

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 150/MP/2016

Coram:

**Shri P.K.Pujari, Chairperson
Shri A.K. Singhal, Member
Shri A.S. Bakshi, Member
Dr. M.K. Iyer, Member**

Date of Order: 16th May, 2018

In the matter of

Petition for consideration of declared capacity of Nathpa Jhakri Hydro Power Station (6 x 250 MW) aggregating to 1500 MW and Rampur Hydro Power Station (6 x 68.67 MW) aggregating to 412 MW and in the matter of "The Minutes of the 120th and 122nd OCC Meetings of the Northern Regional Power Committee dated 24.2.2016 and dated 22.4.2016 on the scheduling and declaration of the capacity of Nathpa Jhakri and Rampur Hydro Power Stations"

And

In the matter of

SJVN Limited.

**(A Joint Venture of Govt. of India and Govt. of Himachal Pradesh)
Himfed Building,
New Shimla - 171009**

.....Petitioner

Vs

- 1. Northern Regional Power Committee
18-A, Qutab Institutional Area,
Shaheed Jeet Singh Marg, Katwaria Sarai
New Delhi- 110016**
- 2. Northern Regional Load Despatch Centre
18-A, Qutab Institutional Area,
Shaheed Jeet Singh Marg, Katwaria Sarai
New Delhi- 110016**
- 3. Punjab State Power Corporation Ltd.
The Mall, Patiala - 147001**
- 4. Haryana Power Purchase Centre,
Shakti Bhawan, Sector VI,
Panchkula - 134019,**
- 5. Tata Power Delhi Distribution Ltd.
33 kV Sub-station, Hudson Lines,
Kingsway Camp, Delhi - 110009**



6. BSES Rajdhani Power Ltd.
2nd Floor, B Block, Nehru Place,
New Delhi 110019
7. BSES Yamuna Power Ltd.
Shakti Kiran Building, Karkardooma,
Delhi - 110092
8. Ajmer Vidyut Vitran Nigam Ltd.
Old Power House, Hathi Bhsata,
Jaipur Road, Ajmer
9. Jaipur Vidyut Vitran Nigam Ltd.
Vidyut Bhawan, Janpath,
Jaipur - 302005
10. Jodhpur Vidyut Vitran Nigam Ltd.
New Power house, Industrial Area, Jodhpur
11. Himachal Pradesh State Electricity Board Ltd,
Vidyut Bhawan, Shimla - 171004
12. Power Development Department (J&K),
Government of J&K,
Mini Secretariat, Jammu
13. Power Department,
Union Territory of Chandigarh,
Additional Office Building, Sector 9D,
Chandigarh
14. Uttar Pradesh Power Corporation Ltd.
Shakti Bhawan, 14, Ashoka Road,
Lucknow - 226001
15. Uttranchal Power Corporation Ltd.
Urja Bhawan, Kanwali Road,
Dehradun- 248001
16. Government of Himachal Pradesh,
H.P. Secretariat,
Shimla -171002

.....Respondents

Parties Present:

Shri M.G. Ramachandran, Advocate, SJVNL
Ms. Ranjitha Ramachandran, Advocate, SJVNL
Ms. Poorva Saigal, Advocate, SJVNL
Ms. Anushree Bardhan, Advocate, SJVNL
Shri Romesh Kapoor, SJVNL
Shri Rajeev Agrawal, SJVNL



ORDER

The Petitioner, SJVNL has filed this Petition seeking the following reliefs:

(a) Declare that PAF of Rampur Project will not in any manner be affected if any of its generating unit cannot operate on account of non-cooperation of the generating unit of Nathpa Jhakri project and also vice versa, namely, if any of the generating unit of Nathpa Jhakri Project cannot operate on account of non-cooperation of any of the Rampur Project, as the case may be;

(b) Direct Respondents No. 1 & 2 to recomputed the PAF of Nathpa Jhakri project and Rampur project on the basis of their respective machines/ generating units being available to generate, notwithstanding that due to non- availability of water/ spillage of water on account of the problem faced by the either project, the actual generation cannot be undertaken in Nathpa Jhakri project or Rampur project, as the case may be; and

(c) Pass such further order or orders as this Hon'ble commission may deem just and proper in the circumstances of the case.

2. The Petitioner, SJVNL is a company incorporated under the provisions of the Companies Act and is a joint venture of the Government of India and Government of Himachal Pradesh. The Petitioner is within the regulatory jurisdiction of this Commission under section 79 (1) (a) of the Electricity Act, 2003 (hereinafter called 'the 2003 Act').

3. The Petitioner has established Nathpa Jhakri Hydro Power Station with a capacity of 1500 MW (hereinafter called 'Nathpa Jhakri Project') comprising of 6 units of 250 MW each in the State of Himachal Pradesh. The Nathpa Jhakri Project is constructed on the river Sutlej and consists of a pondage/ reservoir to hold water and to be released for generation of power, keeping in view the optimum use of water for generation and supply to Respondents 3 to 16.

4. The Rampur Hydro Power Station (hereinafter referred to as 'Rampur Project') also established by the Petitioner comprises of 6 units of 68.67 MW (412



MW) at the downstream of the Nathpa Jhakri Project to harness and have optimum use of water getting released from the Nathpa Jhakri project for generation and sale of electricity to the Respondents 3 to 16.

5. The Rampur Project is built to operate in tandem with the generation of upstream project (Nathpa Jhakri) and is dependent on the use of water in the operation of Nathpa Jhakri Project. Hence, the Rampur Project is a unique generating station which does not have its own pondage at all and is operating with water coming out from tail race tunnel of Nathpa Jhakri Project and thus acting as a tail race extension of Nathpa Jhakri Project. The water so flowing, after being used for generation in Nathpa Jhakri Project, is diverted into Rampur Project through TRT pond. The discharge of water released from the Nathpa Jhakri Project is utilized by Rampur Project in steady state conditions avoiding any spillage of water at TRT of Nathpa Jhakri Project.

