15	Centrifuging machine - 2 nos	11.96	8.04	**20.00**	The petitioner has submitted that centrifuging machine are essentially required for moisture removal from hydraulic oil being used in power packs of 23 nos. radial gate, 8 nos. Intake gates and 8 nos. machine (turbine). At present, only 2 nos. centrifuging machines are available in Power House and Dam which is insufficient for 23 nos. radial gates, 8 nos. Intake gates, 8 nos. machine (turbine) and 01 no. TRCM. Considering the need based expenditure which eventually would facilitate the successful and efficient plant operation, the same is **allowed** under Regulation 14(3) (viii) of the 2014 Tariff Regulations.
16	Up gradation of Air gap and vibration monitoring system	**0.00**	**10.00**	**10.00**	The petitioner has submitted that work is necessary for reliable monitoring of system which is meant for prediction of any problem in air-gap / vibration of running machine. The Air Gap and Vibration Monitoring System of Make-MC-monitoring SA, Switzerland has been commissioned by M/s Voith Siemens in the year 2007. The latest version of software equipped with various newer features and moreover, due to obsolescence of existing software, its replacement is necessitated, so as to avoid the system hang problem being encountered in the recent past. The fact that the air gap and vibration monitoring system is a very important system for maintaining the machines in healthy state. Though the petitioner has not specifically submitted the de-capitalisation value of the old assets, ₹6.77 lakh, has been considered as the de-capitalisation value for the old asset, under '**assumed deletions**' and accordingly an amount of ₹3.23 lakh is allowed.
17	Configuration of memory card for excitation system	0.00	10.00	**10.00**	The petitioner has submitted that 08 Nos. excitation panels have been installed. In excitation panel, memory card has been used for data storage/system software. No spare programmed memory card is available. Hence, memory card is required for excitation system as a

					spare to keep the excitation system healthy and maximizing the machine availability. Considering the fact that the asset is spare in nature, capitalization is **not allowed.**
18	Purchase of wave trap for switchyard	0.00	10.00	**10.00**	The petitioner has submitted that wave trap is required for healthy PLCC communication to other end of line and to SLDC. A total of 10 nos. wave trap has been installed at 220KV switchyard for two way communication. The spare of the same is not available at power station and is proposed to be procured. Item is necessary to keep spare for healthy communication through PLCC at other end of line and SLDC. Considering the fact that the asset is in nature of spare, capitalization of the same is **not allowed.**
19	Purchase of cable fault locator	17.94	12.06	**30.00**	The petitioner has submitted that various types of underground and surface cables are situated at Colony and power house premises. The cable fault locator is necessary to check the fault in minimum time to reduce the outage of cable system and equipment engaged as in case of any earth fault, it becomes extremely difficult to know the exact location of fault. Considering the fact that the assets are of tools & tackles in nature, the same is **not allowed.**
20	New server for ORACLE at OSP along with Anti Virus software	8.97	6.03	**15.00**	The petitioner has submitted that the existing server is around 4 years old and require to be upgraded and augmented with new configuration server because with passage of time the loads on existing server has increased a lot. Simultaneously, the configurations of existing server is old and do not support most of the new software and application. Further, new server will increase the reliability also, so that the work of project based on ORACLE viz. Finance division, stores division and other divisions does not get hampered. However, the same is **not allowed** as the expenditure is of minor nature.

21	Energy Saving lights (solar based LED lights) for Urja Vihar colony	14.95	10.05	**25.00**	The petitioner has submitted that under Energy Conservation Measures, Solar Based LED Lights for Urja Vihar Colony is proposed, so as to reduce the O&M Expenses of the Generating Station, besides fulfilling the mandate of MNRE, GoI for promoting the Solar Power, wherever possible. The reduced O&M Expenses will ultimately benefit the Beneficiary in long term. The asset will reduce the O&M expenses of the generating station. As O&M expenses have been allowed to the generating station on normative basis, the capitalization of this asset is **not allowed** even though it indirectly has an impact on the efficient operation of the generating station.
22	Purchase of 03 MT Fork Lift for Store.	0.00	10.00	**10.00**	The petitioner has submitted that presently no equipment is available in store for material Handling. For safe and convenient material handling it is very much essential. Considering the fact that it is a need based expenditure required for successful and efficient plant operation, the same is **allowed** under Regulation 14(3) (viii) of the 2014 Tariff Regulations.
23	Construction of 06 nos. F-Type Quarters (II-Phase) at Omkareshwar Power Station, Siddhwarkut	47.85	32.15	**80.00**	The petitioner has submitted that available nos. of quarters are less than sanctioned strength of E-3 & E-4 level officers, hence additional quarters are required to be constructed for E-3 & E-4 level officers as per norms of the corporation. There was provision for 16 nos. Permanent F-Type quarters and 10 nos. temporary F type quarters in Revised cost estimate of Omkareshwar Power Station but could not be constructed. Considering the fact that the expenditure is for the benefit of the employees working in the power plant which will facilitate efficient and successful operation of the plant, hence, the same is **allowed** under Regulation 14(3)(viii), of the 2014 Tariff Regulations.

24	Protection work for approach road to main dam at left bank (Phase-II)	29.91	20.10	**50.01**	The petitioner has submitted that embankment constructed for approach road to main dam in left bank is required to be protected up to EL 185.00 M because flood water level may reach up to this level and in absence of protection work, embankment may be eroded. Considering the fact that the work is O&M in nature, capitalization of the same is **not allowed.**
25	Area Development near F-Type quarters at Urja Vihar Colony.	23.92	16.08	**40.00**	The petitioner has submitted that the surroundings near F-type quarter are required to be developed. It is essential to construct road, garages and street lights etc. for the residence of F-Type quarters. Since the expenditure is for the benefit of the employees working in the power plant which will facilitate efficient and successful operation of the plant, hence the same is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.
26	Construction of additional rooms/ transit office at Guest House at Indore.	14.95	10.05	**25.00**	The petitioner has submitted that Indore is one of main business centers of Madhya Pradesh and transit through this place is very rapid. Due to this, the transit camp of Omkareshwar Power Station at Indore is mostly fully occupied. Due to less number of rooms in transit camp, construction of more rooms are required. Considering the fact that the asset/work is for the benefit of the employees working in the station which will eventually facilitate successful and efficient operation of the plant, the same is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.
	Amount claimed	**600.13**	**242.88**	**843.01**	
	Amount Allowed	**250.39**	**124.07**	**374.46**	
	Total Amount claimed in 2015-16	**600.13**	**790.45**	**1390.58**	
	Total Amount Allowed in 2015-16	**250.39**	**671.64**	**922.03**	

2016-17

Sl. No.	Work	UNIT-I	UNIT-III	Additions	Reason for admissibility
A. Admitted Capital Expenditure Spilled over from previous tariff period 2009-14					
1	Hardware and software for making necessary arrangement for Blackstart of Generating units	0.00	30.00	**30.00**	The asset/work claimed under this head was allowed on projection basis vide order dated 9.5.2013 In Petition No. 248/GT/2012. Considering the fact that the asset/work is considered necessary for reliable Grid, the same is **allowed** under Regulation 14(3)(ii) of the 2014 Tariff Regulations.
	Amount claimed	**0.00**	**30.00**	**30.00**	
	Amount Allowed	**0.00**	**30.00**	**30.00**	
B. Fresh additional capital expenditure projected during 2016-17					
2	Providing and fixing access/ platform to Trunion Girder across the piers at Dam of OSPS.	150.00	0.00	**150.00**	The petitioner has submitted that as per the recommendation of Dam Safety Committee, this work is proposed especially for the safety of operation and Maintenance Staff. Considering the fact that the asset/work is considered necessary for the safety of the plant, the same is **allowed** under Regulation 14(3)(iii) of the 2014 Tariff Regulations.
3	Protection work for stabilization of hill slopes in right & left bank and river banks in the d/s of Dam.	179.33	120.67	**300.00**	The right bank side just adjacent to TRC is exposed having fractured rock. It is noticed that landslide is continued in this zone which is just on edge of switchyard. Similarly, the landslide from exposed inclined portion of hill during monsoon near gate of switch yard is also causing damages. Presently, these hills/ edges are unprotected. Hence, for safety of equipments/ TRC, it is necessary to establishment hard rock of hill with shotcrete protection. Considering the fact that the work is of O&M nature, capitalization of the same is **not allowed.**
4	Providing online monitoring system for assessing safety of dam structure.	29.89	20.11	**50.00**	The petitioner has submitted that in present instrumentation system, data is being collected through data acquisition system and these data are required to be analyzed for assessing safety of dam structure. Now a days online monitoring system is available in the market, which shows deflection, settlement etc. of dam structure immediately and thus, it is essential to install such system

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					from safety point of view. Considering the fact that the asset/work will facilitate successful and efficient operation of the plant, the same is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.
5	Brake tracks and Brake cylinders for brake jack system.	0.00	25.00	**25.00**	The petitioner has submitted that Brake Track is very much essential to meet any emergency situation where the track fails due to malfunctioning of brakes. These critical parts are essential to minimize the outage of machine and to avoid the generation loss. As the capitalization sought involves additional spares to reduce downtime, hence the same is **not allowed**.
6	Up gradation of Maintenance Seal.	0.00	50.00	**50.00**	The petitioner has submitted that maintenance seal is very much essential for shaft seal maintenance work which may be carried out without dewatering and hence reducing the downtime of machine and increasing the generation. This system was commissioned along with the machine in year 2007. During maintenance activities some malfunctioning is observed in the maintenance seal system and required to be upgraded/modified. Considering the fact that the work is of O&M nature, capitalization of the same is **not allowed.**
7	Supply, installation and commissioning of Online Dissolved Gas Analyzer for balance of 04 nos. Generator transformers.	0.00	110.00	**110.00**	The petitioner has submitted that out of total 08 Nos. generator transformers, online DGA has been installed in 04 nos. Generator transformers in 2012-13. Online DGA transformer monitoring provides the important and timely information needed to maintain the reliability and safety of transformers. The installed instruments are also capable of detecting moisture in oil. The sampling of oil can be done on hourly basis on a remote computer screed at Control Room at Power House. The performance of installed DGA is very satisfactory. Thus, its installation is proposed for remaining 4 No. GTs. Tools and tackles (including measuring instruments) procured

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					after cut-off date help increase in availability and reduce O&M expenditure. As such, availability and O&M expense being normative numbers, the benefit of such assets accrues solely to the generator. As such, expenditure is **not allowed.**
8	CT,PT and Transducer for excitation system and other accessories	0.00	20.00	**20.00**	The petitioner has submitted that power station having 08 Nos. Excitation panels for 08 generating units. In excitation system CT, PT and voltage and current transducer are used for current & voltage measurement and the values are used for further regulating the system. The performance of excitation system depends upon the voltage & current transducer. Since only one no. spare is available, therefore keeping in view the importance of voltage & current transducer for 08 units, additional one more is required for power station. Critical spares are essential to keep the min. outage of excitation system and reduce the possibility of outage of machine and increase machine availability. Considering the fact that the assets are in the nature of spares, the same is **not allowed.**
9	Up gradation of protection system including replacement of numerical/ Electromagnetic relay for power house	0.00	50.00	**50.00**	The petitioner has submitted that work is essential to replace obsolete relay to keep minimum outage in case of fault in protection system. Since the asset/work is considered necessary for successful and efficient operation of the plant, the same has been **allowed.** De-capitalization value of ₹32.23 lakh of old replaced asset/work is considered under '**assumed deletions**'. As such, allowed amount is ₹17.77 lakh.
10	Mobile lighting mast	4.18	2.82	**7.00**	The petitioner has submitted that in order to deal with emergency condition and to work even at height under dark condition, it will be useful to have one such mobile mast. Considering the fact that the asset would facilitate successful and efficient plant operation, the same has been **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.

11	On line UPS for Power House office computers	2.99	2.01	**5.00**	The petitioner has submitted that since standalone UPS system does not prove to be such reliable and caused problems in past and their maintenance is also frequent to ensure the reliable power supply to computers, purchase one online UPS for power house office computers has been proposed, so that computers can be protected from abrupt OFF and thus fault in computers can also be controlled. The same is **not allowed** as the expenditure is of minor nature.
	Amount claimed	**366.39**	**400.61**	**767.00**	
	Amount Allowed	**184.07**	**40.70**	**224.77**	
	Total Amount claimed in 2016-17	**366.39**	**430.61**	**797.00**	
	Total Amount Allowed in 2016-17	**184.07**	**70.70**	**254.77**	

2017-18

Sl. No.	Work	UNIT-I	UNIT-III	Additions	Reason for admissibility
A. Admitted Capital Expenditure Spilled over from previous tariff period 2009-14					
1	Design, Engineering and Construction of bridge and approach road on D/s of Omkareshwar Dam, Shiddhwarkut.	2090.59	1409.42	**3500.01**	The asset/work claimed under this head was allowed on projection basis vide order dated 9.5.2013 in Petition No. 248/GT/2012. Considering the fact that the asset/work is considered necessary for the safety of the plant, the same is **allowed** under Regulation 14(3)(iii) of the 2014 Tariff Regulations.
	Amount claimed	**2090.59**	**1409.42**	**3500.01**	
	Amount Allowed	**2090.59**	**1409.42**	**3500.01**	
B. Fresh additional capital expenditure projected during 2017-18					
2	Up-gradation of Software of automation i.e. CS-7 system.	0.00	240.00	**240.00**	The petitioner has submitted that the Control System of the generating station is based on distributed Control Modules in hierarchical control levels through the CS-7 System of M/s Voith Siemens. This existing CS-7 System has become obsolete and there is no support available from M/s Siemens and no updates available for windows from Microsoft. Accordingly, in order to avoid any crash of system in future, the existing CS-7 System is to be upgraded with PCS-7 (Ver. 8.0).

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					Considering the fact that the asset/work is considered necessary for successful and efficient operation of plant, the same is **allowed** under Regulation 14(3)(viii) of 2014 Tariff Regulations. However, de-capitalization value has been considered as ₹147.34 lakh under "**assumed deletions**". As such, allowed amount is ₹92.66 lakh. The petitioner is directed to furnish certificate for obsolescence of the existing system at the time of truing up.
	Amount claimed	**0.00**	**240.00**	**240.00**	
	Amount Allowed	**0.00**	**92.66**	**92.66**	
	Total Amount claimed in 2017-18	**2090.59**	**1649.42**	**3740.01**	
	Total Amount Allowed in 2017-18	**2090.59**	**1502.08**	**3592.67**	

2018-19

(₹in lakh)

Sl. No.	Work	UNIT-I	UNIT-III	Additions	Reason for admissibility
A. Admitted Capital Expenditure Spilled over from previous tariff period 2009-14					
	Amount claimed	**0.00**	**0.00**	**0.00**	
B. Fresh additional capital expenditure projected during 2018-19					
1	Up gradation of ARMAC System	10.00	0.00	**10.00**	The petitioner has submitted that the generating station has been commissioned in the year 2007. ARMAC System controls and monitors the operation of all the Radial Gates from DAM Control Room to control the flood. The system consists of various hardware and software for its functioning. Normally electronic system gets obsolete after a specific life cycle and up-gradation in electronic devices is a continuous process. In view of this, it is anticipated that up- gradation work for the ARMAC System shall be required for future needs. Work is necessary to keep update of obsolete technology and to keep system healthy and operative for effective and reliable control of flood. Considering the fact that the asset/work is considered necessary for successful and efficient operation

					of plant, the same has been **allowed** under Regulation 14(3)(viii) of Tariff Regulations, 2014. However, de-capitalization value has been considered as Rs. 5.85 lakh under '**assumed deletions**'. As such, allowed amount is ₹4.15 lakhs.
	Amount claimed	**10.00**	**0.00**	**10.00**	
	Amount Allowed	**4.15**	**0.00**	**4.15**	

Initial Spares

16. The Commission in its order dated 16.1.2012 in Petition No. 265/2010, had admitted the cost of initial spares amounting to ₹1827.15 lakh up to 31.3.2009. By Commission's order dated 9.5.2013 in Petition No. 248/GT/2012, the capitalization of initial spares amounting for ₹942.51 lakh in 2009-14 was allowed on projected basis. However, the petitioner had not actually procured any initial spares during 2009-14. Therefore, the petitioner has claimed ₹1827.15 lakh and ₹1043.40 lakh during the years 2014-15 and 2015-16 respectively. The total amount of ₹2870.55 lakh (1827.15 + 1043.40) towards procurement of initial spares falls within the ceiling limit of 1.5% of the admitted original project cost of ₹204732.85 lakh as on the cut-off date of the generating station in terms of the 2004 Tariff Regulations, as the COD of the station is 15.11.2007.

