as per CBIP 251.

(2) The current THD at point of common couplings (PCC, in short) are high compared to permissible limit (IEEE 519).

(3) Percent negative phase sequence (NPS, for short) current at point of common couplings are much higher than the percent negative phase sequence current at generator output terminal.

(4) The magnitude of power factor at PCC are much less but the variation in power factor at PCC are high compared to at generator terminal.

(5) CPP generator operates at constant power mode when running in parallel with grid. Utility's grid takes care for the variation in the load demand of the CPP load.

(6) During the part -II measurements, the plant load factor has been measured both in parallel mode as well as in isolation mode. It is observed that the plant load factor of captive generator is improved when it operates in parallel with CSEB grid compared to when it operates without grid support.

(7) It was observed that the industries of a CPP draw starting power demand as also excess demand on account of its fluctuating load, beyond the contract demand, from the CSEB grid.

The ERDA have suggested following three alternative methods for working out POC:

(a) BASE MVA SUPPORT

(b) POWER QUALITY PARAMETERS

(c) INTERCONNECTING TRANSFORMERS OF THE CPP

Out of which the base MVA support method has been recommended by the consultant ERDA and has worked out the rate of POC in Rs. per KVA per month for the CPPs included in the study and averaged this charge at Rs.21.11 per KVA per month. This report of ERDA was placed on the public domain and also uploaded on website of the Commission inviting comments from the stakeholders. 9 stakeholders submitted their comments/suggestions and after conducting public hearing the order was passed by this Commission on dated 31.12.08 considering the suggestions/objections/ comments from the stakeholders, which concludes **“the rates of parallel operation charges should be as derived on the basis of Base MVA Support method i.e. Rs. 21 per KVA. However, instead of levy of parallel operation charges on the installed capacity of the CPP, as being done at present, we consider that the demand towards auxiliary consumption of CPP (which shall not be more than 10% of the capacity of the plant), contract demand of the CPP agreed with the utility, the power supplied by the CPP to CSEB or sold inside/outside the State through open access, should be excluded from the installed capacity for the purpose of calculation of POC.”**

2. The CSPDCL filed this petition for review of POC stating some grounds for review and has prayed for re-determination of POC and to keep the impugned order in abeyance till completion of re-determination of POC. The petitioner in their petition and in additional submission has stated that the Commission has proceeded in determination of POC on the assumption that all the captive power generators are of the installed capacity more than their captive requirement of power for industrial load which is not true. The modality of levying the POC as decided by the Commission does not hold good for such captive power plants which are of lesser installed capacity than their aggregate actual power requirement for industrial load like BSP. The petitioner has filed a statement indicating as to how POC will be arrived for individual CPPs. This indicates negative POC in respect of BSP and few other CPPs. It is further stated in petition that the captive generating plant can either import or export power at one time and both these operations cannot take up simultaneously because of the single connectivity with the grid, whereas for calculation of POC both the import and export quantum has been considered simultaneously which is technically not possible. Parameters like auxiliary consumption, export of power to licensee or transactions under open access are the variable parameters changing from time to time and therefore the calculation of POC will be required to be carried out every month based on these datas and is thus difficult and cumbersome.

It is further stated in petition that the study results, discussion paper and recommendation of the ERDA and Commission's views over it, circulated by the Commission vide letter No. 03-tariff/09/2008/1431

dated 03.12.08 amongst stakeholders for comments does not incorporate the auxiliary consumption of the power plant as a parameter to be deducted from the installed capacity of the plant for arriving modality for computation of POC. This was also not the issue discussed even in the public hearing conducted on 24.12.08, therefore, it constitutes to an error apparent on the face of record which justify the ground for review of the Commission's order dated 31.12.08.

The Commission has viewed that this was the very first effort by any State Commission in the country to undertake a detailed study on parallel operation charges through an expert agency. There may be some difficulties in the implementation of the order which could be expected and thus decided to hear the detailed arguments of both the parties before reaching to any conclusion. Looking to the difficulties pointed out by the petitioner we felt that the balance of convenience lies in staying the implementation of the impugned order dated 31.12.2008. We accordingly stayed the order till the disposal of this case and directed the petitioner that parallel operation charges shall continue to be levied as per the earlier orders of the Commission on the subject.

3. M/s Urla Industries Association (UIA, for short) has raised some objections that review petition is not submitted within the time frame specified by our Conduct of Business Regulations and hence does not merit for consideration. It is further pleaded by the UIA that nothing new matter or evidence which were not in the knowledge of the Commission has been brought out in the review petition and only submitted that implementation is difficult and cumbersome. The Commission's order is not for the dynamic condition but relates to the contract demand and contracted power in terms of MW for sale to CSEB or any other party which is fixed as per agreement. UIA, thus, requested to reject the review petition. M/s Bajrang Power and Ispat Ltd. in their reply stated that in their opinion the actual parameters every month are not at all required to calculate the POC and the power supplied by CPP to CSPDCL, their captive load, other captive loads and outside State under open access can well be considered in calculation of POC. M/s Jayaswal Neco Industries Ltd. has expressed that the POC have been finalized by the Commission based on the detailed technical study carried out by the ERDA, Baroda and hence at this stage no review is required and prayed to reject the review petition. M/s Bharat Aluminium Company Ltd. (BALCO, for short) in their submission has mentioned that in case of BALCO, study was not conducted in isolation mode. Therefore, it cannot be ascertained whether the harmonics and other disturbances were being generated from the CSEB grid or the internal BALCO grid. The BALCO has installed harmonic filters at the load end. The current THD is well within the limits at point of common coupling i.e. much below 6%. BALCO operates with the balance load during all operating conditions therefore NPS current is well within

limits. Thus, the measurement with respect to BALCO would not be true.