6. In the above background, the Petitioner has filed this Petition and has submitted the following:

(a) The Scheduling of Rampur Project in tandem with Nathpa Jhakri Project has been appraised in various OCC Meetings of Northern Regional Power Committee (NRPC) for safe and optimum generation of power without spillage of water, for operation of both generating stations.

(b) Since Rampur project does not have its own storage and has been utilizing the pondage of Nathpa dam upstream of Nathpa Jhakri Project for giving peaking power commonly with Nathpa Jhakri Project as per schedule Northern Regional Load Dispatch Centre (NRLDC).

(c) Whenever one unit of Nathpa Jhakri Project is not available for any reason, correspondingly one unit of Rampur Project is also not able to generate power, in spite of availability of all its units. This is only due to less availability of water received from upstream project i.e Nathpa Jhakri Project.

(d) There is no balancing reservoir in between the two projects and the Sutej water released from the Nathpa Jhakri Project enters the Head Race Tunnel of Rampur Project through a small storage in the Nathpa Jhakri Tail



race pond. The Sutlej water is stored at Nathpa dam upto the maximum FRL during the lean season for providing the peaking power as per requirement of grid and in larger public interest. The water availability for Sutlej River stored upstream of Nathpa Jhakri Project and released in relation to one unit of 250 MW of Nathpa Jhakri Project is found to be appropriate for generation of electricity for one unit of Rampur project of 68.67 MW.

(e) Nathpa Jhakri Project was commissioned during the year 2004-05 whereas Rampur Project was commissioned during the year 2014-15. Both projects are being presently operated in tandem, treating one unit of Nathpa Project of 250 MW related to one unit of Rampur Project of 68.67 MW.

(f) Although Rampur Project's six units are all in condition of being operated or being operatable (the machines are fully available), because of non-availability of water from Nathpa Jhakri Project upstream/ reservoir (due to non-availability of one unit of Nathpa Jhakri Project), the water required for corresponding unit of generation at Rampur Project cannot be released. In other words, water equivalent to one unit does not get released till such time 250 MW of Nathpa Jhakri Project is brought back into operation.

(g) Similarly, if one unit of Rampur project cannot be operated for any reason, the operation of all six units of Nathpa Jhakri Project and the release of water for the purpose would result in wastage / spillage of water due to non- utilization of water by Rampur project. For generation of electricity for one unit of 6867 MW.

(h) In view of the above and in order to ensure that the water from the Sutlej River stored in the upstream reservoir of Nathpa Jhakri is effectively and optimally used for maximizing the generation, if any unit of either the Nathpa Jhakri or Rampur Project, cannot be operated for any reason, the corresponding project of either Rampur or Nathpa Jhakri should also not run as the water from the pondage/reservoir is not released.

(i) In the peculiar facts and circumstances mentioned above, the Petitioner is constrained not to release the water for generation of electricity in both the Nathpa Jhakri Project and Rampur Project, under the circumstances where a unit of Rampur Project or Nathpa Jhakri Project, as the case may be, is not available for generation of electricity, though the unit in the other project is available for generation and supply of electricity. Such a situation is for reasons other than those attributable to the petitioner and has been mandated on account of utilization of water of the Sutlej river to the maximum extent possible. The above arrangement is beneficial to the Procurers being Respondents 3 to 16 herein, especially during the lean season, where water of Sutlej river stored in the pondage maintained upstream of Nathpa Jhakri Project and gets released only when the



generation is possible at both Nathpa Jhakri Project and Rampur Project in tandem.

(j) It is not prudent for SJVNL to organize the release of water from the reservoir/ pondage upstream of Nathpa Jhakri Project till such time the corresponding units of both projects can be operated in tandem. Therefore, non-availability of water and consequently non- generation of electricity will not be treated as non- achievement lowers plant availability factor as long as generating units and machines are available to generate and supply electricity.

(k) The scheme under which a hydro-electric generating station operates is required to be considered. There is a need to recognize the fact that the NPAF of a hydroelectric generating unit/ machines are capable of generating electricity. The total non- availability of water to undertake generation and sale of electricity, for whatever reason, cannot be taken as ground for any default of breach or otherwise attributable to the generating company so as to deny Plant Availability Factor (PAF) and Declared Capacity (DC).

(l) The Petitioner will suffer financially if PAF of either Nathpa Jhakri Project or Rampur Project is reduced on account of non-availability of generating units/machines of the other. For the purpose of computation of PAF of Nathpa Jhakri Project, Rampur Project should be considered as if it is owned and controlled by an independent company and vice versa. If the Rampur Project had belonged to another entity, in such a difficult situation if water supply were not released by Nathpa Jhakri Project for generation at Rampur Project, the Rampur Project would not have been denied the PAF. Similarly, if on account of non-availability of the generating unit at Rampur Project, the Nathpa Jhakri Project is required not to operate one of its generating unit to avoid spillage of water, PAF of Nathpa Jhakri Project cannot be denied.

(m) Therefore, there is a need for the Commission to intervene in the matter and declare that PAF of Rampur Project or the Nathpa Jhakri Project should not be affected if any of the generating unit of such project cannot be operated on account of the non-availability of generating unit of the other project. Though the above methodology was followed in the scheduling by NRLDC for Rampur Project (which was in a Slave-Master relationship with Nathpa Jhakri project) till 16.3.2016, however from 17.3.2016 onwards; there has been a shift in NRLDC's stand.