17. Considering the fact that building the stock of adequate initial spares ensures higher availability of the plant and is in the overall interest of beneficiaries and the generator, the procurement of initial spares which was within the ceiling limit was allowed in order dated 9.5.2013 in Petition No. 248/GT/2012 after the cut-off date of the generating station. Considering the fact that the petitioner had not procured any initial spares during the period 2009-14, the capitalization of the expenditure towards procurement of initial spares for ₹1043.40 lakh in 2014-15 and 2015-16, as claimed by the petitioner, is allowed as the same is within the ceiling limit as specified under the 2004 Tariff Regulations.

Assumed Deletions

18. As per the methodology adopted by the Commission for determination of tariff, the expenditure on replacement of assets, if found justified is allowed for the purpose of tariff provided that the capitalization of the said asset is followed by the de-capitalization of the original value of the old asset. However, in certain cases where de-capitalization is effected in books in the subsequent years, the de-capitalization of the old asset for the purpose of tariff is shifted to that particular year in which the capitalization of the new asset is allowed. Such de-capitalization which is not a book entry in the year of capitalization is termed as "Assumed deletion".

19. It is observed that the petitioner has claimed ₹396.50 lakh against the capitalization for Installation of instrumentation system for Dam& Power house, Sliding Ring & Sealing Ring insert along with other accessories for Shaft Seal System, electrical drives for EOT Cranes and encoders for Radial Gates, Up gradation of Air gap and vibration monitoring system, Up gradation of protection system including replacement of numerical/ Electromagnetic relay for power house, Up-gradation of Software of automation i.e. CS-7 system and Up gradation of ARMAC System on replacement basis, during the period 2014-19. The petitioner has not indicated the gross value of the old assets replaced. Therefore, the methodology of arriving at the fair value of the de-capitalized asset, i.e. escalation rate of 5 % per annum from the COD has been considered in order to arrive at the gross value of old assets in comparison to the cost of new assets. Gross value of the old assets considered for the purpose of tariff in respect of the admitted assets/works has been indicated against individual assets, as in para 15 above. However, the petitioner is granted liberty to furnish the actual gross value of replaced assets at the time of truing up exercise and the same will be considered in accordance with law.

20. Based on the above discussions, the projected additional capital expenditure claimed *vis-à-vis* allowed prior to adjustment of Irrigation component, is summarized as under:

(₹in lakh)

Year	Amount Claimed			Amount Allowed		
	Unit-I (Dam)	Unit-III (Power House)	Total	Unit-I (Dam)	Unit-III (Power House)	Total
2014-15	2407.05	1183.28	**3590.33**	557.84	951.33	**1509.17**
2015-16	600.13	790.45	**1390.58**	250.39	671.64	**922.03**
2016-17	366.39	430.61	**797.00**	184.07	70.70	**254.77**
2017-18	2090.59	1649.42	**3740.01**	2090.59	1502.08	**3592.67**
2018-19	10.00	0.00	**10.00**	4.15	0.00	**4.15**
Total	**5474.16**	**4053.76**	**9527.92**	**3087.04**	**3195.75**	**6282.79**

21. In arriving at the allowable projected additional capital expenditure for power component, the additional capital expenditure allowed as above for Unit-I i.e Dam is reduced by Irrigation component @ 16.75%. Accordingly, the projected additional capital expenditure allowed for Power component, as against the expenditure allowed on Unit-I is as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Additional capital expenditure allowed on projection basis to Unit-I i.e Dam (a)	557.84	250.39	184.07	2090.59	4.15	3087.04
Irrigation component @ 16.75% (b)	93.44	41.94	30.83	350.17	0.70	517.08
Additional capital expenditure of Dam towards power component (c)=(a)-(b)	464.40	208.45	153.24	1740.42	3.45	2569.96

22. The expenditure on Unit-III (Power house) considered for the purpose of tariff of Power Component, is as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Unit-III share to power component	951.33	671.64	70.70	1502.08	0.00	3195.75

23. Based on above, the total projected additional capital expenditure allowed for the purpose of tariff for Power component is as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Projected additional capital expenditure against Unit-I allowed (a)	464.40	208.45	153.24	1740.42	3.45
Projected additional capital expenditure against Unit-III allowed (b)	951.33	671.64	70.70	1502.08	0.00
Total Projected additional capital expenditure allowed for power component before adjustment of un-discharged /discharged liabilities (c)=(a)+(b)	**1415.73**	**880.09**	**223.94**	**3242.50**	**3.45**

Un-discharged liabilities

24. Considering actual un-discharged liabilities in Power component as on 31.3.2014 as allowed vide order dated 10.5.2016 in Petition No. 460/GT/2014, the position of un-discharged liability as on 31st March of the financial year of the period 2014-19 as under:

(₹in lakh)

31.3.2014	31.3.2015	31.3.2016	31.3.2017	31.3.2018	31.3.2019
10643.48	10004.41	10004.41	10004.41	10004.41	10004.41

25. The additional capital expenditure for allowed for Power component, after adjustment of un-discharged liabilities/discharge of liabilities is as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Additional Capital Expenditure (Power Component) (a)	1415.73	880.09	223.94	3242.50	3.45
Un-discharged liabilities at the beginning of the year (b)	10643.48	10004.41	10004.41	10004.41	10004.41
Un-discharged liabilities at the ending of the year (c)	10004.41	10004.41	10004.41	10004.41	10004.41
Un-discharged liabilities discharged (d)=(b)+(c)	639.07	0.00	0.00	0.00	0.00
Additional Capital Expenditure (Power Component) allowed for tariff (e)=(a)+(d)	**2054.80**	**880.09**	**223.94**	**3242.50**	**3.45**

26. The liabilities pertain to power component only. In the absence of asset-wise details of liabilities, the position of overall liabilities has been considered.

Capital Cost for 2014-19

27. As stated, the closing capital cost as on 31.03.2014 approved vide order dated 10.5.2016 in Petition No. 460/GT/2014 is ₹238286.93 lakh. This has been considered as the opening capital cost as on 1.4.2014. Accordingly, the capital cost allowed for the purpose of tariff for the period 2014-19 is as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	238286.93	240341.73	241221.82	241445.76	244688.26
Additional Capital Expenditure	2054.80	880.09	223.94	3242.50	3.45
Closing Capital Cost	240341.73	241221.82	241445.76	244688.26	244691.71

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Debt- Equity Ratio

28. Regulation 19 of the 2014Tariff Regulations provides as under:

> ***19. Debt-Equity Ratio:*** *(1) For a project declared under commercial operation on or after 1.4.2014, the debt-equity ratio would be considered as 70:30 as on COD. If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:*
>
> *Provided that:*
> *i. where equity actually deployed is less than 30% of the capital cost, actual equity shall be considered for determination of tariff:*
>
> *ii. the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment:*
>
> *iii. any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt : equity ratio.*

29. The petitioner has stated that the funding of the additional capital expenditure has been made through internal resources and others. In terms of the above regulations, the debt equity ratio of 70:30 has been considered on the additional capital expenditure, after adjustment of the un-discharged liability.

Return on Equity

30. Regulation 24 of the 2014 Tariff Regulations provides as under:

> ***"24. Return on Equity:*** *(1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 19.*
> *(2) Return on equity shall be computed at the base rate of 15.50% for thermal generating stations, transmission system including communication system and run of the river hydro generating station, and at the base rate of 16.50% for the storage type hydro generating stations including pumped storage hydro generating stations and run of river generating station with pondage:*
> *Provided that:*
> *i). in case of projects commissioned on or after 1st April, 2014, an additional return of 0.50 % shall be allowed, if such projects are completed within the timeline specified in Appendix-I:*
> *ii). the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever:*
> *iii). additional RoE of 0.50% may be allowed if any element of the transmission project is completed within the specified timeline and it is certified by the Regional Power Committee/National Power Committee that commissioning of the particular element will benefit the system operation in the regional/national grid:*

iv). the rate of return of a new project shall be reduced by 1% for such period as may be decided by the Commission, if the generating station or transmission system is found to be declared under commercial operation without commissioning of any of the Restricted Governor Mode Operation (RGMO)/ Free Governor Mode Operation (FGMO), data telemetry, communication system up to load dispatch centre or protection system: v) as and when any of the above requirements are found lacking in a generating station based on the report submitted by the respective RLDC, RoE shall be reduced by 1% for the period for which the deficiency continues: vi) additional RoE shall not be admissible for transmission line having length of less than 50 kilometers.

31. Regulation 25 of the 2014 Tariff Regulations provides as under:

Tax on Return on Equity:
(1) The base rate of return on equity as allowed by the Commission under Regulation 24 shall be grossed up with the effective tax rate of the respective financial year. For this purpose, the effective tax rate shall be considered on the basis of actual tax paid in the respect of the financial year in line with the provisions of the relevant Finance Acts by the concerned generating company or the transmission licensee, as the case may be. The actual tax income on other income stream (i.e., income of non generation or non transmission business, as the case may be) shall not be considered for the calculation of "effective tax rate".

(2) Rate of return on equity shall be rounded off to three decimal places and shall be computed as per the formula given below:
Rate of pre-tax return on equity = Base rate / (1-t)
Where "t" is the effective tax rate in accordance with Clause (1) of this regulation and shall be calculated at the beginning of every financial year based on the estimated profit and tax to be paid estimated in line with the provisions of the relevant Finance Act applicable for that financial year to the company on pro-rata basis by excluding the income of non-generation or non-transmission business, as the case may be, and the corresponding tax thereon. In case of generating company or transmission licensee paying Minimum Alternate Tax (MAT), "t" shall be considered as MAT rate including surcharge and cess.

(3) The generating company or the transmission licensee, as the case may be, shall true up the grossed up rate of return on equity at the end of every financial year based on actual tax paid together with any additional tax demand including interest thereon, duly adjusted for any refund of tax including interest received from the income tax authorities pertaining to the tariff period 2014-15 to 2018-19 on actual gross income of any financial year. However, penalty, if any, arising on account of delay in deposit or short deposit of tax amount shall not be claimed by the generating company or the transmission licensee as the case may be. Any under-recovery or over-recovery of grossed up rate on return on equity after truing up, shall be recovered or refunded to beneficiaries or the long term transmission customers/DICs as the case may be on year to year basis.

32. The base rate of ROE has been grossed up with the MAT rate for the year 2013-14.

Accordingly, in terms of the above regulations, Return on Equity has been computed as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Notional Equity	71486.08	72102.52	72366.55	72433.73	73406.48
Addition due to additional capital expenditure	616.44	264.03	67.18	972.75	1.04
Closing Equity	72102.52	72366.55	72433.73	73406.48	73407.51
Average Equity	71794.30	72234.53	72400.14	72920.10	73407.00
Rate of ROE (pre-tax)	20.876%	20.876%	20.876%	20.876%	20.876%
Return on Equity	**14,987.78**	**15,079.68**	**15,114.25**	**15,222.80**	**15,324.44**

33. The petitioner is directed to furnish on affidavit, the effective tax rates along with the Tax Audit Report for the period 2015-19 at the time of truing-up exercise in respect of the generating station in terms of the 2014 Tariff Regulations.

Interest on loan

34. Regulation 26 of the 2014 Tariff Regulations provides as under:

> ***26. Interest on loan capital**: (1) The loans arrived at in the manner indicated in regulation 19 shall be considered as gross normative loan for calculation of interest on loan.*
>
> *(2) The normative loan outstanding as on 1.4.2014 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2014 from the gross normative loan.*
>
> *(3) The repayment for each of the year of the tariff period 2014-19 shall be deemed to be equal to the depreciation allowed for the corresponding year/period. In case of Decapitalization of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered up to the date of de-capitalization of such asset.*
>
> *(4) Notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the depreciation allowed for the year or part of the year.*
>
> *(5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio after providing appropriate accounting adjustment for interest capitalized:*
>
> *Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered:*

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Provided further that if the generating station or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered.

(6) The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.

(7) The generating company or the transmission licensee, as the case may be, shall make every effort to re-finance the loan as long as it results in net savings on interest and in that event the costs associated with such re-financing shall be borne by the beneficiaries and the net savings shall be shared between the beneficiaries and the generating company or the transmission licensee, as the case may be, in the ratio of 2:1.

(8) The changes to the terms and conditions of the loans shall be reflected from the date of such re-financing.

(9) In case of dispute, any of the parties may make an application in accordance with the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999, as amended from time to time, including statutory re-enactment thereof for settlement of the dispute:

Provided that the beneficiaries or the long term transmission customers /DICs shall not withhold any payment on account of the interest claimed by the generating company or the transmission licensee during the pendency of any dispute arising out of re-financing of loan.

35. Interest on loan has been worked out as mentioned below:

i. The opening gross normative loan as on 01-04-2014 has been arrived at in accordance with Regulation 26 of the 2014 Tariff Regulations.

ii. The weighted average rate of interest has been worked out on the basis of the actual loan portfolio of respective year applicable to the project.

iii. The repayment for the year of the tariff period 2014-19 has been considered equal to the depreciation allowed for that year.

iv. The interest on loan has been calculated on the normative average loan of the year by applying the weighted average rate of interest considering the time factor.

36. Accordingly, Interest on loan is computed as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Normative Loan	166800.85	168239.21	168855.27	169012.03	171281.78
Cumulative Repayment	59039.97	69993.61	80997.17	92029.74	103146.61
Net Loan-Opening	107760.88	98245.60	87858.10	76982.29	68135.17
Repayment during the year	10953.64	11003.56	11032.57	11116.87	11160.91
Addition due to Additional Capitalization	1438.36	616.06	156.76	2269.75	2.42
Net Loan-Closing	98245.60	87858.10	76982.29	68135.17	56976.68

Average Loan	103003.24	93051.85	82420.20	72558.73	62555.92
Weighted Average Rate of Interest	10.453%	10.290%	10.290%	10.290%	10.290%
Interest on Loan	**10767.37**	**9575.04**	**8481.04**	**7466.29**	**6437.00**

Depreciation

37. Regulation 27 of the 2014 Tariff Regulations provides as under:

> ***27. Depreciation**: (1) Depreciation shall be computed from the date of commercial operation of a generating station or unit thereof or a transmission system including communication system or element thereof. In case of the tariff of all the units of a generating station or all elements of a transmission system including communication system for which a single tariff needs to be determined, the depreciation shall be computed from the effective date of commercial operation of the generating station or the transmission system taking into consideration the depreciation of individual units or elements thereof.*
>
> *Provided that effective date of commercial operation shall be worked out by considering the actual date of commercial operation and installed capacity of all the units of the generating station or capital cost of all elements of the transmission system, for which single tariff needs to be determined.*
>
> *(2) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission. In case of multiple units of a generating station or multiple elements of transmission system, weighted average life for the generating station of the transmission system shall be applied. Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis.*
>
> *(3) The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset:*
>
> *Provided that in case of hydro generating station, the salvage value shall be as provided in the agreement signed by the developers with the State Government for development of the Plant:*
>
> *Provided further that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciated value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff:*
>
> *Provided also that any depreciation disallowed on account of lower availability of the generating station or generating unit or transmission system as the case may be, shall not be allowed to be recovered at a later stage during the useful life and the extended life.*
>
> *(4) Land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.*
>
> *(5) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-II to these regulations for the assets of the generating station and transmission system:*

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 12 years from the effective date of commercial operation of the station shall be spread over the balance useful life of the assets.