4. We have gone through the submission of the petitioner and respondents, heard them in length and observed that the review petition was filed by the petitioner CSPDCL on 26.03.09 which is well within the provision of ninety days period for submission of review petition in accordance with the provision in clause 43(i) of CSERC (Conduct of Business) Regulations, 2004 and hence the review petition is not time barred. On petitioner's view that the parameters like auxiliary consumption, export of power to licensee or transaction under open access are the variable parameters changing from time to time and therefore, the calculation of POC will be required to be done every month based on these datas, UIA pleaded that the Commission's order is not for the dynamic condition but relates to the contract demand and contracted power. M/s Bajrang Power and Ispat Ltd. is also of the view that actual parameters are not at all required to calculate the POC and the contracted power be considered in calculation of POC. We are in agreement with the views of UIA & Bajrang Power and Ispat Ltd. to arrive POC based on agreed power as such calculation of POC on every month based on variable datas will be difficult and cumbersome as expressed by petitioner in petition. Further, evaluation of POC based on contracted power will eliminate the difficulty expressed by the petitioner in calculation of POC every month in simultaneous consideration of import and export power. We are also in agreement with M/s Jayswal Neco Industry Ltd. that the POC has been finalized based on the detailed technical study carried out by ERDA, Baroda and hence no further technical study is required. Regarding the submission of M/s BALCO, it is to mention here that their views expressed in their submission has already been considered in our order dated 31.12.2008. Regarding contention of BALCO that POC shall not be applicable to them since they have installed harmonic filters at the load end, we have already specified the position in para 9.2 (iv) of our order dated 31.12.08, reproduced as below:

"BALCO was included in the study and ERDA measured electrical parameters on 220 KV system. If BALCO has installed harmonic filter, the life of their generator and associated equipments shall enhance. However, the current THD at the point of common coupling in case of BALCO was measured above permitted values, indicating the support drawn from the grid.

We are in agreement with contention of petitioner also that "the auxiliary consumption of power plant as a parameter to be deducted from the installed capacity of the plant for arriving modality for computation of POC was not incorporated in the report of the ERDA, and in the discussion paper. This issue was also not raised during the public hearing and thus it constitutes an error apparent on face of the record to justify the ground of review of Commission's order dated

31.12.08.” The auxiliary consumption of a CPP is an essential load to run the CPP and the net quantum of useful power which is available for use by the CPP comes out only after deducting the power related to auxiliary consumption, from the installed capacity of CPP. Therefore, the Commission viewed it appropriate not to consider the load related to auxiliary consumption of CPP as a captive load and accordingly not to consider it as an element for computation of POC. The object of Electricity Act 2003 is to delicense the generation and to freely permit CPPs, therefore, in order to promote the CPPs the Commission incorporated in the order dt. 31.12.2008 that the load related to the auxiliary consumption of CPP be exempted while computing the POC of CPP which is also in line with the object of Electricity Act, 2003. This view of Commission was also not objected by the petitioner during argument of this case. The statement submitted by the petitioner indicating as to how the POC has been arrived for in respect of individual CPPs shows negative POC in respect of Bhilai Steel Plant and few other CPPs whose installed capacity of CPP are quite less than their actual industrial load, though their captive loads are connected to the grid and causing shocks, pollution and disturbance to the grid. Looking to the such situation of negative POC arrived on the basis of the formula given in our order dated 31.12.08 indicating that demand towards auxiliary consumption of CPP, contracted demand of the CPP agreed with the utility, power supplied by CPP to the utility or sold inside-outside the State through open access be excluded from the installed capacity of CPP for the purpose of calculation of POC, it is concluded that the said formula does not come out with correct picture of parameters to be taken into account for evaluation of POC and thus need to be reviewed. It will be appropriate to specifically identify the parameter responsible for causing shock, pollution and disturbance in the grid as parameter for calculation of POC. The power generated by CPP can be utilized for auxiliary consumption captive load, non-captive load, supply to utility and for inter state sale. In case of elimination of supply for auxiliary consumption, supply to utility and power for inter state sale as per provision in our order dt. 31.12.2008 the balance remains power supply to captive and non-captive loads of CPP, and this can be specifically identified as an element for payment of POC. The essence of technical study conducted and report submitted by the ERDA is that the load connected to grid is responsible for creation of shocks, disturbance and pollution in the grid. Though the grid absorbs the pollution of the loads of the consumers who has agreement with the utility and utility charges to consumers as per the retail tariff fixed by the Commission, but the grid also used to absorb the pollution of the captive and non-captive loads of the CPP connected with the grid which is not the consumer of utility and therefore, captive and non-captive load of CPP can be parameter for payment of POC. Such captive and non-captive load of CPP can either be co-located, supplied through the grid or may be supplied through dedicated system. We have thus come to the conclusion that the POC shall be calculated at the rate of Rs.21/-

per KVA per month (the rate as decided by the ERDA) on the captive and non-captive load of CPP which may either be co-located, fed through the grid or through dedicated lines of CPP.

The billing of parallel operation charges is therefore ordered as above and it shall remain effective from 1st January 2009, till it is revised by the Commission.

**Sd/-
Member**

**Sd/-
Chairman**