(n) At the 122nd OCC meeting of NRPC, the Petitioner raised the issue of operation of the Rampur Project that it cannot operate any of its available generating unit on account of non-release of water from the Nathpa Jhakri Project on account of non-availability of a generating unit(s) of upstream



Nathpa Jhakri Project and thus being not in a position to operate Rampur project unit(s), and therefore in such cases DC as well as PAF to be considered based on availability of unit(s) of downstream project i.e. Rampur project. While expressing certain reservations in the 122nd Meeting of OCC, it was however decided that the matter be raised before the Commission.

Accordingly, the present Petition has been filed by the Petitioner, with the prayers in para 1 above.

7. The Commission on 8.9.2016, directed the Petitioner to file additional information on the following:

(a) Instances with full details where Plant Availability Factor (PAF) of Rampur (6 x 68.67 MW) Project has been reduced by NRLDC due to unit outage of Nathpa Jhakri (6x250 MW) Project.

(b) Instances with full details where Plant availability Factor (PAF) of Nathpa Jhakri (6x250 MW) Project has been reduced by NRLDC due to unit outage of Rampur (6x68.67 MW) Project.

8. In response, the Petitioner vide affidavit dated 29.9.2016 has submitted its response on the above said issues as follows:

As regards (a) above

(i) DC is being punched on line by respective Generating stations through individual station-wise user name and password given by NRLDC. Therefore, Nathpa Jhakri Project and Rampur Project are punching declared capacity online based on availability of machine as well as water availability.

(ii) From 18.3.2016 to 30.3.2016, one Unit of Nathpa Jhakri Project was under forced outage and thus only 5 units of Nathpa Jhakri Project were available for generation. During the same period, all the 6 units of Rampur Project were available and even demonstrated for few days in different time blocks. Based on availability of all six machines, DC of Rampur Project was punched as 442 MW w.e.f 18.3.2016 to 19.3.2016, however NRLDC allowed only 377 MW DC considering the availability of water for 5 Machines of Rampur Project. Thereafter, under persuasion of NRLDC for reduction of Declaration of DC to 375 MW, the Petitioner started declaring 375 MW for further days w.e.f. 20.3.2016 to 30.3.2016.



As regards (b) above

(i) There is no such case, when Declared Capacity of Nathpa Jhakri project was reduced by NRLDC due to outage of unit(s) of Rampur Project. Each of the six units of Rampur Project of 68.67 MW can be run only if the corresponding unit of 250 MW each of Nathpa Jhakri Project is run for optimum utilisation of the water for generating electricity at both the projects and avoid wasteful/spillage of water. However, if one unit of Rampur Project cannot be operated for any reason, the operation of all six units of Nathpa Jhakri Project and release of water for the purpose would result in the wasteful/spillage of water, due to not being utilised for generation of electricity by Rampur Project. This water can be stored in the upstream reservoir of Nathpa Jhakri and optimally used for maximising the generation at both Nathpa Jhakri Project and Rampur Project in tandem.

(ii) This situation was raised in the 120th OCC meeting of the Northern Regional Power Committee (NRPC), wherein SJVN submitted that in case of non-availability of unit of Rampur Project, water released from Nathpa Jhakri Project cannot be utilised fully during peaking hours and leads to spillage of water, which is not in the interest of procurer and not in the public interest. The same can be stored at the Dam site of upstream Jhakri Project and extended peaking can be given as per the requirement of Grid.

9. The Commission admitted the Petition and directed the parties to complete pleadings in the matter. In response, NRLDC, UPPCL & BRPL have filed their replies in the matter and the Petitioner has filed rejoinder to the said replies.

Reply of Respondents

NRLDC

10. The Respondent No. 2, NRLDC vide affidavit dated 1.12.2016 has mainly submitted the following:

(i) The submission of the Petitioner that from 17.3.2016, there has been a shift in NRLDC's stand with respect to the scheduling methodology, is factually incorrect as the same has not been supplemented with facts. There is no change in NRLDC's stand with respect to the scheduling methodology and the same is being carried out as per provisions of Regulations notified by the Commission.



(ii) Though the Petitioner's argument is to consider DC only based on the machine availability, it is emphasized that for considering capability to deliver power, Machine and Water are not mutually exclusive and both are important for considering the DC.

(iii) The Petitioner is getting full DC if it is available to deliver only for three hours during peak hours as certified by NRLDC. However, if the plant is not available to deliver during peak hours even though machine is available, there is no parameter to which it can be entitle for DC. If the prayer of the Petitioner is considered by the Commission, then the commercial implication on hydro generators to optimally do the outage planning of the generating stations working in tandem, would get diluted.

(iv) As per the new Tariff Policy, 2016, the beneficiaries are paying to get the peaking support from the storage based hydro power stations and they should not be unreasonably burdened in paying the fixed charges for planned or forced outages. Therefore, any relaxation would be against the basic intent of the regulations as it is not only the energy but peaking capability delivery from hydro stations, which is of paramount importance.

(v) The concept of PAF was introduced in the 2009 Tariff Regulations with lot of emphasis on the peaking capability from hydro stations. Thus, to get DC, both, unit or machine availability as well as water availability are necessary.

(vi) During the lean period, there will be slight overall gain in terms of hydro energy utilization but the beneficiaries will be deprived of peaking power of 275 MW (considering 10% overload capability of machines), even in case of outage of one unit at Rampur project. This peaking loss will increase further in multiple of unit's outage, e.g.; if 4 units at Rampur Project are out, then there will be loss of peaking power of the order of 1100 MW. During the outage of Nathpa Jhakri units, even if units at Rampur are available, there is no gain to the beneficiaries but loss of peaking (and also energy loss during high hydro season).

(vii) As per clause 6.4.18 of the Indian Electricity Grid Code (IEGC), the generator should declare its DC faithfully as per its capability to deliver. Thus, during the lean season, if the generator wants to optimise on energy charge (as a part of fixed cost component is recovered through energy charge), then it shall declare its DC accordingly.