(6) In case of the existing projects, the balance depreciable value as on 1.4.2014 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31.3.2014 from the gross depreciable value of the assets.

(7) The generating company or the transmission license, as the case may be, shall submit the details of proposed capital expenditure during the fag end of the project (five years before the useful life) along with justification and proposed life extension. The Commission based on prudence check of such submissions shall approve the depreciation on capital expenditure during the fag end of the project.

(8) In case of de-capitalization of assets in respect of generating station or unit thereof or transmission system or element thereof, the cumulative depreciation shall be adjusted by taking into account the depreciation recovered in tariff by the de-capitalized asset during its useful services.

38. The weighted average rate of depreciation has been calculated by the petitioner in accordance with the above regulations. Accordingly, depreciation has been worked out as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Gross block	238286.93	240341.73	241221.82	241445.76	244688.26
Additional capital expenditure during 2014-19	2054.80	880.09	223.94	3242.50	3.45
Closing gross block	240341.73	241221.82	241445.76	244688.26	244691.71
Average gross block	239314.33	240781.78	241333.79	243067.01	244689.99
Rate of Depreciation	4.577%	4.570%	4.571%	4.574%	4.561%
Depreciable Value	215382.90	216703.60	217200.41	218760.31	220220.99
Remaining Depreciable Value	156342.93	146709.99	136203.24	126730.57	117074.37
Depreciation	**10953.64**	**11003.56**	**11032.57**	**11116.87**	**11160.91**

Operation & Maintenance Expenses

39. Regulation 29 clause (3) sub-clause (a) provides as under:

"(a) Following operations and maintenance expense norms shall be applicable for hydro generating stations which have been operational for three or more years as on 1.4.2014:

(₹ in lakh)

NHDC				
Omkareshwar				
2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
4515.31	4815.30	5135.23	5476.42	5840.27

40. The generating station is in operation for more than three or more years as on 1.4.2014. Accordingly, in terms of the above regulation, the year-wise O&M expense norms considered for the generating station for 2014-19 is as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
4515.31	4815.30	5135.23	5476.42	5840.27

Interest on Working Capital

41. Sub-section (c) of Clause (1) of Regulation 28 of the 2014 Tariff Regulations provides as under:

> *"28 (1) (c) Hydro generating station including pumped storage hydro electric generating station and transmission system including communication system:*
>
> *(i) Receivables equivalent to two months of fixed cost;*
>
> *(ii) Maintenance spares @ 15% of operation and maintenance expenses specified in regulation 29; and*
>
> *(iii) Operation and maintenance expenses for one month."*

42. Clause (3) of Regulation 28of the 2014 Tariff Regulations provides as under:

> *"(3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2014 or as on 1st April of the year during the tariff period 2014-15 to 2018-19 in which the generating station or a unit thereof or the transmission system including communication system or element thereof, as the case may be, is declared under commercial operation, whichever is later."*

43. Working capital has been calculated considering the following elements:

Maintenance Spares

44. Maintenance spares@ 15% of O & M Expenses considered for the purpose of tariff is as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
677.30	722.30	770.28	821.46	876.04

Receivables

45. Receivable component of the working capital has been worked out on the basis of two months of fixed cost as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
7053.08	6926.73	6807.31	6727.18	6640.51

O&M Expenses

46. O & M expenses for one month for the purpose of working capital is as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
376.28	401.28	427.94	456.37	486.69

47. In terms of the above regulations, the Bank Rate of 13.50% (Base Rate + 350 Basis Points) as on 1.4.2014 has been considered by the petitioner. This has been considered in the calculations for the purpose of tariff.

48. Necessary computations in support of interest on working capital are appended below:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Maintenance Spares	677.30	722.30	770.28	821.46	876.04
O & M expenses	376.28	401.28	427.94	456.37	486.69
Receivables	7053.08	6926.73	6807.31	6727.18	6640.51
Total	8106.65	8,050.30	8,005.53	8,005.01	8,003.24
Rate of Interest	13.50%	13.50%	13.50%	13.50%	13.50%
Interest on Working Capital	**1094.40**	**1086.79**	**1080.75**	**1080.68**	**1080.44**

Annual Fixed charges for 2014-19

49. The annual fixed charges allowed for the period 2014-19 in respect of the generating station is summarized as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Return on Equity	14987.78	15079.68	15114.25	15222.80	15324.44
Interest on Loan	10767.37	9575.04	8481.04	7466.29	6437.00
Depreciation	10953.64	11003.56	11032.57	11116.87	11160.91
Interest on Working Capital	1094.40	1086.79	1080.75	1080.68	1080.44
O & M Expenses	4515.31	4815.30	5135.23	5476.42	5840.27
Total	**42318.49**	**41560.37**	**40843.84**	**40363.06**	**39843.06**

Design Energy

50. The petitioner has submitted that the NCA has notified the Water Accounting for the years 2011-12 and 2012-13 and has provided the Water Utilization quantity by GOMP. The Commission in order dated 13.6.2012 has worked out the following formula corresponding to Restricted Reservoir Level at EL 189.0 M and Design Energy for the year 2011-12 and 2012-13:

$$FP_{(stage-II)} = 226 - \frac{(226 - 125)}{(13 - 6.00)} \times (Q - 6.00)$$

Where,

$FP_{(stage-II)}$ = Reducing power benefit i.e. Firm Power (in MW) on pro-rata basis during Stage–II period of Indira Sagar Multi-purpose Project.

Q^* = Actual water utilization (in BM^3) for Irrigation by MP in the Narmada Basin to be notified by NCA for respective years.

*Note: * The value of Q shall be irreversible and shall not be reduced once attained.*

Particulars	**Filling of Reservoir upto EL 189.0 M**	
	FY 2011-12	**FY 2012-13**
Utilization of Water by GoMP as Notified by NCA (BM^3)	7.0567	8.09841
Firm Power (MW)	96.196	90.042
Monthly Trued-up Design Energy (MUs)		
Month	**FY 2011-12**	**FY 2012-13**
April	69.26	64.83
May	71.57	66.99
June	69.26	64.83
July	71.57	66.99
August	71.57	66.99
September	69.26	64.83
October	71.57	66.99
November	69.26	64.83
December	71.57	66.99
January	71.57	66.99
February	64.64	60.51
March	71.57	66.99
Annual D.E.	**842.67**	**788.76**

51. Accordingly, the modified design energy for the year 2012-13 i.e. 788.76 MU has been provisionally allowed for the period 2014-19, subject to submission of actual consumptive water utilization by GOMP for the said period duly certified by Narmada Control Authority. However, the Design Energy shall be calculated based on water utilization certification by NCA and shall be trued up at the end of each year based on the actual water utilization certified.

Application Fee and Publication Expenses

52. The petitioner has deposited the filing fees of ₹2288000/- for the period 2014-15 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. The petitioner has published the notice of the tariff petition for 2014-19 in the newspapers in terms of the Central Electricity Regulatory Commission (Procedure for making of application for determination of tariff, publication of the application and other related matters) Regulation, 2004. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations and in line with the decision in order dated 6.1.2016 in Petition No.232/GT/2014, the petitioner shall be entitled to recover the filing fees for the year 2014-15 and the expenses incurred on publication of notices for the period 2014-19 directly from the respondents. The filing fees for the remaining years of the tariff period 2015-19 shall be reimbursed after deposit of the same and subject to production of documentary proof.

53. The annual fixed charges approved for the generating station for the period 2014-19 as above are subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.

54. Petition No. 264/GT/2014 is disposed of in terms of the above.

-Sd/-	***-Sd/-***	***-Sd/-***	***-Sd/-***
(Dr. M.K.Iyer)	**(A.S Bakshi)**	**(A.K.Singhal)**	**(Gireesh B Pradhan)**
Member	**Member**	**Member**	**Chairperson**

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ANNEXUR-1.1

2018/[redacted] Himachal Baspa Power Co-Ltd/Baspa/BASPA POWER HOUSE/02-06-

NOTE FOR APPROVAL

Ref No: Himachal Baspa Power Co-Ltd/Baspa/BASPA POWER HOUSE/02-06-2018/396893

Date:02-06-2018

Department : BASPA POWER HOUSE

NFA Status :IN PROCESS

Subject: Administrative Approval for replacement of One Number Electronic Governor as part of Mandatory Regulatory Compliance of having inbuilt RGMO & FGMO capability and to combat Obsolescence (Baspa-II)

Amount (in INR): Rs.5,300,000(five million three hundred thousand)

Preamble Details:

Three numbers Electronic governors of Baspa units were commissioned during 2003 by M/s Andritz Hydro Private Limited (Formerly known as M/s Hydro Vevey) and are operational since then.

Electronic governor system is the main controller of the hydraulicturbine. Governorsystem varies the water flow through thenozzlesto control itsSpeed, Frequency, Power Output, load rejections and starting / stopping processes.

Governing system includes following: -

- - Speed sensing elements
- - Governor control actuators
- - Hydraulic Oil pressure unit (OPU)
- - Turbine control servomotors

The primary functions of the hydraulic turbine governor are as follows: -

- - To start, maintain and adjust unit speed for synchronizing with the running units/grid.
- - To maintain system frequency after synchronization by adjusting turbine output to load changes.
- - To share load changes with the other units in a planned manner in response to system frequency error.
- - To adjust output of the unit in response to operator or other supervisory automation commands.
- - To perform normal and emergency shut down of units safely.

As per 5th Amendment (issued on 12th April, 2017) of Indian electricity grid code (IEGC), Regulation 2010, Clause 5.2 (f), *"All hydro units of 25 MW and above which are synchronized with the grid, irrespective of their ownership, needs to have their governors in operation at all time in accordance with these provisions"* (Amendment copy attached). Also, Central Electricity Regulatory Commission (CERC) have further declared these provisions as MANDATORY in its order dated 31st July, 2017 (Copy of order attached).

As such, upgradation to FGMO / RGMO **has now become a statutory & mandatory requirement** as per fifth amendment mentioned above. FGMO / RGMO compliance is meant to enhance the Grid stability as Generating Units of Power Station then respond to frequency variations very quickly and varies the power output according to grid requirements, without any human intervention.

To fulfill the mandatory compliance, OEM of these electronic governors (M/s Andritz Hydro Pvt. Ltd.) was approached for upgrading our existing governors for RGMO / FGMO, according to the IEGC and CERC requirements.

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Later, OEM (M/s Andritz Hydro Pvt. Ltd.) offered their expert advice on our existing Governors as below. OEM's email reply is reproduced as verbatim below: -

"We would like to inform you that changes in technologies & design are a continuous process. Therefore, for the betterment and improvement of our existing product and to serve our customers with efficient and robust products, in this regards, we would like to inform you that we are no more manufacturing our earlier supplied Governor model MIPREG DGC and spares support are not available now.

In place of this we have, started offering our new more advanced and specialized"State of Art Microprocessor Based Digital Governing system". The new system is compatible to the earlier supplied hydraulic Systems & other plant auxiliaries with key features like-

- ***- Windows based interface***
- ***- Remote Access feature***
- ***- Self-fault detection feature***
- ***- More users friendly.***

Therefore, we strongly recommend replacing the existing model with new age Digital Governor to increase the reliability and availability of machines with minimum efforts."

(Copy of mail attached at Annexure-1)

Based on OEM's recommendation, budgetary offer for installation of new governor was requested by us. OEM initially submitted its offer for three Governors for Rupees 1,24,35,000/- EXCLUDING Taxes (**@41.45 Lac per Governor** excluding Taxes). After lot of persuasions & negotiation, Andritz re-submitted its offer for Two Governors for Rupees 69,50,000/- EXCLUDING Taxes (**@34.75 Lac per Governor** excluding Taxes) and mandatory spares of Rs. 11,12,960/- (Both the offers are attached).

Keeping in view the Change in Law regarding implementation of FGMO / RGMO, we had kept budget provision for Fy 2018-19 and thus we have approved CAPEX Budget of Rupees 53 Lac with us.

Also, it was learnt that for complete compatibility of new proposed governor with existing SCADA system, soft communication between governor and unit PLC / SCADA needs to integrated over IEC 60870-5-104 protocol. For enabling this soft link, we need to upgrade existing UNIT PLC / SCADA software and additional PLC needs to be installed for supporting software changes. So, for upgradation of Unit PLC / SCADA, M/s Deutek Controls India Ltd. (Delhi) was contacted who had upgraded our SCADA system in past and was also having AMC with us, for maintenance of SCADA system during 2017-18.

This modification in Unit PLC / SCADA will be costing us approximately 1.6 **Lacs** excluding Taxes as per their offer. (Offer attached).

Its pertinent to mention here that, we have only approved budget of **53 Lacs** under "CAPEX" and total budgetary offers for pursuing the aforesaid work is amounting to Rs **56 Lacs (including Taxes). The Commercial /GBS have to ensure that both the orders are negotiated and placed within available budget of 53 Lacs.**

Technical/Functional Details/Commercial Details:

The new Governor system will consist of following: -

- - Microprocessor based Controller
- - Electronic Cubicle

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2018/JSW Himachal Baspa Power Co-Ltd/Baspa/BASPA POWER HOUSE/02-06-

- - Interfacing with Existing Actuator
- - Interfacing with Existing Feedback Mechanism
- - Redundant Electronic speed sensor
- - Control Switches / Indicator
- - Interface with Operator Console – Touch screen
- - Interface with SCADA / DCS

Business Justification:-

Changing of one governor unit with new governor (along with recommended mandatory spares) having inbuilt feature of RGMO / FGMO will ensure compliance to the mandatory IEGC regulations and CERC orders. Performance of Governor and FGMO/RGMO compatibility will get tested and we may plan to upgrade another two governors in future based on performance of this replacement. Moreover, the spared governor & its components will give the comfort of spares availability for balance two units where old governors will still be functioning. This will also ensure Governor redundancy, looking at **Obsolescence** PART.

Proposal Details:

Administrative approval is required for: -

1. Placing Supply & Service Order for Design, manufacturing, transportation, installation, testing & commissioning of one number HIPASE-T Electronic Governor along with mandatory spares and having inbuilt Restricted & Free Governing Mode Operation (RGMO/FGMO) capability, for one unit of Baspa-II Plant.
2. Placing Supply & Service Order for upgradation of unit PLC / SCADA for integrating proposed HIPASE-T governor with existing Unit PLC over soft link (i.e. over "IEC 60870-5-104" protocol)

We have approved capex budget of Rs. 53 Lac under the head "CAPEX for Baspa-II HPS". (Budget Sheet Enclosed)

Other Details:

1. Budgetary offers received from OEM (M/s Andritz Hydro Pvt. Ltd.)
2. Budgetary offer received from M/s Deutek Controls India Ltd. (For Upgradation of Unit PLC / SCADA)
3. Approved CAPEX Budget Sheet
4. Fifth Amendment IEGC dated 12 April 2017 regarding mandatory compliance of RGMO/FGMO
5. CERC Order dated 31 July 2017 mandating implementation of FGMO / RGMO
6. Andritz E-mail regarding **Obsolescence** of existing Governors & its spares. (Annexure -1)

NFA Enclosures:

Annexure -1.pdf

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Initiated by:
himanshu.puri - ,
02-06-2018

NFA Status :IN PROCESS

No Signature

Signature

''''''

Approved by:
ravindra rana - Dy Gen Mgr, O&M Baspa-II
02-06-2018
Remarks:-

Approver Status :APPROVED

Signature

Approved by:
sanjeev.kango - ,
02-06-2018
Remarks:- Ok ,with in limit of approved budget. Subject to final approval as per DOP

Approver Status :APPROVED

No Signature

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ANNEXURE-1.2

ANNEXURE – II

TERMS & CONDITIONS:

Scope of Work:

Our scope of work is limited to Supply and Supervision of testing and commissioning of Governing system (HIPASE-T) for one unit of 3x100 MW Baspa Power House.

Price:

The prices are based on Ex-works Prithla basis. The prices are exclusive of all Transportation, Insurance & GST etc. which shall be borne and payable by Purchaser as extra on actual basis as per applicable rates at the time of execution. Any other local taxes, if applicable, shall also be paid extra against documentary proof.

Effectiveness of contract:

The effective date of the contract shall be the latest of the following

- ✓ Placement of firm purchase order by JSW Energy.
- ✓ Date of acceptance of the same by us in writing.
- ✓ Receipt of advance payment from JSW Energy.
- ✓ Receipt of an irrevocable, sight, divisible, operable and acceptable letter of credit for full contract value less advance payment from the reputed Nationalized or Scheduled bank.

Taxes & Duties:

Please note above prices mentioned is inclusive of packaging & forwarding, However above prices are exclusive of insurance , freight & GST, which shall be charged extra at, actual as applicable at the time of delivery .

Delivery:

The Ex-works delivery period shall be 8 Months approx. reckoned from the date of the effective date of contract as defined above.

Work Schedule:

The completion period for:

- Supervision of dismantling, erection, testing & commissioning for replacement of New Governor panel shall be 20-25 days per unit (approx.) from the date of handing over of unit by JSW .
- Purchaser will ensure availability of the required unit as and an asked by AHPL to carry out the required work.

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Payment Terms:

- 20% interest free advance of TOTAL contract value including all taxes and duties within 30 days of PO.
- Remaining 80% of supply portion along with all applicable taxes and duties shall be payable against proforma invoice within thirty days on pro rata basis.
- Remaining 80% of service portion shall be released within 30 days after successful commissionning of the unit.

Validity:

Our offer is valid for a period of **90** days, after which it is subject to further written confirmation from us. Prices quoted by us above are valid for the items and quantities therein. In case quantities ordered are less, prices are likely to change.

Purchaser Scope:

JSW will provide all the necessary Tools Tackles, Skilled/Unskilled Manpower, helper, Cranes etc. on site to the contractor at free of cost required to carry out the work.

On-site accommodation in standard AC room, local transportation will be provided by JSW Energy at frees of cost to our engineers during ETC work or charge by us at actual.

Warranty:

Our overall liability under warrantee obligations for the supplies made will be over in 12 months from date of commissioning or 18 months from the date of dispatch of material form our works whichever is earlier.

Defect Liability conditions (Warranty) by supplier do not cover for any normal wear and tear of parts, improper operations and or maintenance, for third party repairs or modifications and defects developed due to misuse or abuse by the client or third parties (not employed by supplier).
Any defects during warrantee period will be rectified within one month or as applicable from the receipt of intimation of defects / failure.
You shall notify all defects in writing to supplier within 5 days of occurrence of defects within the defect liability period.

Limitation of Liability:

The aggregate liability of the Contractor in this Contract to Owner, whether under the contract, in tort or otherwise including the cost of repairing or replacing defective equipment, shall not exceed 50% of the contract price.

Under no circumstances contractor shall be liable for any consequential or indirect damages incurred by Owner, including but not limited to loss of profit or loss of production etc.

The exclusions and limitations of liabilities set forth herein shall apply to the contractor's subcontractors and suppliers of every tier. This clause shall prevail over any other clause contained contract.

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Force Majeure:

Force majeure is herein defined as any cause which is beyond the control of the CONTRACTOR, which could not be foreseen or with a 'reasonable amount of diligence could not have been foreseen and which substantially affect the performance of the "Order" Such as but not limited to the following events:

a) Acts of God, natural calamities, including but not limited to floods, droughts, earthquakes and epidemics,

b) Acts of any Government, domestic or foreign, including but not limited to war, declared or undeclared priorities, quarantines, embargoes:

c) Acts of public enemy, accidents and disruptions including but not limited to fires, explosions, breakdown of essential machinery or equipment.

d) Transportation delay due to accidents.

e) Strikes, lockouts and sabotage

f) Riots, terrorism and civil commotions

g) Any other reason which is genuinely not in control of the Contractor.

Provided contractor shall within fifteen (21) days from the occurrence of such a cause notify the purchaser in writing of such causes.

The Contractor or the purchaser shall not be liable for delay in performing his obligations resulting from any force majeure cause as referred to and / or defined above.

If the performance in whole or part by the PURCHASER/ CONTRACTOR or any obligation under the Contract is prevented or delayed by "Force Majeure' conditions for a period exceeding 60 days, the PURCHASER and / or CONTRACTOR may at his option terminate the contract by notice in writing.

If the Force majeure period last for 60 days at a stretch or cumulatively for 60 days Contractor will be entitle to terminate the contract by giving notice to other party. PURCHASER shall pay to Contractor as per our comments to Foreclosure below.

Foreclosure:

In the event of Foreclosure/Termination by the PURCHASER for its requirement or due to force majeure clause above, the PURCHASER shall reimburse to the contractor all reasonable payments such as, but not limited to contract price attributable to the supplies made or works completed or of any other inventory whether at site or at the contractor / contractor's sub-vendors works, payments to subcontractors and costs incurred in de-mobilizing the site.

PURCHASER shall also immediately return all the dues to CONTRCTOR.

Arbitration:

At first both the parties shall make endeavour to settle any or all dispute related to this work through amicable measures.

JSW Hydro Energy Limited

Arbitration, upon failure to solve through amicable measures any dispute, controversy or claim arising out of or relating to or in connection with this Agreement, or the breach, termination or validity hereof shall be finally settled by an arbitral tribunal (the "Tribunal") in accordance with the Indian Arbitration and Conciliation Act, 1996, as in force at the time such arbitration is commenced (the "Arbitration Act"). Each Party will appoint an arbitrator within thirty (30) days of the receipt by a Party at the other Party's request to initiate arbitration. The two arbitrators so appointed will then jointly appoint a third arbitrator within thirty (30) days of the date of appointment of the second arbitrator, where third Arbitrator will act as Chairman of the Tribunal. Arbitrators not appointed within the time limit set forth in the preceding provision shall be appointed by the President of Institute of Engineers, New Delhi. The place of the arbitration shall be New Delhi, India. The language of the arbitration and award shall be English

Hope you will find our offer in line with your requirement and we now look forward to receive your valued order at the earliest.

Thanking you & assuring of our best attention and services.

Yours faithfully,

For ANDRITZ Hydro Private Limited

Adesh Mehra
SR - Sales & Marketing

JSW Hydro Energy Limited

ANNEXURE – III

Scope of Work for Baspa HEP (1 x 100 MW) & Price Schedule (Supply + Supervision of Erection ,Testing & Commissioning):-

Sl.No	Item Description	Total Qty for 1 unit	Unit Price (INR)	Total Price (INR)
Baspa (1x100 MW) - Supply				
1	Digital Governor HIPASE-T Hardware & Panel with required accessories	1	4,475,000	**4,475,000.00**
Baspa (1x100 MW) - Service				
1	Supervision of Erection, Testing & Commissioning of HIPASE-T Digital Governor Panel	1	180,000	**180,000.00**
	Sub Total of Baspa HEP (Supply + Service) in INR			**4,655,000.00**
	Sub Total In Words	**Indian Rupees Four Million Six Hundred Fifty Five Thousand Only.**		

c

Our Scope is limited to Supply & Service of above items.

Note:-

1) The prices are based on Ex-works basis. The prices are exclusive of all Transportation, Insurance & GST etc. which shall be borne and payable by Purchaser as extra on actual basis as per applicable rates at the time of execution. Any other local taxes, if applicable, shall also be paid extra against documentary proof.

JSW Hydro Energy Limited

ANDRITZ Hydro

To:
Mr. Ravindra Rana,
Dy. General Manager, (O&M Baspa II)
JSW Energy Limited, HBPCL, Sholtu Colony,
PO Tapri, Distrcit Kinnaur – 172104
Himachal Pradesh, India

E-Mail: Deepak.raj@andritz.com
Dept./Abt.: SR – Sales & Marketing
Date/Datum: 06th Oct 2017

Fax: +91 (1275) 262 055
Phone/Tel.: +91 (1275) 288 523
Pages/Seiten: 1 (total 2)
Our Ref: PID No. 26002

Reference

1. **Your email dated 31st Aug 2017**

Subject/Betreff: **Offer for Implementation of RGMO & FGMO in three units of Baspa HEP (3 x 100MW)**

Dear Sir,

We thank you for your enquiry for the implementation of RGMO & FGMO in three units of Baspa HEP (3 x 100MW)

With reference to above mentioned subject, we are pleased to submit our offer for the implementation of RGMO & FGMO with following Commercial Terms and Conditions.

Scope of Supply

The scope of work shall be to:

1.	Implementation of RGMO & FGMO FOR THREE UNITS • **MIPREG Modification Includes** ➢ Program Modification of the Turbine controller (Governor) ➢ New EPROM for Software ➢ 1 ETH 603 Card for Modbus communication • **On Site Modification** • **Indian Grid Test** ➢ PID parameter optimization in respect to Indian Grid Criteria (FGMO)

ANDRITZ Hydro Pvt. Ltd.

Regd.Office & Correspondence Address :
ANDRITZ HYDRO Private Ltd.
CIN – U04010MP1996PTC011430
Location – Mandideep
D-17, MPAKVN Industrial Area,
Mandideep, District Raisen – 462 046
Near Bhopal (M.P.) INDIA
Phone: +91 (7480) 400400-401
Fax: +91 (7480) 403393
www.andritz.com

ANDRITZ HYDRO Private Ltd.
Location - Prithla
49/5, Mathura Road, Village Prithla,
District Palwal – 121 102
(Haryana) INDIA
Phone: +91 (1275) 282161-163
Fax: +91 (1275) 282055
www.andritz.com

Company Seat: Vienna
Reg. of Companies FN 61833 g
Vienna Commercial Court
VAT-No. ATU 14756808

Headquarters:
ANDRITZ HYDRO GmbH
Eibesbrunnergasse 20, 1120 Vienna, Austria

JSW Hydro Energy Limited

ANDRITZ Hydro

Price Schedule

Sl.No.	Item Description	Qty	Total Price (INR) At Site
1	Implementation of RGMO & FGMO • **Mipreg Modification Includes** ➢ Program Modification of the Turbine controller (Governor) ➢ New EPROM for Software ➢ 1 ETH 603 Card for Modbus communication • **On Site Modification** • **Indian Grid Test** ➢ PID parameter optimization in respect to Indian Grid Criteria (FGMO)	3 Units	**4,900,000/-**
	Total Amount In Words:	**Indian Rupees Four Million Nine Hundred Thousand Only**	

Assumption & Consideration

- The above implementation of RGMO & FGMO shall be carried out by our ANDRITZ European expert accompanied with Indian Expert.
- Above price quoted are for carrying out the implementation of RGMO & FGMO in 3 units of Baspa HEP.
- Existing governor system & other relevant components will be in healthy condition.
- Software backup of existing application will be with JSW and handover to AHPL during commissioning of RGMO & FGMO.
- Broadband Internet facility will be available at site during testing of RGMO & FGMO.
- Availability of unit as and when required by AHPL engineer for the trial and final commissioning must be ensured.
- Any logic modification (of unit operation) or service support of any kind required to be carried out will be extra cost and extra time and to be negotiated separately.
- Advance notice of at least 45 days is required by AHPL for preparation to implementation the RGMO & FGMO.
- Implementation of RGMO & FGMO in all units in a single stretch shall be time bound (approx. 5 days), JSW to ensure the availability of units in single visit of our experts.
- European expert shall be carrying out the above works, if any delay in commissioning for any reason attribute to JSW will be charge extra at **INR 2,50,000/- (Indian Rupees Two Lacs Fifty Thousand Only)** per day.
- JSW to provide well-furnished guest house for our experts and local transportation at free of cost to AHPL team.

ANDRITZ Hydro Pvt. Ltd.

JSW Hydro Energy Limited

ANDRITZ Hydro

- Acceptance note to be given immediately but not later than 24 hour by JSW after implementation of RGMO & FGMO. Delay in issuing of acceptance note beyond 24 hours will be treated deemed acceptance.

Exclusion

1. Detailed design of above, including drawings.
2. Site Expertise
3. SGS, Vertas or other inspection.
4. Handling devices.
5. Any spares or Tools required
6. Site work for dismantling/re-erection
7. Any work on old existing items.
8. Work on any other component associated with above mention items

Effectiveness of contract

The effective date of the contract shall be the latest of the following:

- Placement of firm purchase order by JSW and the date of acceptance of the same by us in writing.
- Receipt of interest free Advance Payment.

Delivery period

Implementation of RGMO & FGMO in all units shall be approx. 5 days.

Validity

Our offer is valid for a period of 60 days from date of this offer, after which it is subject to further written confirmation from us.

Payment terms

- 20% of Contract Value as an interest free advance payment. Against submission of bank guarantee of the equivalent amount.
- 80% of Contract Value along with 100% taxes & duties, etc shall be paid through RTGS.

The above 80% payment to be released by JSW within 30 days from the date of completion of services

Limitation of Liability

The aggregate liability of the Contractor in this Contract to Owner, whether under the contract, in tort or otherwise including the cost of repairing or replacing defective equipment, shall not exceed 50% of the contract price including escalation.

JSW Hydro Energy Limited

ANDRITZ Hydro Pvt. Ltd.

Deepak

ANDRITZ Hydro

Under no circumstances contractor shall be liable for any consequential or indirect damages incurred by Owner, including but not limited to loss of profit or loss of production etc.

Force Majeure

Force majeure is herein defined as any cause which is beyond the control of the CONTRACTOR, which could not be foreseen or with a 'reasonable amount of diligence could not have been foreseen and which substantially affect the performance of the "Order" Such as but not limited to the following events:

a) Acts of God, natural calamities, including but not limited to floods, droughts, earthquakes and epidemics,

b) Acts of any Government, domestic or foreign, including but not limited to war, declared or undeclared priorities, quarantines, embargoes:

c) Acts of public enemy, accidents and disruptions including but not limited to fires, explosions, breakdown of essential machinery or equipment.

d) Transportation delay due to accidents.

e) Strikes, lockouts and sabotage

f) Riots, terrorism and civil commotions

g) Any other reason which is genuinely not in control of the Contractor.

Provided contractor shall within fifteen (21) days from the occurrence of such a cause notify the purchaser in writing of such causes.

The Contractor or the purchaser shall not be liable for delay in performing his obligations resulting from any force majeure cause as referred to and / or defined above.

If the performance in whole or part by the PURCHASER/ CONTRACTOR or any obligation under the Contract is prevented or delayed by "Force Majeure' conditions for a period exceeding 60 days, the PURCHASER and / or CONTRACTOR may at his option terminate the contract by notice in writing.