(viii) These types of issues had already been considered by the Commission by notification of regulations and clause 6.5.10 of the IEGC, which specifically provides that the declaration of the generating capability by hydro ISGS should include limitation on generation during specific time periods, if any, on account of restriction(s) on water use due to irrigation, drinking water, industrial, environmental considerations etc.



(ix) Based on above, NRLDC has been advising the generators for declaration of capability taking into consideration any constraints/restrictions.

(x) Thus, the submissions of the Petitioner are not in line with the intent of the present Regulations to maximize the peaking capability in the system. However, considering the unique nature of the tandem operation, the Commission may consider devising the PAF of the stations in such a way that the combined maximization of peaking is incentivized (though without spillage of water). The combined PAF calculation and its segregation between two plants for tariff recovery could also be thought of (though in case of unavailability of water, even independent certification of unit availability is difficult).

UPPCL

11. The Respondent No. 14, UPPCL vide reply affidavits dated 22.9.2016 and 21.4.2017 has mainly submitted the following:

(a) Spillage of ponds

(i) When one unit of Nathpa Jhakri Project is under shut down all other five units will run and there will be no spillage.

(ii) All units of Rampur Project will give 100% generation under first condition and there will be no spillage at the Tail Race Pond of Nathpa Jhakri Project.

(iii) When there is outage of two or more units at Nathpa Jhakri there will be spillage at Nathpa Jhakri Pond, However all the units of Rampur Project will give lower generation but there will be No spillage of Tail Race Pond of Nathpa Jhakri Project.

(iv) Under second condition all the units of Nathpa Jhakri will work. There will be No spillage of pond at this power station when there is outage of one unit at Rampur Project. All the other units of Rampur Project will be overloaded by 3.33% and there will not be any spillage at Tail Race Pond of Nathpa Jhakri Project. However this outage more than unit at Rampur Project there will be spillage at Rampur Pond.

(b) Capacity Charge and PAF/ Declared Capacity

(i) The Petitioner's request for increased quantum of DC will amount to increase in the capacity charges. This is not justified because the tariff regulations provides for incentive for over performance and disincentive for under performance.

(ii) The ratio of incentive and disincentive is same and accordingly, there is equitable sharing of risk between the generator and the beneficiary. There is also provision under the said regulations for incentive in energy charges for



generation above the Design Energy. Therefore, utilities like the Petitioner are not expected to rush to the Commission to seek compensation where incentives already exist and where 2% reduction in NAPF is already embedded in the value of NAPAF to take care of outages.

(c) Payment of Additional Capitalization

(i) The outage of unit in a hydroelectric project is either on account of force majeure conditions or for the purpose of regular maintenance. In general, the Petitioner is paid by way of O&M charges which are embedded in tariff. However, in case of capital maintenance like refurbishment etc., the burden of additional capitalization is borne by the beneficiaries.

(ii) Further, in case of force majeure conditions, the burden of additional condition is also borne by the beneficiaries. Therefore, it will not be appropriate to allow the enhanced DC as the same will amount to double charging the beneficiary.

(d) Order dated 11.12.2013 in Petition No.120/MP/2011

(i) In Petition No. 220/MP/2011 relating to PAF of Tehri Hydroelectric Project with Koteshwar Hydroelectric Project, downstream, the Commission had consciously disallowed the demand of the Petitioner to reduce NAPAF. Regulation 21 of the 2009 Tariff Regulations and the Regulation 31 of 2014 Tariff Regulations are similar, as they provide for incentive for over performance and disincentive for under performance.

(ii) The ratio of incentive and disincentive is same and accordingly, there is equitable sharing of risk between the generator and the beneficiaries. There is further provision under Regulation 22 (7) of the 2009 Tariff Regulations for incentive in energy charges for generation above design energy.

Accordingly, the respondent, UPPCL has submitted that the prayers (a) and (b) sought for by the Petitioner is not acceptable.

BRPL

12. The Respondent No. 6, BRPL vide reply affidavit dated 23.1.2017 has submitted the following:

(i) The problems narrated by the Petitioner are his own problems created due to non-coordination in the operation aspects of these two hydro generating stations. The contention of Petitioner claiming to adopt prudent utility practice is without any substance when even the coordination between the two generating station is missing.



(ii) The DC as defined in Regulation 3(15) of the 2014 Tariff Regulations is required to be declared by such generating station in relation to any time block of the day. Once the DC is declared by the generating station, NRLDC is responsible for optimum scheduling and despatch of electricity within the region in accordance with the contracts entered between the discoms and the generating companies.

(iii) NRLDC is also responsible for carrying out real time operations for grid control and despatch of electricity within the region through secure and economic operation of the regional grid in accordance with grid standards and the IEGC. In the light of all this, it is not understood as to how the Petitioner can claim DC without considering the same capacity for scheduling and despatch of electricity by the NRLDC?

(iv) Once the DC is declared by the generating company, it should be ready for scheduling and despatch by NRLDC. DC in relation to Regulation 3(15) of the Tariff Regulations, 2014 means the capability to deliver ex-bus electricity in MW. It cannot be interpreted to be the availability of machines being incapable of generating and without subjecting to schedule and despatch of electricity. In case all hydro generating stations in the region follow this interpretation, it would lead to a chaotic condition in the integrated operation of the regional grid and the secure and economic operation of the regional grid cannot be ensured by NRLDC within the region. The Petitioner has misconceived the whole issue by simply misinterpreting Regulation 3(15) of the 2014 Tariff Regulations.

Rejoinder of Petitioner

13. The Petitioner has filed its rejoinder to the replies filed by the Respondents as stated below;

Rejoinder affidavit dated 7.2.2017 to reply of NRLDC

(a) Rampur project, as a whole, was available for generation from 16.12.2014 onwards. After COD of the Rampur Project during 2014-15 (after 16.12.2014 onwards) and 2015-16, in many occasions whenever one or two unit(s) of Nathpa Jhakri Project were under shut down due to Forced Outage/Planned Outage, DC of Rampur Project was allowed based on the availability of its machine.