If the Force majeure period last for 60 days at a stretch or cumulatively for 60 days Contractor will be entitle to terminate the contract by giving notice to other party. PURCHASER shall pay to Contractor as per our comments to Foreclosure below.

Foreclosure

In the event of Foreclosure/Termination by the PURCHASER for its requirement or due to force majeure clause above, the PURCHASER shall reimburse to the contractor all reasonable payments

ANDRITZ Hydro Pvt. Ltd.

JSW Hydro Energy Limited

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such as, but not limited to contract price attributable to the supplies made or works completed or of any other inventory whether at site or at the contractor / contractor's sub-vendors works, payments to subcontractors and costs incurred in de-mobilizing the site.

PURCHASER shall also immediately return all the dues to CONTRCTOR.

Arbitration

At first both the parties shall make endeavour to settle any or all dispute related to this work through amicable measures.

Arbitration, upon failure to solve through amicable measures any dispute, controversy or claim arising out of or relating to or in connection with this Agreement, or the breach, termination or validity hereof shall be finally settled by an arbitral tribunal (the "Tribunal") in accordance with the Indian Arbitration and Conciliation Act, 1996, as in force at the time such arbitration is commenced (the "Arbitration Act"). Each Party will appoint an arbitrator within thirty (30) days of the receipt by a Party at the other Party's request to initiate arbitration. The two arbitrators so appointed will then jointly appoint a third arbitrator within thirty (30) days of the date of appointment of the second arbitrator, where third Arbitrator will act as Chairman of the Tribunal. Arbitrators not appointed within the time limit set forth in the preceding provision shall be appointed by the President of Institute of Engineers, New Delhi. The place of the arbitration shall be New Delhi, India. The language of the arbitration and award shall be English

Guarantee

The executed services shall be guaranteed for any workmanship defect for a period of 12 months from the date of commissioning.

We trust that you will find our offer as per your requirement.

Thanking you,
Yours faithfully,

For ANDRITZ Hydro Private Limited

ANDRITZ Hydro Pvt. Ltd.

Deepak Raj
Sales & Marketing
Services & Rehab Division

Ajay Aggarwal
HOD - Sales & Marketing
Services & Rehab Division

JSW Hydro Energy Limited

Annexure 1.3

Central Electricity Regulatory Commission
New Delhi

Notification

Date: 12th April, 2017

No. L-1/18/2010-CERC – In exercise of powers conferred under clause (h) of sub-section (1) of Section 79 read with clause (g) of sub-section (2) of Section 178 of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, the Central Electricity Regulatory Commission hereby makes the following regulations to amend the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 including the first to fourth amendments thereof (hereinafter referred to as "the Principal Regulations"), namely:-

1. Short title and commencement

(1) These regulations shall be called the Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Fifth Amendment) Regulations, 2017.

(2) These regulations shall come into force with effect from 1st May, 2017.

2. Amendment of Regulation 2 in General Part of Principal Regulations

(1) In Regulation 2(1)(sss) of General Part of Principal Regulations, the definition of 'Spinning Reserves' shall be substituted as under:

(sss) Spinning Reserve means: "the Capacities which are provided by devices including generating station or units thereof synchronized to the grid and which can be activated on the direction of the System Operator and effect the change in active power."

(2) Regulation 2(2) of General Part of the Principal Regulations shall be substituted as under:

"Words and expressions used in these regulations and not defined herein but defined in the Act or other relevant Regulations of the

JSW Hydro Energy Limited

Commission shall have the meaning as assigned to them under the Act or relevant Regulations of the Commission."

3. **Amendment in Part 1 of Principal Regulations- The following provision shall be added at the end of Regulation 1.4 (v) of Part 1 of the Principal Regulations**

'This section will also cover scheduling and despatch of power of ISGSs for operation of Ancillary Reserve Services, for utilization of Un-requisitioned surplus power and for operation of Spinning Reserves with the process of the flow of information between the Generating Stations, National Load Despatch Centre, Regional Load Despatch Centre, Power Exchanges, the State Load Despatch Centres and other concerned users."

4. **Amendment in Part 2 of Principal Regulations**

(1) Regulation 2.2.2(i) Part 1 of the Principal Regulations shall be substituted as under:

"(i) NLDC shall be the nodal agency for collective transactions and Ancillary Services including Spinning Reserves."

(2) The following shall be added as Regulation 2.2.2(iii) after Regulation 2.2.2(ii) of Part 2 of the Principal Regulation as under:

"(iii) Coordination with ISGSs, Regional Load Dispatch Centers, State Load Dispatch Centers and Regional Power Committees for implementation of Ancillary services, prudent utilization of Un-requisitioned power, and identification and operation of Spinning Reserves at inter-State level as per Detailed Procedure and Regulations specified by the Commission."

(3) Regulation 2.3.2(g) of Part 1 of the Principal Regulations shall be substituted as under:

"(g) Operation of Ancillary Services including Spinning Reserves."

(4) The following provision shall be added as Regulation 2.4.2 (i) and (j) after Regulation 2.4.2(h) of Part 2 of the Principal Regulations:

"(i) To perform the functions as mandated under the Central Electricity Regulatory Commission (Ancillary Services Operation) Regulations, 2015.

(j) To maintain the accounts of energy transacted under Ancillary Services Operation including Spinning Reserves."

5. Amendment in Part 5 of the Principal Regulations:

(1) In Regulation 5.2(f) of Part 5 of the Principal Regulations, the words: "All thermal generating units of 200 MW and above and all hydro units of 10 MW and above" shall be substituted with words "All Coal/lignite based thermal generating units of 200 MW and above, Open Cycle Gas Turbine/Combined Cycle generating stations having gas turbines of capacity more than 50 MW each and all hydro units of 25 MW and above".

(2) In Regulation 5.2(f)(i)(a) of Part 5 the Principal Regulations, the words "Thermal generating units" shall be substituted with words "Coal/lignite based thermal generating units."

(3) In Regulation 5.2(f)(i)(b)of Part 5 of the Principal Regulations, the word and number "10 MW" shall be substituted with the word and number "25 MW".

(4) The following clause shall be added after Regulation 5.2(f)(i)(b) of Part 5 of the Principal Regulations :

"(c) Open Cycle Gas Turbine/Combined Cycle generating stations having gas turbines of capacity more than 50 MW each: with effect from 01.10.2017"

(5) Regulation 5.2(f)(ii)(a) of Part V of the Principal Regulations shall be substituted as under:

"(a) There should not be any reduction in generation in case of improvement in grid frequency to a level below 50.00 Hz. (For example, if grid frequency changes from 49.9 to 49.95 Hz, or from 49.95 to 49.99 Hz there shall not be any reduction in generation). For any fall in grid frequency, generation from the unit should increase as per generator droop upto a maximum of 5% of the generation subject to ceiling limit of 105% of the MCR of the unit having regard to machine capability".

(6) In Regulation 5.2(f)(iii) of Part 5 of the Principal Regulations, the words "Gas Turbine/Combined Cycle Power Plants" shall be deleted.

(7) The first sentence of Regulation 5.2(h) of Part 5 of the Principal Regulations, shall be substituted as under:

"All coal/lignite based thermal generating units of 200 MW and above, Open Cycle Gas Turbine/Combined Cycle generating stations having gas turbines of more than 50 MW each and all hydro units of 25 MW and above operating at or up to 100% of their Maximum Continuous Rating (MCR) shall have the capability of (and shall not in any way be prevented from) instantaneously picking up to 105%, 105% and 110% of their MCR, respectively, when the frequency falls suddenly."

JSW Hydro Energy Limited

(8) The following shall be added at the end of Regulation 5.2 (h) of Part 5 of the Principal Regulations:

"For the purpose of ensuring primary response, RLDCs/SLDCs shall not schedule the generating station or unit(s) thereof beyond ex-bus generation corresponding to 100% of the Installed capacity of the generating station or unit(s) thereof. The generating station shall not resort to Valve Wide Open (VWO) operation of units whether running on full load or part load, and shall ensure that there is margin available for providing Governor action as primary response. In case of gas/liquid fuel based units, suitable adjustment in Installed Capacity should be made by RLDCs/SLDCs for scheduling in due consideration of prevailing ambient conditions of temperature and pressure vis-à-vis site ambient conditions on which installed capacity of the generating station or unit(s) thereof have been specified:

Provided that scheduling of hydro stations shall not be reduced during high inflow period in order to avoid spillage:

Provided further that the VWO margin shall not be used by RLDC to schedule Ancillary Services."

(9) The following proviso shall be added at the end of Regulation 5.2 (g) of Part 5 of the Principal Regulations :

"Provided that periodic checkups by third party should be conducted at regular interval once in two years through independent agencies selected by RLDCs or SLDCs as the case may be. The cost of such tests shall be recovered by the RLDCs or SLDCs from the Generators. If deemed necessary by RLDCs/SLDCs, the test may be conducted more than once in two years."

6. Amendment of Part 6 of the Principal Regulations:

(1) In Regulation 6.4.2(c), the word "including" shall be substituted by the word "and".

(2) In Regulation 6.5.3 of the Part 6 of the Principal Regulations, the words "8 AM" shall be substituted by words "6 AM".

(3) In Regulation 6.5.4 of Part 6 of the Principal Regulations, the words "10 AM" shall be substituted by words " 8 AM".

(4) New Clauses (4a), (4b), (4c) and (4d) shall be added after Regulation 6.5.4 of Part 6 of the Principal Regulations as under :

"4(a) The original beneficiary shall communicate its consent to the ISGS by 9.45 AM each day about the quantum and duration of power for next day for sale in the market.

4(b) The original beneficiary may also provide a standing consent to the ISGS for sale of power in the market for specified duration and specified quantum.

4(c) The ISGS shall not sell the power of any beneficiary in the market without its express consent.

4(d) The beneficiary shall not be allowed to schedule the power for which consent has been given by the beneficiary to the ISGS except in cases where power is still available with the ISGS after sale through bilateral and collection transactions.

4(e) The ISGS shall intimate the details of the share of power of individual beneficiaries sold in the market to the respective RLDC.

JSW Hydro Energy Limited

(5) The following provision shall be added as first proviso at the end of Regulation 6.5.3.19 of Part 6 Principal Regulation:

"Provided that the generator or trading licensee any other agency selling power from the generating station or unit(s) thereof may revise its estimated restoration time once in a day and the revision schedule shall become effective from the 4th time block, counting the time block in which the revision is advised by the generator to be the first one."

7. **A New Regulation shall be added after Regulation 6.5 of the Principal Regulations as under:**

"6.5 (A) Scheduling and commercial settlement of energy exchanged under Ancillary services including Spinning Reserves and URS:

(a) The Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations, 2015 provides detailed frame work of scheduling and despatch, withdrawal, energy accounting and commercial settlement of Reserves Regulation Ancillary Services.

(b) In case of spinning reserves, the scheduling and commercial settlement of energy exchanged shall be as per the Detailed Procedure to be notified separately by the Commission in consultation with POSOCO (NLDC).

(c) In case of sale of share of original beneficiaries in market by ISGS for which consent has been given, the realized gains shall be shared between the ISGS and the concerned beneficiary in the ratio of 50:50 or as mutually agreed by the ISGS and concerned beneficiary in the billing of the following month. This gain shall be calculated as the difference between selling price of such power and fuel charge including incidental expenses.

Provided that such sale of power by ISGS shall not result in any adverse impact on the original beneficiary(ies) including in the form of higher average energy charge vis-à-vis the energy charge payable without such sale:

Provided further that there shall be no sharing of loss between the ISGS and the beneficiary(ies):

Provided also that, the liability of fixed charge in such cases shall remain with original beneficiary(ies) as determined in accordance with the Tariff Regulations notified by the Commission from time to time.

-Sd-
(Sanoj Kumar Jha)
Secretary

Note: Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 were notified in Part III, Section 4 No. 115 of the Gazette of India (Extraordinary) dated 28.4.2010 and amended vide:-

(a) Corrigendum published in Part III, Section 4, No. 168 of the Gazette of India (Extraordinary) dated 03.07.2010.
(b) Addendum published in Part III, Section 4, No. 168 of the Gazette of India (Extraordinary) dated 03.07.2010.
(c) First Amendment Regulations, 2012 published in Part III, Section 4, No. 60 of the Gazette of India (Extraordinary) dated 06.03.2010.
(d) Second Amendment Regulations, 2014 published in Part III, Section 4, No. 08 of the Gazette of India (Extraordinary) dated 07.01.2014.
(e) Corrigendum published in Part III, Section 4, No. 64 of the Gazette of India (Extraordinary) dated 21.2.2014.
(f) Third Amendment Regulations, 2015 published in Part III, Section 4, No 271 of the Gazette of India (Extraordinary) dated 10.08.2015
(g) Fourth Amendment Regulation, 2016 published in Part III, Section 4, No 162 of the Gazette of India (Extraordinary) dated 29.04.2016

JSW Hydro Energy Limited

Annexure 1.4

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CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 84/MP/2015
Along with I.A. No.8/2016

Coram:

Shri Gireesh B. Pradhan, Chairperson
Shri A. K. Singhal, Member
Shri A.S. Bakshi, Member
Dr. M.K. Iyer, Member

Date of Order: 31st of July, 2017

In the matter of

Endangering the secured grid operation of All India electricity grid through inadequate/non-performance of Free Governor Mode Operation (FGMO) with Manual Intervention by the generators and non-compliance of Regulation 5.2 (f), (g), (h), (i) of Indian Electricity Grid Code read with Regulations 24 and 111 of Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999.

And
In the matter of

National Load Despatch Centre (NLDC)
B-9 (1st Floor), Qutub Institutional Area,
Katwaria Sarai, New Delhi-110016 **...Petitioner**

Vs

1) General Manager, Delhi Transco Limited,
Delhi-SLDC 33 kV, sub-station Building,
Minto Road, New Delhi -110002.

2) Haryana Vidyut Prasaran Nigam Limited,
Haryana-SLDC, Sewah Panipat,
XEN/LD & PC, SLDC Complex,
Sewah Panipat -132103.

3) Himachal Pradesh State Electricity Board,
HP-SLDC, HP Load Despatch Society,
SLDC complex, Totu, Shimla -171011.

4) Jammu & Kashmir Power Development Department,
J&K-SLDC, SLDC Building,
220 kV Grid Station Narwal, Jammu -180007.

5) Punjab State Transmission Corporation Limited,
Punjab-SLDC, Ablowal, Patiala,
SLDC Building, near 220KV Grid Substation,
PSTCL, Ablowal, Patiala -147001

6) Chief engineer(LD),
Rajasthan Rajya Vidyut Prasaran Nigam Limited,
Rajasthan-SLDC, State Load Despatch Centre,
Rajasthan Rajya Vidyut Prasaran Nigam Limited,
Ajmer Road, Heerapura, Jaipur -302024

7) Uttar Pradesh Power Transmission Corporation Limited,
SLDC-UP, Power System, 5th Floor,
Shakti Bhawan, 14 Ashok Marg,
Lucknow -226001

8) Power Transmission Corporation of Uttarakhand Limited,
SLDC-Uttarakhand, 400 KV Sub-station,
Veerbhadra, Rishikesh -249202

9) General Manager,
Singrauli Super Thermal Power Station,
Shakti Nagar, UP-231222

10) General Manager,
Rihand Super Thermal Power Station-I,
Rihand Nagar, UP-231223

11) General Manager,
Rihand Super Thermal Power Station-II,
Rihand Nagar, UP-231223

12) General Manager,
Rihand Super Thermal Power Station-III,
NTPC Rihand, Dist-Sonbhadra, UP - 231223

13) General Manager, Dadri,
National Capital Power Project,
Dadri Dhaulana Road,
Distt.Gautam Buddh Nagar,
UP-201008

14) General Manager,
Dadri - Stage - II,
National Capital Power Project,
Dadri Dhaulana Road,
Distt.Gautam Buddh Nagar, UP-201008

15) General Manager,

Firoz Gandhi Unchahar Thermal Power Project-I,
Unchahar, Distt. Raibareilly, UP

16) General Manager,
Firoz Gandhi Unchahar Thermal Power Project-II,
Unchahar, Distt. Raibareilly, UP

17) General Manager,
Firoz Gandhi Unchahar Thermal Power Project-III,
Unchahar, Distt. Raibareilly, UP

18) General Manager,
Dadri Gas Power Project,
Dhaulana Road, Distt.Gautam Buddh Nagar,
UP-201008

19) General Manager,
Auraiya Gas Power Project
(Gas Fired, RLNG Fired, Liquid Fired),
Dibiyapur, Distt Etawah, UP-206244

20) General Manager,
Anta Gas Power Project
(Gas Fired, RLNG Fired, Liquid Fired),
Distt. Baran, Rajasthan-325209

21) Station Director,
Narora Atomic Power Station,
Narora, Distt. Bulandsahar, UP-202389

22) Station Director,
Rajasthan Atomic Power Station-B,
Anu Shakti Vihar, Kota, Rajasthan-323303

23) Station Director,
Rajasthan Atomic Power Station-C,
(RAPS-5&6) PO-Anushakti,
Kota, Rajasthan-323304

24) General Manager,
Bairasiul Hydro Electric Project,
NHPC Ltd., Surangini,
Distt.Chamba, HP-176317

25) General Manager,
Salal Hydro Electric Project,
NHPC Ltd, Jyotipuram, Distt. Udhampur,
J&K-182312

26) General Manager,
Tanakpur Hydro Electric Project,
NHPC Ltd., Banbassa, Distt. Champawa,
Uttrakhand-262310

27) General Manager,
Chamera-I Hydro Electric Project,
NHPC Ltd., Khairi, Distt. Chamba,
HP-176310

28) General Manager,
Uri Hydro Electric Project,
NHPC Ltd., Mohra, Distt. Baramulla,
J&K-193122

29) General Manager,
Chamera-II Hydro Electric Project,
NHPC Ltd., Karian, Distt. Chamba, HP-176310

30) General Manager,
Chamera-III Hydro Electric Project,
NHPC Ltd., Dharwala, Distt.-Chamba,
HP-176311

31) General Manager,
Dhauliganga Hydro Electric Project,
NHPC Ltd., Tapovan, Dharchula,
Pithoragarh, Uttrakhand-262545

32) General Manager,
Dulhasti Hydro Electric Project,
NHPC Ltd., Chenab Nagar, Distt. Kishtwar,
J&K-182206

33) General Manager,
Satluj Jal Vidyut Nigam Ltd. Power Project, Jhakri,
Rampur, Distt. Shimla, HP-172201

34) General Manager,
Tehri Hydro Development Corporation Ltd.,
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35) General Manager,
Uri 2 Hydro Electric Project,
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J&K-193123

36) General Manager,
Sewa-II Power Station, Mashke,
P.O-Khari,Tahsil-Dalhausie , Dist-Chamba,

JSW Hydro Energy Limited

HP-176325

37) General Manager,
Koteshwar HEP, THDCIL,
Koteshwerpuram, Tehri Garwal-249002

38)General Manager,
ADHPL Prini, Tehsil Manali,
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39) General Manager,
Indra Gandhi Super Thermal Power Project
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40) General Manager,
Karcham Wangtoo HEP,
Jaiprakash Power House Ventures Limited
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41) Plant In Charge,
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42) Lanco Budhil HPS Ltd,
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43) SLDC, Airoli, Navi Mumbai, Airoli,
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Navi Mumbai -400708.

44) State Load Despatch Centre,
MPPTCL, Jabalpur, O/o Chief Engineer (SLDC),
MPPTCL, Nayagaon, Jabalpur

45) SLDC Gotri Vadodara,
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Opposite Kalpvrux Complex, Gotri Road, Vadodara

46) Chhattisgarh State Load Despatch Centre,
C.E(LD),State Load Despatch Centre,
CSPTCL, Daganiya-HQ, Raipur, Chhattisgarh

47) General Manager,
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48) General Manager,
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56) General Manager,
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57) General Manager,
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58) General Manager ,
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ACB (India) Ltd. District - Korba
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62) Executive Director
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64) Executive Director,
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70) Station Director,
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71) Station Director,
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P.O. TAPP, Thane (Dist), Maharashtra- 401 504

72) Station Director,
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73) Managing Director,
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84) Damodar Valley Corporation,
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86) General Manager,
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88) General Manager,

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95) Additional General Manager,
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98) Andhra Pradesh State Load Dispatch Centre,
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100) State Load Despatch Centre,

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112) The Deputy General Manager ,
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113) The Deputy General Manager,
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114) The Station Director,
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116) The Chief Operating Officer,
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119) Sr. Vice President,
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120) Managing Director,
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122) State Load Despatch Centre,
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123) Department of Power,
Government of Nagaland,
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124) Electricity Colony,
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125) Mizoram State Load Despatch Centre,
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126) State Load Despatch Centre,
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127) General Manager,
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128) General Manager,
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129) General Manager,
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Kathalguri, Tinsukia,

Assam

130) General Manager,
AGTPP, NEEPCO, Ramchandranagar,
Agartala, Tripura

131) General Manager,
KHANDONG HEP, NEEPCO,
Umrangsoo, N.C. Hills, Assam

132) General Manager,
KOPILI HEP, NEEPCO,
Umrangsoo, N.C.Hills, Assam

133) General Manager,
KOPILI-2 HEP, NEEPCO, Umrangsoo,
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134) Chief Engineer,
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135) Managing Director,
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Parties Present:

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Ms. Abiha Zaidi, NLDC
Shri Rahul Shukla, NLDC
Shri Anil Raghuwanshi, THDC
Shri D.S. Chauhan, THDC
Shri Rahul Srivastava, Advocate, UPSLDC
Shri Zahir Ahmad, UPSLDC
Shri M.K.Gupta, UPSLDC
Shri Aashish Bernard, Advocate, SLDC, M.P.
Shri Darshan Singh, SLDC Delhi
Shri S. Sutradhar, SLDC Delhi
Shri K. Nayak, NHPC
Shri A.K.Arya, RRVPNL
Shri V.K.Gupta, RRVPNL
Ms. Swapna Seshadri, Advocate, KPTCL and KSK Mahanadi
Shri Anand K. Ganesan, Advocate, KPTCL and KSK Mahanadi
Shri Ajay Dua, NTPC
Shri V.K.Jain, NTPC
Shri Romesh Kapoor, SJVN Ltd.
Shri Sanjeev Sood, SJVN Ltd.

Shri Rajeev Agarwal, SJVN Ltd.
Shri K.K. Gupta, SJVN Ltd.
Shri Sheikh Salim, UPRVUNL
Shri G.K. Mishra, UPRVUNL
Shri F.E. Kharshing, MeECL
Shri Girish Gupta, CSPTCL
Shri Pankaj Kocay, CSPTCL
Shri R.A. Sharma, MPPTCL
Shri Sanjiv R. Saxena, Advocate, HVPNL
Shri R. Mishra, Advocate, HVPNL
Shri Amit Kumar Saini, HVPNL
Shri Ravi Sher Singh, HVPNL

ORDER

The Petitioner, National Load Despatch Centre, has filed the present petition seeking direction to the Respondents to comply with the provisions of Regulation 5.2 (f), (g), (h) and (i) of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) (hereinafter referred to as "Grid Code"). The Petitioner has made the following prayers:

> "(i) Direct all utilities to provide primary response compulsorily as provided for in the IEGC in sections 5.2 (f), (g), (h) and (i).
>
> (ii) Any other directions as deemed fit in the interest of power system security"

2. The Petitioner has submitted as under:

(a) The necessity for a responsive governing system on the generators has been underlined by the Commission since approval of the Grid Code in December 1999. As per the provisions of the Grid Code as amended from time to time, during fall in grid frequency, generation from the units of the generating stations is required to increase by 5% by way of governor response.

(b) The frequency profile has improved considerably over the years, particularly in the year 2014 with the synchronization of Southern grid with the rest of the

country, implementation of the amendments in the Grid Code w.e.f. 17.2.2014 and introduction of the Deviation Settlement Mechanism Regulations. The scatter plots of the maximum, minimum and average frequency have been given in Annexure-I of the Petition. The earlier variation of the order of 4-5 Hz on daily basis between1998-2002 has now come down to the order of 0.50-0.70 Hz.

(c) In the context of synchronization of Southern Grid with the NEW Grid in December, 2013, operation of large Grid without adequate Primary Response makes the system vulnerable in case of large contingencies in the grid, particularly if there is part separation of any part of the grid.

(d) The issue of primary response gains further importance in view of increasing penetration of renewable generation in the system. Various measures are being taken to narrow the variations in frequency. However, large efforts are required in narrowing the variations further. Therefore, it has become essential to ensure primary response through governor action from all the generators. In order to assess/monitor the implementation of primary response, the Commission vide order dated 3.5.2013 in Petition Nos. 47-52 of 2012 has mandated computation of frequency response of all control areas of the grid and all the generating stations. The Commission had notified the procedure for 'Assessment of Frequency Response Characteristic (FRC) of control areas in Indian power system' for periodic monitoring of control area frequency response vis-a-vis ideal frequency response for large events. The Commission directed NLDC/RLDCs/SLDCs to report Frequency Response characteristics (FRC), on control area basis, for large events in the grid. Accordingly, NLDC has been evaluating frequency response of the regions and grid entities for large events and it has been constantly submitting

quarterly feedback to the Commission (alongwith calculations).

(e) The Commission in order dated 31.12.2012 in Petition No. 191/SM/2011 directed NLDC to implement a pilot project for testing governor response. After the approval of the terms of reference for testing by a Task Force constituted by CEA for the purpose and placement of order by the CTU, the pilot project tests were completed between October, 2014 to January, 2015. The Commission had been apprised of the test details on 27.1.2015 where the vendor involved in the tests, M/s Solvina also gave a presentation.

(f) Meanwhile, on 24.9.2014, the Commission constituted a Committee headed by Shri A Velayutham, ex-Member, MERC for implementation of Free Governor Mode of Operation (FGMO) or primary response. However, primary response remains elusive.

(g) On 14.1.2015, in case of tripping of one 1000 MW unit at Kudankulam nuclear power station at 1920 hours, the FRC of control areas as well as generators was calculated as per the procedure validated by the Commission.

(h) NLDC has compiled FRC for major generating stations and the constituents of all the regions, for Kudankulam generation outage event. Since, the generating stations, connected to the grid, are expected to increase their output during contingencies involving loss of generation (resulting in decline in frequency), it is understood that the generating station with highest -negative value of FRC is contributing maximum to frequency response and the generating station with highest positive value of FRC is aggravating the frequency deviation. On the other hand, the constituent with highest positive value of FRC contributes maximum to

frequency response and that with highest-negative value severely aggravates the frequency deviation.

(i) As per the table 3 and 4 of the Annexure-IV of the Petition, the control areas like Bihar, UP, Chhattisgarh, MP, Gujarat, OPTCL, etc. had very low or negative frequency response in the event and not supporting attest of the frequency fall. Similarly, many generating stations like Vindhyachal, Ramagundam, Singrauli, etc. have shown positive or very small Frequency Response thereby aggravating the frequency deviation in the event. All the generating stations have not provided adequate frequency response.

(j) The overall FRC on an all India basis for this event which has occurred during the evening peak hours is of the order of 6000 MW/Hz. During this period, the number of the generating units on bar is maximum and the capacity on bar would be typically 130-140 GW which should have provided a much higher frequency response (50000-55000 MW/Hz ideally assuming 5% governor droop). While such an ideal response is rarely available practically, a response of 15000-20000 MW/Hz is still desirable as a complete 4000 MW generating station outage is a credible contingency. It is desirable that the frequency fall in such cases is contained within 49.70-49.80 Hz to avoid any inadvertent tripping in the system such as on account of over-fluxing of transformers in any part of the grid. In this regard, the Petitioner has placed on record the voltage and frequency scatter plots of important generating stations as Annexure-V of the Petition. It would be seen from these plots that operation in second quadrant (high voltage and frequency much less than 50 Hz) can lead to problems of over-fluxing and tripping of transformers.

(k) On 12.3.2014 at 1922 hours, Mundra UMPP had tripped leading to loss of 4100 MW generation. During the period, FRC was 4200 MW/Hz and the frequency fall from 49.93 Hz to 49.28 Hz had led to reduction in power order on HVDC Bheramara feeding Bangladesh by 150 MW (as part of System Protection Scheme). The fall in frequency for a similar loss during off peak hours could very well be imagined when the system size is of the order of 100 GW only and FRC would be much lower during this period.

(l) Improvement in the all India FRC is required to protect the system during major contingencies and aiding frequency stabilization.

3. Notices were issued to the respondents to file their replies. Replies to the Petition have been filed by SLDC, Delhi, SLDC, Rajasthan, SLDC, UP, NTPC, NHPC, SJVNL, THDC, SLDC, Madhya Pradesh, SLDC, Gujarat, SLDCs Andhra Pradesh and Telangana and NTPC Tamil Nadu Energy Ltd.

4. During the course of hearing, the representative of the Petitioner submitted that during the earthquake in Nepal on 25.4.2015 at around 11:43 hrs, adequate frequency response was not provided by the constituents and there was demand reduction of approx. 3500 MW within 3-4 minutes due to trippings/manual load shedding especially in Northern Region and Eastern Region. The frequency went up to 50.50 Hz from 49.95 Hz i.e. variation of 0.55 Hz was observed in few minutes. In this event, adequate frequency response was again missing in number of control areas, particularly in the NEW Grid which led to high voltages in the system, large angular variation among nodes in Grid, etc. The most alarming outcome of the event was sudden flow change in 765 kV Sholapur-Raichur D/C (AC Lines between NEW Grid and SR Grid) by approx.1000 MW due to better frequency response from Southern Region generating units leading to

generation reduction in the region. The impact was also observed on 400 kV Wardha-Parli D/C transmission line on which loading increased to such high levels that triggering of System Protection Scheme (SPS) missed by a narrow margin. The Representative of the Petitioner submitted that SPS action of load shedding associated with the line would have again caused frequency to rise to a higher value. Frequency rise to 50.50 Hz and above was also dangerous considering the likely increase in Distributed Generation resources such as solar PV. The Representative of the Petitioner submitted that the CEA Grid Standards Regulations prescribe disconnection of Solar PV at 50.50 Hz and above (or lower depending on agreement with the licensee).

5. The Representative of POSOCO submitted that the performance of FGMO/ RGMO is far below expected level. SLDCs are yet to take-it-up seriously at appropriate management level/SERC for ensuring effective governor performance. The Representative of THDC submitted that THDC is not able to implement the FGMO as THDC is a multi-purpose project.

6. The Petitioner was directed to upload a copy of the petition on the website of POSOCO and RLDCs so that it is easily accessible by all the respondents. The Petitioner, vide Record of Proceedings for the hearing dated 5.5.2014, was directed to file the following information/clarification:

(a) FRC report for the Earthquake in Nepal on 25th April, 2015.

(b) The ISGSs, who have given poor response or no response and justification for poor response or negative response with reference to Grid Code during both frequency excursions.

7. SLDCs were directed to file the following details/clarifications:

(a) FRC report of their respective control areas including reasons for poor/negative response from their control areas clearly bringing out the generator-wise response in MWs, in percentage of ideal response and scheduled MW during both the frequency excursions for all the generators of the State.