(ii) Similarly, when one unit of Nathpa Jhakri Project was under forced outage from 16.3.2016 to 30.3.2016 and only 5 units of Nathpa Jhakri Project were available for generation, during the same period, all the 6 units of Rampur Project were available and even demonstrated in different time blocks. During such period from 16.3.2016 to 30.0.2016, NRLDC allowed 442 MW for two days (16.3.2016 & 17.3.2016) and thereafter reduced DC as 377/375 MW for remaining days from 18.3.2016 to 30.3.2016 onwards considering the availability of water for 5 machines of Rampur Project. Till 17.3.2016, there was no denial by the NRLDC in regard to the treatment of PAF of Rampur Project in the manner claimed by the Petitioner



in the Petition filed. From 18.3.2016, NRLDC had raised issues for reduction of DC of Rampur Project on the treatment of non-availability of unit of Rampur Project when the water is not released on account of non-availability of units of Nathpa Jhakri Project. Therefore, it is not correct on the part of NRLDC to say that there has been no shift in the stand of NRLDC of 17.3.2016.

(iii) THDC filed Petition No. 220/MP/2011 for revision of DC for their generating stations by indicating that NRLDC has been averaging DC for the day when the machines are taken for shut down or planned maintenance during a part of the day, even though they were available for 3 hours during the day. However, the Commission by order dated 11.12.2013 directed NRLDC to recalculate PAFM and consequently the capacity charges during the affected days. The said order in respect THDC is not relevant to the case of Petitioner.

(iv) In Petition No. 157/MP/2013 filed by THDC India Limited, CEA had recommended that hydro generators should be adequately compensated and a liberal treatment be allowed in order to promote hydroelectricity capacity addition in the country, thereby leading to much needed improved hydro thermal mix in the country.

(v) Nathpa Jhakri Project, as a whole, is being commercially operative since 18.5.2004. However, Rampur Project as a whole is being commercially operative since 16.12.2014. The outage planning of both the Project is being done in coordinated manner. However, maintenance days for Nathpa Jhakri Project are always completed in lesser time in comparison to Rampur Project, which is unavoidable till stabilisation of units of Rampur Project. Also, forced outage of units of Rampur Project and Nathpa Jhakri Project cannot be predicted in advance, hence at such time, spillage of water or to penalise the downstream project on account of non-availability of water from upstream project is not in the interest of the Petitioner as well as the Procurers.

(vi) It is reiterated that the machine availability is distinct from water availability in a Hydroelectric Project especially in case of tandem operation of two projects. Thus, if the water is not to be utilised for economic and proper operation while the machine is available, the DC based on machine availability is required to be taken.

(vii) The interpretation of the regulations in the contextual manner will establish that water available for hydroelectric generation has to be utilised in an effective manner to maximise the generation from both Nathpa Jhakri Project and Rampur Project.

Rejoinder affidavit dated 7.2.2017 to reply of BRPL

(i) For optimum utilization of water from both the projects, scheduling is required to be done by NRLDC to avoid spillage of water based on the availability of units of both the projects.



(ii) It is denied that the Petition filed by the Petitioner is due to the design constraints attributable to the Petitioner and it was raised by the Petitioner while framing the draft 2014 Tariff Regulations.

(iii) The decision taken at NRPC meeting is contrary to the scheme under which hydroelectric generating stations operate. The decision taken in the OCC meeting do not consider the fact that the non-availability of water to undertake generation and sale of electricity due to tandem operation of plants cannot be taken as a ground of any default of breach or otherwise attributable to the generating company so as to deny PAF.

(iv) NRPC meetings have not addressed the aspect that if the above scheme is not adopted, the interest of the Procurers as well as the public interest suffers. The Petitioner will be acting contrary to the prudent utility practice if water is released from the reservoir and it is not utilised for generation in any unit either of Nathpa Jhakri Project or of Rampur Project, aggregating to 318.67 MW. Thus, the decision taken by NRPC is contrary to the scheme and objective of the Electricity Act, 2003 and contrary to the fact that PAF of the Rampur Project is not being given despite the fact that the machines were available and the machines could not generate electricity on account of water non-availability due to tandem operation of both the project.

Rejoinder to reply affidavit dated 29.9.2016 of UPPCL

Spillage of the Ponds

(i) Rampur Project is operated in tandem with the upstream project i.e. Nathpa Project. Rampur Project is a unique generating station which does not have its own storage / pondage and is operating with water coming out from the Tail Race Tunnel (TRT) of Nathpa Jhakri Project. The water so flowing after being used for generation in Nathpa Jhakri project is diverted to the Rampur intakes through TRT pond. The water released from Nathpa Jhakri Project is utilized by Rampur Project in steady state conditions avoiding any spillage of water at TRT of Nathpa Jhakri Project. The objective of establishing the Rampur project is to utilise the water released from the Naptha Jhakri Project gainfully for generation and in public interest and specifically to benefit the Respondent, Procurers.

(ii) Due to its unique operation, whenever one unit of Nathpa Jhakri Project is not available for any reason, correspondingly one unit of Rampur Project is also not able to generate power despite the availability of all its units. This is only due to less availability of water received from upstream Nathpa Jhakri Project. The analysis mentioned by UPPCL regarding spillage of Ponds do not depict the true picture and is totally misleading. It can be understood in the following way:

Example:

(a) Assuming one unit of Nathpa Jhakri Project is utilising approx. 60 cumecs of water for generation of 250 MW. Hence, total inflow required in the intake of Nathpa Jhakri Project for running its 6 units would be 360 (6 x 60) cumecs of water. Correspondingly



being a tandem operation, one unit of RHPS is utilising 60 cumecs of water for generation of 68.67 MW and total inflow required in the intake of Rampur Project through TRT pond of Nathpa Jhakri Project for running its 6 units are 360 cumecs of water.