(b) Seek the reasons from the generators who have shown poor or no response as per their respective Grid Code or negative response to the frequency excursions.

8. It was observed during the hearing that while reporting the Frequency Response of demand areas, it would be required to know "net system Demand met after the event". Accordingly, the Petitioner and SLDCs were directed to submit the same for both events. It was further observed that ideal response has been calculated based on governor droop of 5% which requires generation to be increased by 40% for a frequency fall of 1 Hz. Accordingly, frequency dip of 0.17 Hz in the case of tripping of one unit (1000MW) at Kudankulam Nuclear Power Station on 14.1.2015 at 1920 hours as indicated by the Petitioner, requires generation increase of 6. 8%. However, as per provisions of the Grid Code, the maximum increase has been limited to 5% considering limited thermal reserve available in thermal units. Accordingly, the Petitioner vide RoP of the hearing dated 22.5.2015 was directed to indicate whether the FRC procedure requires to be modified to take into account the above aspect.

9. The Petitioner, vide Record of Proceedings for the hearing dated 14.7.2015, was directed to reconcile the data with the SLDCs and to submit the list of ISGSs which have not provided the adequate response in the events submitted by the petitioner. The Petitioner vide its affidavit dated 7.9.2015 has filed the information called for.

10. The Petitioner has filed the IA No.36/2015 reporting the FRC of various control

areas and the generators during the earthquake in Afghanistan on 26.10.2015 during which there was a load crash of 1300 MW.

11. UP Rajya Vidyut Utpadan Nigam Limited (UPRVUNL) has filed the I A No. 8/2016 listing all the efforts made by it for implementation of FGMO/RGMO as per Regulation 5.2 (f), (g), (h) and (i) of the Grid Code to provide the primary response. UPRVUNL in the said IA has prayed to keep in abeyance the provisions of the Grid Code as the responses at certain generating stations are inadequate. During the hearing of IA, it was observed that IA would be considered and disposed of in the light of decision of the Commission on the report of the Committee constituted to examine the issues with regard to implementation of FGMO/RGMO.

12. The replies and rejoinders filed by the respondents and the Petitioner have been discussed briefly as under:

(a) SLDC, Delhi has submitted that all the generators within Delhi except unit 4 and 5 of Badarpur Thermal Power Station (BTPS) are exempted from RGMO/FGMO stipulations. As per Regulation 5.2 of the Grid Code, thermal power plant below 200 MW and Gas Turbines Stations are exempted from FGMO. The units of BTPS were commissioned on 2.12.1978 and 25.12.1981 and are having mechanical governors. SLDC, Delhi has further submitted that in line with the Grid Code, FRC for control area Delhi has not been reported for any major event. SLDC has submitted that the calculated FRC in case of tripping of Kudankulam unit, comes out to be 37.1% of ideal response. However, as per NLDC calculations, it is coming to 12.4%. SLDC, Delhi has submitted that it supports the contention of the Petitioner that improvement in the all India FRC is very much required to protect the system during

major contingencies and aiding frequency stabilization.

(b) The Petitioner in its rejoinder has submitted that tripping of Kudankulam unit may be attributed to difference in change in net interchange value, between the NLDC and Delhi, SLDC`s calculation sheets. With regard to SLDC, Delhi contention that similarly for Nepal Earthquake incident, FRC response as per SLDC, Delhi comes out to be (–)33 % while as per the calculation of NLDC, it is coming out to be +2.4 %, the petitioner has submitted that this may be due to the difference in load throw off value between two calculations. The Petitioner has submitted that SLDC, Delhi appreciates the role of primary response in maintaining all India Frequency but at the same time cites inability to provide primary response.

(c) SLDC, Rajasthan has submitted that on both the events i.e on 14.1.2015 at 19.20 hrs and 25.4.2015 at 11.43 hrs at Kudankulum and Nepal respectively, since, the system operate in Rajasthan control area was within operating frequency range and drawl from the grid was also within limit, no action was taken to curb the drawl or improve with the State generation. SLDC, Rajasthan has placed on record the report regarding over drawl and under drawal dated 14.1.2015 and 25.4.2015 at 19.20 hrs and 11.43 hrs respectively. SLDC, Rajasthan has submitted that the FGMO and RGMO schemes are in operation in the Rajasthan control area by the generators and FRC is found in line. FRC is contributing maximum to frequency response.

(d) The Petitioner in its rejoinder has submitted that for the Kudankulum incident on 14.1.2015 at 19:20 hours, SLDC, Rajasthan has calculated the FRC for Rajasthan Control Area as 96.67% of the ideal response. However, as per NLDC's calculations, the Rajasthan's response was merely 18.4%. The Petitioner has

submitted that while checking the calculation, NLDC observed that change in frequency is calculated as -0.06 Hz, which is incorrect since the frequency dip, as shown by the SLDC, Rajasthan in the Annexure to the reply, was from 50.08 Hz to 49.86 Hz. Therefore, the change in frequency was (-) 0.22 Hz and there appears to be certain ambiguity in frequency settling point selection in FRC calculation by the SLDC, Rajasthan. The Petitioner has submitted that for the incident on 25.4.2015 at 11:43 hours, SLDC, Rajasthan has calculated the frequency response of Rajasthan Control Area as (-) 30.57% of the ideal response i.e. SLDC, Rajasthan has aggravated the frequency deviation. However, as per NLDC calculations, Rajasthan's response was 13.4% i.e. SLDC, Rajasthan has countered the frequency rise to this extent. The Petitioner has submitted that while checking the calculation, NLDC observed that change in frequency is again calculated as 0.05 Hz, which is incorrect since the frequency rise, as shown by SLDC, Rajasthan in Annexure to its reply, was from 49.99 Hz to 50.50 Hz. Therefore, the change in frequency was 0.51 Hz.

(e) SLDC, Uttar Pradesh in its reply has placed on record the status of implementation of FGMO/RGMO in its control area. SLDC, Uttar Pradesh has submitted that out of 5 units at Anpara TPS, three 200 MW units are operating with locked/in-operative governor. At Obra TPS, out of 5 units, 4 units are operating with locked/inoperative governor. Paricha TPS and Harduaganj TPS have implemented RGMO as per design. SLDC, Uttar Pradesh has submitted that for IPPs generating stations, RGMO has been implemented on all the generating units of Roza TPS and Anpara C TPS (LANCO). SLDC, Uttar Pradesh has submitted that SLDC vide its letter dated 16.4.2016 requested all the generating stations and IPPs to submit the

report regarding operation of RGMO which is still awaited.

(f) The Petitioner in its rejoinder has submitted that the implementation of RGMO is not the end of the Grid Code adherence but required response is also required to be achieved by the generators. The Petitioner has submitted that NLDC has received the report from the generating stations, namely (i) Parichha unit nos 3, 4, 5 and 6, (ii) Harduaganj unit nos. 8 and 9, (iii) Anpara unit nos. 1, 3, 4 and 5, (iv) Obra unit-9, (v) Anpara-C, unit-1 and 2 (vi) Rosa unit-1 and 3. The Petitioner has submitted that no response from the generators was received at the time of tripping of first unit of Kudankulam on 14.1.2015.

(g) NTPC in reply has submitted as under:

(i) The Petitioner has calculated the FRC considering FGMO with 5% droop where as the Grid Code stipulates RGMO with 5% droop limited to +/- 5% of generation capacity. The secondary response shall be in place for sustainable primary response.

(ii) Normal changes in renewable generation would have to be handled through flexing of conventional generation.

(iii) A reference to the primary response testing done by the Petitioner is not related to the present petition.

(iv) Based on the UCTE guidelines, an all India FRC of the order of 20,000 MW/Hz (15,200 MW/Hz due to generator response and 4,800 MW/Hz due to load) shall be desirable. This would require 38,000 MW machines to provide primary response with 5% droop. However, considering carrying cost of Primary Control Reserve, permissible frequency drop of (-)

0.4 Hz for Indian conditions shall be considered in place of (-) 0.2 Hz quasi steady State drop specified by UCTE. This would reduce the capacity of the units to be put under primary response to 13,000 MW with 5% droop.

(v) The events like momentary decline in frequency from 49.93 Hz to 49.28 Hz for Mundra UMPP tripping should not be a cause of concern. As per UCTE guidelines, this momentary dip of 0.80 Hz is acceptable.

(vi) Since, certain units are giving poor response, NTPC has filed the petition for exemption due to the reasons such as mechanical governor and electric governor not amenable to RGMO retrofit.

(vii) There is no mechanism in the generating stations to show a negative response.

(h) The Petitioner in its rejoinder has submitted as under:

(i) Notwithstanding the provisions in the Grid Code, all the computations are pertaining to FGMO. Regulation 5.2 (f) of the Grid Code provides that after stabilization of frequency around 50 Hz, the Commission may review the above provision regarding the restricted governor mode of operation and free governor mode of operation may be introduced. With regard to limit of +/-5%, it is not clear as to how the NTPC is concluding that the Grid Code restricts the maximum response from machines to ±5% corresponding to a frequency change of ±0.125 Hz. Since, Regulation 5.2 (f)(i)(a) of the Grid Code specifically stipulates a 5% limit for generation increase, there is no restriction in respect of generation reduction.

(ii) Since, the secondary control is necessary to maintain frequency at a

constant value, a request has been made to the Commission to initiate deliberations in this area as the same is going to be intricate task. However, this in no way undermines the importance of primary control.

(iii) NTPC agrees that normal changes in renewable generation would have to be handled through flexing conventional generation. However, a major quantum of renewable generation, particularly wind, is without features like Low Voltage Ride Through (LVRT) characteristics. The same is provided only in machines installed after 15.4.2014. This has led to a situation where a fault in the system (not cleared in time) has led to a large quantum of wind generation going off the grid. Primary control becomes important in such situations.

(iv) The pilot project execution was done in line with the order dated 31.12. 2012 in Petition No. 191/2011.

(v) A presentation was made on 16.3.2015 by M/s Solvina, the agency, before the Committee constituted by the Commission on FGMO implementation where the issues listed by NTPC in Para 9a to 9d were highlighted by the agency.

(vii) The computations indicated by NTPC based on the UCTE standards are in order from steps 1 to 6 leading to an all India FRC of the order of 20,000 MW/Hz (15,200 MW/Hz due to generator response and 4,800 MW/Hz due to load). However, NTPC is now bringing out the cost of carrying Primary Control Reserve as a reason for going to a lower frequency drop of (-) 0.4 Hz rather than the quasi steady state instead of (-) 0.2 Hz specified by UCTE. The cited cost is not much in case of primary response.

Regulation 5.2 (h) of the Grid Code provides that thermal generating units of 200 MW and above and hydro units of 10 MW and above operating at or upto 100% of their Maximum Continuous Rating (MCR) shall normally be capable of (and shall not normally be prevented from) instantaneously picking up 105% and 110% of their MCR, respectively, when frequency falls suddenly. One would ordinarily expect a 200 MW unit to operate at 200 MW and not at 210 MW continuously. So the 200 – 210 MW range should be available for contingencies in the normal course for which the stakeholders are already carrying the cost in terms of fixed charges. With regard to a related issue with the UCTE stipulation of 0.2 Hz drop in quasi steady state, it is clarified that the generator loading would actually increase by 8% considering 5% droop. Therefore, if NTPC feels that the increase in generation must be restricted to 5%, the frequency drop in quasi steady state would have to be restricted to 0.125 Hz giving FRC of 4000 MW/ 0.125 Hz or 32,000 MW/Hz which would mean 68,000 MW capacity at 5% speed droop instead of 38,000 MW computed by NTPC as per the UCTE guidelines.

(vii) The real issue of cost carrying would come with secondary control indicated by NTPC as this reserve has to be carried all the time. Further, limited primary response in the system would lead to a situation where any separation or islanding of part of a system can lead to a dangerous situation and collapse of the islanded system.

(viii) The issue of over-fluxing of transformers becomes a possibility considering that the voltage at certain nodes goes to 430-435 kV range also where a frequency level of 49.40 Hz might be enough to cause over-fluxing

of transformers and consequential tripping.

(ix) With regard to UCTE, the frequency recovers to at least 49.80 Hz, the quasi steady state acceptable frequency quickly through primary response in less than a minute. However, in the example of Mundra UMPP, this was not the case and the frequency recovery was mainly through some df/dt relay actions in Western Region and operation of the System Protection Scheme (SPS) of Bangladesh HVDC.

(x) NLDC agrees that there is no mechanism in the generating stations to show a negative response. However, it may be appreciated that in case the governor control valves position remain unchanged, and frequency rises or falls, the auxiliary drives such as boiler feed pumps, primary heat transfer pumps in a nuclear unit start or air compressors on the same gas turbine shaft consume less or more power depending on low or high frequency.

(i) NHPC in its reply has submitted as under:

(i) Out of 12 generating stations, 7 generating stations being ROR or Pondage type stations with capacity up to three hours, are exempted from RGMO/FGMO. RGMO/FGMO can be better realized when compared to injection schedule. During the incidence of Nepal Earthquake, the injection schedule in respect of all the generating stations (except Dhauliganga, Teesta-V & Loktak) was reduced in the time block 78 to time block 79. Therefore, required unit's response i.e. reduction of generation by primary response to the incidence of frequency rise, got mixed with the reduction of injection schedule.

(ii) As per NLDC calculations, Chamera-I has shown only -3% of ideal response but 'Primary Frequency Response' test carried out by M/s Solvina International shows consistent response in RGMO mode of operation. During Kudankulam incidence, since, the generation of Loktak Power Station was manually increased by plant operator, response can be seen.

(iii) With regard to Teesta-V machines, for 0.12 Hz variation in frequency, as per 5% droop setting, the generation should vary around 16 MW and for 6% droop, the generation shall vary around 13.5 MW. Teesta-V increased the generation by 11.5 MW keeping in mind the generation at the time of incident as 351.5 MW.

(j) The Petitioner in its rejoinder has submitted as under:

(i) NHPC has contended that with changing schedules, correct frequency response cannot be ascertained as actions for reducing and closing down generation are also being taken by the plant. However, in para 7, NHPC suddenly casts certain doubt on the data at NLDC available through SCADA. In this connection, it is clarified that the SCADA data at NLDC with an up-dation time of 10-20 seconds can be relied upon in number of cases.

(ii) The sheet provided by NHPC in Annexure to the reply talks about the changes in terms of 15-minute time blocks while the SCADA data is updated every 10-20 seconds. So possibly, the operator has increased the generation manually after the fall in frequency.

(iii) The recommended rate for changing the governor setting for all the generating units is 1% per minute as stipulated in Regulation 5.2 (i) of the Grid

Code refers to secondary control. The procedure for calculation by Teesta shows that 105% of MCR shall be taken as limit. This issue has been addressed by NLDC in Para 13 of its submission dated 11.6.2015.

(k) SJVNL in its reply has submitted that Nathpa Jhakri HPS is under successful operation in FGMO with a droop setting of 6% with inherent dead band of 0.03 Hz as per the Grid Code. Rampur Hydro Power Station operates in tandem with Nathpa Jhakri HPS and it follows the governor of NJHPS as its master. However, FRC calculations of both the generating stations for both incidents were not possible due to non-availability of data at SJVNL end.

(l) The Petitioner in its rejoinder has stated that since real time data at NLDC from NJHPS was not updated on both the incidents, 0% response was coming from calculations. However, in case of Rampur HPS, during earthquake incident, the response was coming to be -3.8 % of ideal response. Since, the generating stations operate in tandem, the response of NJHPS would also be in this range. Hydro machines of such high capacity should provide good response for controlling the frequency deviation.

m) THDC in its reply has submitted as under:

(i) The primary response and secondary response have not been well defined in the Grid Code. However, the machines at Tehri and Koteshwar are kept in RGMO. This has been tested by M/s Solvina during Pilot study at Tehri. The RGMO response at Koteshwar was tested by M/s BHEL during internal testing and was found to be as expected. There has been no notification

regarding compliance with FGMO in accordance with Regulation 5.2(f) (d) of the Grid Code.