(b) In case one unit of NJHPS is under shut down due to any reason, 60 cumecs of extra water would be available in the intake of Nathpa Jhakri Project and thus inflow in the remaining units would be increased to 72 cumecs (360/5), i.e. 20 % extra inflow). Hence, to settle down the increased inflow to 72 cumecs, Nathpa Jhakri Project is required to generate 300 MW i.e. 20 % extra generation, which is not feasible being a design constraint up to 10 % over loading only. In a similar way, for further outage of more than one units of Nathpa Jhakri Project cannot be settled down by the Rampur project and extra water as available due to outage(s) of units can be stored only in the Nathpa Dam.

(c) Similarly, if one unit of Rampur Project is under shut down due to any reason and Nathpa Jhakri Project is running on full load, then extra available water of 20 % in the intake of Rampur Project through TRT pond of Nathpa Jhakri Project cannot be absorbed through remaining five units of Rampur Project due to design limitation of 10%. This will result in the spillage of water, which would not be in the interest of Procurers and for the country.

(d) In line with the IEGC, 2010, generating stations (Nathpa Jhakri Project and Rampur Project) is declaring the station-wise ex-power plant MW and MWh capabilities foreseen for the next day, i.e. from 0000 hrs to 2400 hrs of the following day, to NRLDC for every days along with Maximum Capacity of the generating station including overload capability, if any, minus Auxiliary Consumption, corrected for the reservoir level.

(iii) In non-monsoon condition during peak hours especially, the Petitioner ensures that all the units of Nathpa Jhakri Project and Rampur Project are available and running smoothly matching with the generation schedule including overload capability of respective generating stations given by NRLDC. Also, during off Peak hours, based on the water availability, the generation schedule is generally given for lesser number of units (less than 6 units) by NRLDC and then there is least possibility of such constraints of spillage of water as well as of DC. The circumstances viz reduction of DC / spillage of water becomes prominent only when scheduling for all six units of Nathpa Jhakri Project and Rampur Project is given by NRLDC and one unit of either of the Nathpa Jhakri project and Rampur Project is not available due to forced Outage/miscellaneous Outage.

(iv) In case of shut down of any one unit of Nathpa Jhakri Project, remaining five units are available and are generating power as per capability of its units. Extra water available on account of this would be stored in Nathpa Dam and water for only five units would be available in the TRT pond of Nathpa Jhakri Project. This would result in generation from 5 units of Rampur Project.



(v) Rampur project cannot operate any of its available generating unit on account of non-release of water from the Nathpa Jhakri Project (on account of non-availability of a generating unit(s) of upstream Nathpa Jhakri Project) and therefore in such cases, the DC as well as PAF is to be considered based on availability of unit(s) of downstream project i.e. Rampur project.

(vi) However, if one unit of Rampur Project cannot be operated for any reason, the operation of all six units of Nathpa Jhakri Project and release of water for the purpose would result in the wasteful/spillage of water, due to water not being utilised for generation of electricity by Rampur Project. In that case, there would not be any impact on the DC of Rampur Project. However, extra water available due to operation of six units of Nathpa Jhakri Project can be stored in the upstream reservoir of Nathpa Jhakri by running only five units of Nathpa Jharki Project for longer period peaking, if required, and thus optimally can be used for maximising the generation at both Nathpa Jhakri Project and Rampur Project in tandem.

Capacity Charge and PAF/DC

(i) The phenomenon of tandem operation of such capacity (Nathpa Jhakri Project 1500 MW and Rampur Project 412 MW on 1:1 basis) has unique feature and appropriate methodology needs to be implemented to deal with such situations. In consideration of the constraints to be faced in the tandem operation of both the project, it was pleaded that Rampur Project cannot be operated independently and its operation is dependent entirely upon the water released from the Nathpa Jhakri Project. Thus, the Commission was requested to clarify the position by adding one more category of Hydro station over and above the existing categories "as ROR with Pondage and running 100% in tandem with upstream project" and this parameter may be defined accordingly in the Regulations. The Performance of existing generating stations was considered in the 2014 Tariff Regulations while deriving the NPAF of the respective stations. However, in the 2014 Tariff Regulations, the scheme on tandem operation of two hydro Projects was not addressed.

(ii) Regulation 31 of the 2014 Tariff Regulations provides for the computation of the Capacity Charges and Energy Charges in respect of Hydro generating stations. Accordingly, the capacity will be considered to be available as long as the generating units / machines are in a position to generate and supply electricity, in the event of water being available for such generation. The generating units /



machines ought to be considered for achievement of normative annual plant availability, in the case of Hydro generating stations as per Regulation 37 of the 2014 Tariff Regulations, as long as the generating units/machines are available, even in the circumstances where the generating units cannot actually generate and supply electricity on account of water non-availability.

Payment of Additional Capitalisation

(i) This Petition has not been filed for additional capitalisation of expenditure either for Rampur Project or for Nathpa Jhakri Project. The present Petition deals with matters related to the tandem operation of the Rampur Project and Nathpa Jhakri Project, with optimum utilisation of natural resources.

14. During the hearing on 9.2.2017, the learned counsels for the Petitioner and the Respondents, including the representative of NRLDC reiterated their submissions as above. However, the Commission vide ROP of the said hearing directed the Staff of the Commission to convene a meeting with the parties to explore the possibility of resolving the issues within one month and thereafter to submit a report containing recommendations, within two weeks.

15. In terms of the above directions, the Chief (Engineering) of the Commission held a meeting with the representatives of the Petitioner, NRLDC and the Respondents on 28.2.2017. Accordingly, the Chief (Engineering), after due consultations with the parties, including the CEA, submitted his recommendations to the Commission vide Report dated 8.8.2017. Copies of the Report dated 8.8.2017 were served on the parties vide letter dated 29.9.2017, with directions to furnish their views / comments on the said Report. In response, the Petitioner vide affidavit dated 21.11.2017 has submitted its comments on the said Report. Thereafter, the Commission after hearing the parties at length, on 22.2.2018, reserved its orders in the Petition. Taking into consideration the submission of the



parties and the Report dated 8.8.2017, we proceed to examine the matter as stated in the subsequent paragraphs.

Analysis and Decision

16. The Petitioner has submitted that the water non-availability and consequently the non-generation of electricity shall not be treated as non-achievement towards the Plant Availability Factor (PAF), as long as the generating units and its machines are in a position to generate and supply electricity, despite the fact that the water being not available due to tandem operation, the actual generation does not take place. Considering the unique nature of operation of the above said Projects, the Petitioner has contended that for the purpose of computation of PAF of Nathpa Jhakri Project, the Rampur Project should be considered as if owned & controlled by an independent company. It has also submitted that the Petitioner would suffer financially if PAF of either Projects are reduced on account of non-availability of generating units / machines of the other. Though the Respondent, NRLDC has submitted that the contentions of the Petitioner are not in line with the provisions of the 2014 Tariff Regulations, it has stated that considering the nature of tandem operation, the Commission may consider devising the PAF of these Projects in such a way that the combined maximization of peaking is incentivized (though without spillage of water). The other Respondents, namely BRPL & UPPCL have objected to the prayers of the Petitioner in the Petition.

17. The submissions of the Petitioner in the Petition relate to the tandem operation of Rampur Project with the upstream project namely the Nathpa Jhakri Project. It is noticed that the parties have put forward the above submissions before the Chief (Engineering) of the Commission, who has, in his report dated 8.8.2017, identified and examined in detail the question as to whether the sanctity



of the station wise declaration should be maintained or declaration has to be on combined basis for both the generating stations of the Petitioner due to tandem operation, under the following heads for consideration of the Commission:

(a) Operation during High Discharge season

(b) Operation during Low Discharge Season

(i) **Scenario.1:** The number of machines available at NJHPS are 6 (six) and number of units available at Rampur are 5 (five); and

(ii) **Scenario.2:** The number of machines available at NJHPS are 5 (five) and number of units available at Rampur are 6 (six)

18. The relevant portion containing the recommendations of the Chief (Engineering) in the said Report are extracted hereunder:

“6.3.1 Operation during High Discharge Season:

i) There is agreement between system operator i.e NRLDC and SJVNL that during high discharge season, the separate D.C of each station could be considered as sufficient water is available and some spilling of water would not unduly affect SJVNL or the beneficiaries in terms of energy and peaking support. As such, there is no dispute with respect to scheduling and PAF calculation during high discharge season.

6.3.2 Operation during Low Discharge Season

Scenario 1: The number of machines available at NJHPS are 6 (six) and number of units available at Rampur are 5 (five)

iv) To give DC, based on machine and water availability, is the prerogative of the generator. For the first scenario, the petitioner would give DC corresponding to six machines at NJHPS as all six machines are available along with water availability and for five machines at Rampur. As such, the beneficiaries and system operator have two choices to make depending upon their need and grid requirements, respectively

v) In case, during a day, peaking support is the priority of the beneficiaries and the system operator, then system operator either on beneficiary's advice or on its own accord, depending upon the system requirements, shall schedule all the machines of NJHPS. However, in this situation, petitioner may be allowed to recover the energy charges for the energy lost at Rampur for which the petitioner shall keep a block wise record of the energy lost at Rampur. In the event of non-recovery of full energy charges, petitioner shall furnish these details in the petition to be filed for recovery of shortfall in energy charges. For this choice made by the system operator/beneficiaries, there is no issue with regard to calculation of PAF for NJHPS as well as for Rampur.

vi) In case, during a day, peaking support is not the priority of beneficiary/system operator, system operator on beneficiaries advise, shall schedule five units of NJHPS. However, PAF of the NJHPS shall be calculated based on the six machines.



Scenario 2: The number of machines available at NJHPS are 5 (five) and number of units available at Rampur are 6 (six)

iv) For this scenario, we are of the view that the criteria of machine availability along with water availability for declaration of DC and its subsequent consideration for PAF cannot be relaxed. Considering the fact that both the plants are with SJVNL, there is a need for co-coordinating the planned outages among the two stations during lean period such that machine availability at RHPS is not more than NJHPS during same blocks. Further, regarding the fact that forced outages of any unit of NJHPS will affect the PAF of the Rampur, it is to mention that to start with Rampur has been awarded lower NAPAF of 82% for initial two years of tariff setting 2014-19 to take care of such eventualities resulting due to tandem operation of the plant. Further, lesser PAF after accounting for the above scenario would find its way on normative basis in the NAPAF of Rampur to be determined for the period 2016-19 based on the actual PAF achieved by the station during 2014-16. Accordingly, it may be provided that the petitioner shall declare DC of Rampur after taking into account the water released from NJHPS as well as availability of units.”

19. With regard to the ‘Operation during high discharge season’, it is observed that there is agreement between the Respondent, NRLDC and the Petitioner for consideration of separate DC of each station due to availability of sufficient water and that some spilling would not affect the Petitioner and the beneficiaries in terms of energy and peaking support. In view of this, the recommendation in the report on this issue is accepted and accordingly it is directed that separate DC for the two projects needs to be considered.

Scenario 1: The number of machines available at NJHPS are 6 (six) and number of units available at Rampur are 5 (five)

20. With regard to Scenario-1 under ‘Operation during low discharge season’, the availability of machines at Nathpa Jhakri Project is higher (6 units) than the availability of units (5 units) at Rampur Project. In this scenario, the Petitioner has requested that the NRLDC should schedule for five units of Nathpa Jhakri Project so that there is no spillage at Rampur Project. It has also stated that PAF of Nathpa Jhakri Project should be calculated based on six units that are available for generation. However, the NRLDC is of the view that the Petitioner shall declare the DC of Nathpa Jhakri Project corresponding to five machines to avoid spillage of



water at Rampur Project where only five machines are available. As rightly pointed out in the report, though the Petitioner would be benefitted by higher PAF corresponding to six machines at Nathpa Jhakri Project even after running five machines and would be able to meet its design energy obligation and recover the 'Energy Charges', the beneficiaries would be losing peaking support of 250 MW from Nathpa Jhakri Project even after paying capacity charges corresponding to six machines. Similarly, if Nathpa Jhakri Project is scheduled corresponding to six units, water corresponding to sixth machine would get spilled at Rampur Project affecting both, the Petitioner and the beneficiaries and the same would result in the Petitioner recovering lower energy charges and the beneficiaries losing 0.206 MUs of energy due to spillage of water. Under this scenario, based on the DC given by Petitioner corresponding to six machines of Nathpa Jhakri Project (with water availability) and for five machines at Rampur Project, the recommendation provides for choices to be given to the System operator or at the request of the beneficiary to either schedule all the six machines or five machines of Nathpa Jhakri Project, during the day, depending on system requirements. Based on the choice made by the system operator/beneficiaries, the recommendations also suggests the procedure for recovery of energy charges and the calculation of PAF of Nathpa Jhakri Project based on six/five units declared. The Petitioner in its affidavit dated 21.11.2017 has submitted that the same beneficiaries could be provided peaking in further blocks as per their allocation and is otherwise agreeable to the recommendations on this scenario in the said Report. In view of the above, the recommendations in the report on this scenario are accepted. The recommendations in the report provides a practical solution as regards prayer of the Petitioner. The Commission has accepted the report and direct that PAF of Nathpa Jhakri project shall be calculated accordingly.



Scenario 2: The number of machines available at NJHPS are 5 (five) and number of units available at Rampur are 6 (six)

21. With regard to Scenario-2 under 'Operation during low discharge season', the Petitioner has suggested that the PAF of Rampur Project shall be calculated based on six units available for generation in spite of the fact that water released from the upstream Nathpa Jhakri Project is limited to operation of five machines in peaking mode at Rampur Project. However, NRLDC is of the view that Rampur Project cannot be permitted DC/PAF corresponding to six machines as the water availability as well as machine availability are the two pre-requisites for declaring capability of a hydroelectric generating station in terms of the 2014 Tariff Regulations. NRLDC is of the view that Petitioner should declare the DC of Rampur Project corresponding to five machines based on the water availability from the Nathpa Jhakri Project. Under this scenario, as pointed out in the report, while the Petitioner would get advantage of higher PAF corresponding to six machines at Rampur Project after providing peaking support corresponding to five machines, the beneficiaries would however be paying capacity charges. The Report also recommends that there is a need for coordinating planned outages amongst the two generating stations of the Petitioner during the lean period such that the machine availability at Rampur is not more than Nathpa Jhakri Project during the same blocks. Accordingly, the Report provides that the Petitioner shall declare the DC of Rampur Project after taking into account the water from Nathpa Jhakri Project as well as availability of its units.

22. In response to this, the Petitioner vide its affidavit dated 21.11.2017 has submitted that for computation of PAF of Nathpa Jhakri Project, Rampur Project should be considered as if it is owned and controlled by an independent company and vice versa. It has also submitted that all hydro projects have their own



peculiarity and outages can be minimized but cannot be fully avoided. The Petitioner has further submitted that Rampur project is being operated in tandem with the upstream Nathpa Jhakri Project and its operation is dependent entirely upon the water released from the Nathpa Jhakri Project. The Petitioner has stated that whenever one unit of Nathpa Jhakri Project is not available for any reason, correspondingly one unit of Rampur project is also not able to generate power, inspite of availability of all units. Under these circumstances, the Petitioner has submitted that the water non-availability and consequently the non-generation of electricity in case of Rampur Project, should not be treated as non-achievement towards the PAF.

23. We have examined the matter. In normal parlance, forced outages of 2% per annum is considered while deciding the NAPAF of the storage/pondage stations and as such in probabilistic terms, the simultaneous occurrence of forced outages in two plants is 0.04%. This would mean that in all likelihood there are chances that 1.96% of the time, Scenario 2 may occur i.e machines available at NJHPS are 5 (five) and number of units available at Rampur are 6 (six). In order to account for such situation so that the Rampur Project does not suffer in terms of capacity charges/ incentive, the NAPAF of Rampur needs to be lower by 1.96% in comparison to NAPAF of Nathpa Jhakri Project. In this context, it is pertinent to mention that NAPAF of Rampur Project has been fixed at 82% for the first two years under the 2014 Tariff Regulations as against NAPAF of 90% for Nathpa Jhakri Project. This gap of 8% is considered reasonable to take care of tandem operation, teething problems in this scenario where the units available at Rampur are more in comparison to units available at Nathpa Jhakri Project. Therefore, we are not inclined to accept the Petitioner's contention that it would suffer financial loss if PAF of either of the Projects are reduced on account of non-availability of



generating units/ machine of the other. Based on the above discussions, we are inclined to accept the recommendations made with regard to Scenario 2 in the said Report that recommends that DC of downstream project (Rampur) should be declared on basis of both i.e. machine and water availability.

24. Petition No. 150/MP/2016 is disposed of in terms of the above.

Sd/-
(Dr. M.K.Iyer)
Member

Sd/-
(A.S. Bakshi)
Member

Sd/-
(A. K. Singhal)
Member

Sd/-
(P. K. Pujari)
Chairperson