(ii) Tehri and Koteshwar HEPs are obligated to supply drinking water to the States of UP and Delhi and irrigation water for UP at a higher priority to power generation. Therefore, the control of machine generation based on system frequency alone is not justifiable for THDC. During monsoon season, the increase in inflow limits the possibility of generation reduction at Tehri and Koteshwar since the discharge of Tehri becomes the inflow at Koteshwar.

(iii) Tehri and Koteshwar should be exempted from FGMO response as and when notified. FGMO is not likely to be effective in its present form. Additional generation resources or load shedding may be resorted to for frequency control.

(iv) On the day of earthquake in Nepal, Tehri Unit 1 was already under stop sequence as per injection schedule and the generation in the only other running unit (Unit # 3) was reduced from 168.60 MW to 137.40 MW. Therefore, total reduction of 60.60 MW was achieved though the unit-1 reduction was on account of shut down sequence. Similarly, Koteshwar generation was around 99.81 MW and it got reduced to 98.37 MW.

(n) The Petitioner in its rejoinder has submitted that FGMO response is essential to secure grid operation. During the nine months of low hydro (October to May), THDC can easily provide primary response fully honouring its commitment of water release. During the three months of high hydro, water overflow or spillage could restrict provision of primary response as the units might already be utilizing

the available overload capability. The Petitioner has submitted that as per NLDC`s calculation, the response was (-) 4.7% of ideal response i.e. helping the system frequency though far inadequate.

(o) SLDC, Madhya Pradesh in its reply has submitted that since historical data was not available, response could not be calculated for the event of 14.1.2015. Out of the 14 generating stations, only 4 have shown certain response for the incidence of Nepal earthquake. SLDC, MP had sought reply from the MP Power Generating Co. Ltd and Jaypee Bina TPS on the poor response or no response as per Grid Code by the generating units. In response, MP Power Generating Co. Ltd has cited several reasons for non-performance of frequency response by its units. In certain cases such as unit Nos. 6, 7, 8 and 9 of Sarni, it has filed Petition in the Commission for exemption in RGMO on these units while in certain cases where RGMO is in service and adequate response was not obtained, it has taken necessary actions to rectify the discrepancies. Jaypee Bina TPS has stated that it has found insignificant response by its units on the date of incident on 25.4.2015. Jaypee Bina TPS has submitted that Jaypee Bina contacted OEM for checking functionality of FGMO in machines who has agreed in this regard.

(p) The Petitioner in its rejoinder has submitted that the overall response by the generators appears inadequate to the frequency rise during the incident.

(q) SLDC, Gujarat in its reply has submitted that out of total conventional generation installed capacity of 16465 MW under the control area of SLDC, Gujarat, only 7290 MW capacity is available with RGMO in service. SLDC has further submitted that calculated response of the generators in its control area

have shown poor frequency response. While some have shown no response and certain have shown negative response causing aggravation in frequency deviation. SLDC has submitted that during the tripping of Kudankulam unit on 14.1.2015, there was festival celebration in the State of Gujarat and there was anticipated drop in demand of 2500 MW from previous day. Therefore, number of the generating units was under reserve shutdown. Since, 600 MW unit of M/s EPGCL-Vadinar and 3960 MW capacity from M/s APL-Mundra TPS complex were commissioned few years back, they have low inertia constant compared to older units. Therefore, their contribution to frequency response might not be to the desired level. 1000 MW of Gujarat demand was being catered using wind energy, which ultimately led to poor frequency response. SLDC has submitted that during the earthquake in Nepal incident, GTPS Unit 3, APL Units 1, 4 & 7 and EPGL Unit 1 have not responded at all while APL Units 2, 3 & 5 have responded negatively. In this incident also out of the total demand being met by Gujarat of 13100 MW, nearly 1175 MW was from RE sources. Out of the 7290 MW capacity of RGMO eligible generators, only 6480 MW was on bar. Further, 5220 MW of the 6480 MW generation consists of newer and larger sized machines which have lower inertia constant. SLDC has stated that since, the response from older machines at WTPS and GTPS also coincides with scheduled generation reduction, it is not known for sure whether the good response is due to RGMO or coincidental manual generation backing. SLDC has submitted that it has been consistently pursuing the matter with all RGMO eligible generators in the State.

(r) The Petitioner in its rejoinder has submitted that keeping approx. 5000 MW of generation out of primary response is a threat to system operation. The response from these units would have surely improved the response appreciably.

Regarding new units with low inertia, the Petitioner has submitted that primary response is an independent parameter and has little or no relation to inertia constant. In fact, worldwide, even wind turbines are providing frequency response during high frequency conditions.

(s) SLDC, Andhra Pradesh and Telangana have submitted that on the day of earthquake, NTTPS and RTTPS machines were operating at technical minimum due to dispatch instructions. SLDC Andhra Pradesh has submitted that positive response was obtained from the units except NTTPS-I & II. Since, these units were operating at technical minimum, they could not reduce their load any further. Therefore, no frequency response could be obtained from them. SLDC, Telangana has placed on record a table indicating the response of RGMO/FGMO in its generating units. SLDC, Telangana has submitted that the overall response of Telangana as a constituent for 25.4.2015 comes out to be 19.51% due to poor operation of few units being poor coal quality and wide valve open operation in units. SLDC, Telangana has submitted that as per Srisailem Left Bank Units, details of primary response could not be furnished due to loss of data.

(t) The Petitioner in its rejoinders has submitted that the explanation given by SLDC, Andhra Pradesh appears to be unconvincing. However, **SLDC, Andhra Pradesh** has not provided the response for tripping of Kudankulam unit on 14.1.2015. The Petitioner has submitted that the overall response of Telangana comes out to be mere 5.7% of ideal response as against the calculation of 19.51% by SLDC, Telangana. Out of 4 nos. of thermal units at KTPS, only two have shown slight response supporting the frequency while one unit has shown response in a way to aggravate the frequency deviation. SLDC Telengana has citied the reasons

for poor operation of few units as poor coal quality and wide valve open operation in units. However, the application appears unconvincing considering that the 500 MW units were operating at a level of 350 MW/360 MW and wide valve opening at such low generation levels appears unconvincing. Further, on 25.4.2015, a generation reduction was actually required rather than increase and valve wide operation creates a constraint only for generation increase.

(u) NTPC Tamil Nadu Energy in its reply has submitted that on 14.1.2015, Unit-I and II of VTPS responded by contributing maximum to frequency response. RGMO is fully functional in all units of VTPS. Unit-I & II of VTPS performed well on the event of 25.4.2015 and RGMO status has been extended to SRLDC by NTPC Tamil Nadu.

(v) The Petitioner in its rejoinder has submitted that it is difficult to make out the response from the graphs enclosed from the Data Acquisition System (DAS) with black background. During the earthquake in Nepal on 25.4.215, VTPS units showed a response of -10.5% (as per the petitioner's calculations) which means responding in a way to improve the frequency. However, NTPC Tamil Nadu Energy has not produced any records from the plant for this incident.

Analysis and decision:

13. We have considered the submissions of the Petitioner and the Respondents and perused the documents on record.

14. The Grid Code lays down the rules, guidelines and standards to be followed by various participants in the system to plan, develop, maintain and operate the power

system, in most secure, reliable, economic and efficient manner, while facilitating healthy competition in the generation and supply of electricity. The Grid Code facilitates the optimal operation of the grid, facilitation of coordinated and optimal maintenance planning of the grid and facilitation of development and planning of economic and reliable National/Regional grid.

15. Regulations 5.2 (f), (g), (h) and (i) of the Grid Code provides as under:

> "(f) All Coal/lignite based thermal generating units of 200 MW and above, Open Cycle Gas Turbine/Combined Cycle generating stations having gas turbines of capacity more than 50 MW each and all hydro units of 25 MW and above, which are synchronized with the grid, irrespective of their ownership, shall have their governors in operation at all times in accordance with the following provisions:
>
> **Governor Action**
> i) Following Thermal and hydro (except those with upto three hours pondage) generating units shall be operated under restricted governor mode of operation with effect from the date given below:
>
> (a) Coal/lignite based thermal generating units of 200 MW and above,
> (1) Software based Electro Hydraulic Governor (EHG) system: 1.8.2010
> (2) Hardware based EHG system : 1.8.2010
> (b) Hydro units of 25 MW and above : 1.8.2010
>
> (c) Open Cycle Gas Turbine/Combined Cycle generating stations having gas turbines of capacity more than 50 MW each: with effect from 1.1.2017
>
> ii) The restricted governor mode of operation shall essentially have the following features:
>
> a) There should not be any reduction in generation in case of improvement in grid frequency below 50.05 Hz (for example, if grid frequency changes from 49.9 to 49.99 Hz, there shall not be any reduction in generation). For any fall in grid frequency, generation from the unit should increase as per generator droop upto a maximum of 5% of the generation subject to ceiling limit of 105% of the MCR of the unit having regard to machine capability .
>
> b) Ripple filter of +/- 0.03 Hz. shall be provided so that small changes in frequency are ignored for load correction, in order to prevent governor hunting.
>
> c) If any of these generating units is required to be operated without its governor in operation as specified above, the RLDC shall be immediately advised about the reason and duration of such operation. All governors shall have a droop setting of between 3% and 6%.

d) After stablisation of frequency around 50 Hz, the CERC may review the above provision regarding the restricted governor mode of operation and free governor mode of operation may be introduced.

iii) All other generating units including the pondage upto 3 hours, wind and solar generators and Nuclear Power Stations shall be exempted from Sections 5.2 (f), 5.2 (g), 5.2 (h) and 5.2 (i) till the Commission reviews the situation:

Provided that if a generating unit cannot be operated under restricted governor mode operation, then it shall be operated in free governor mode operation with manual intervention to operate in the manner required under restricted governor mode operation.

(g) Facilities available with/in load limiters, Automatic Turbine Run-up System (ATRS), Turbine supervisory control, coordinated control system, etc., shall not be used to suppress the normal governor action in any manner and no dead bands and/or time delays shall be deliberately introduced except as specified in para 5.2(f) above:

Provided that periodic checkups by third party should be conducted at regular interval once in two years through independent agencies selected by RLDCs or SLDCs as the case may be. The cost of such test s shall be recovered by the RLDCs or SLDCs from the Generators. I f deemed necessary by RLDCs/SLDCs, the test may be conducted more than once in two years.

(h) All coal/lignite based thermal generating units of 200 MW and above, Open Cycle Gas Turbine/Combined Cycle generating stations have gas turbines of more than 50 MW each and all hydro units of 25 MW and above operating at or up to 100% of their Maximum Continuous Rating (MCR) shall have the capability of (and shall not in any way be prevented from) instant onerously picking up to 105%, 105% and 110% of their MCR, respectively, when the frequency falls suddenly.

For the purpose of ensuring primary response, RLDCs/SLDCs shall not schedule the generating stat ion or unit (s) thereof beyond ex-bus generation corresponding to 100% of the Installed capacity of the generating stat ion or unit (s) thereof. The generating stat ion shall not resort to Valve Wide Open (VWO) operation of unit s whether running on full load or part load, and shall ensure that there is margin available for providing Governor act ion as primary response. In case of gas/liquid fuel based units, suitable adjustment in Installed Capacity should be made by RLDCs/SLDCs for scheduling in due consideration of prevailing ambient conditions on which installed capacity of the generating station or unit (s) thereof have been specified:

Provided that scheduling of hydro stat ions shall not be reduced during high inflow period in order to avoid spillage:

Provided further that the VWO margin shall not be used by RLDC to schedule Ancillary Services.

(i) The recommended rate for changing the governor setting, i.e., supplementary control for increasing or decreasing the output (generation level) for all generating units, irrespective of their type and size, would be one (1.0) per cent per minute or as per manufacturer's limits."

As per the above provisions, all coal based /lignite based thermal generating units of 200 MW, Gas Turbine/Combined cycle generating stations having gas turbines of more than 50 MW each and above and all hydro units of 25 MW and above which are synchronized with the Grid, irrespective of their ownership, are required to have their governors in operation at all time in accordance with the provisions of sub-clauses (i) to (iii) of Clause (f) of Regulation 5.2 the Grid Code. Also, the generators on the pretext of technical constraints cannot be allowed to avoid the said provisions of the Grid Code.

16. The Petitioner has submitted that on 14.1.2015 at 1920 hrs, one unit (1000 MW) of Kudankulam Nuclear Power Station tripped and the frequency fell to 48.87 Hz from 50.04 Hz. The Petitioner has submitted that the overall FRC on an All India Basis for this event which occurred during the evening peak hours was of the order of 6023.5 MW Hz. The Petitioner has submitted that during this period, the number of generating units on bar is maximum and they should have provided a much higher frequency response (assuming 5% governor droop). It is noted that among the control areas, Kerala has shown highest response of 70%. However, BSEB control area has shown negative response (has aggravated the situation) of (-) 54.2%. During the period, Sipat has been highest response of (-) 35% whereas the generating stations such as Sterlite and Adhunik have shown positive response (deteriorated the situation) of 57.90% and 54.20%. The following generating stations have worsened the situation by way of reduction in generation instead of increase in generation:

(a) Northern Region: Singraulli (0.3%), Dehar (0.9%), Salaal (1.2%),Dadri-Gas (2.4%), Anta (2.7%), Sri-Cement(5.4%), Jhajjar-PG (5.8%), Bhakara (6.4%), Bairasul (9.9%) and Pong (17.8%),

(b) Western Region: UMPP-Mundra (6.%), Vindhyanchal (2.55), KSK

Mahanadi (4.1%), NTPC SAIL (8.2%), SSP (9.8%) and Mouda (25.3%).

(c) Eastern Region: Kahalgaon (2.4%), TSTPS-I (5.4%), MPL (9.1%), Adhunik (54.2%) and Sterlite (57.9%).

(d) Southern Region: MAPS (3.2%).

(e) North Eastern Region: Loktak (2.8%), Doyang (3.7%) and Ranganadi (3.8%)

17. The Petitioner has submitted that during the earthquake in Nepal on 25.4.2015 at around 11:43 hrs, there was demand reduction of approximately 3500 MW within 3-4 minutes due to tripping/manual load shedding especially Northern Region and Eastern Region. The Petitioner has submitted that in this event, adequate frequency response was missing in a number of control areas, particularly in the NEW Grid which led to high voltages in the system and large angular variation among nodes in the grid, etc. The Petitioner has contended that during the event, FRC of NEWS Grid was 4043 MW/Hz and the control areas of Assam (-340%), Andhra Pradesh (-149%), DNH (-77.9%), Bihar (-41.7%) have aggravated the situation. The Petitioner has submitted that the Tehri Hydro Development Corporation has shown the maximum desired response of (-)180.50%. Other hydro generating stations like Karcham (-88.2%), Chamera-1 (-75.3%), Chamera-3 (-30.9%), Rangit (-173.4%), Teesta (-95.6%), Chukha (-89%) have shown high desired response. According to the Petitioner, Thermal Generating Stations, namely Singrauli (-58.2%), GMR (-122%), Niyveli (-30.6%) and Barh (-925.5%) have shown high desired response. The generating stations of Jindal (48.9%), BALCO (31.1%), Tanmar (14.3%) and Kakrapara (13.2%) have aggravated the situation by increasing the generation instead of decreasing the same.

18. The following is observed from the submissions of the Petitioner, the Respondents and SLDCs:

(a) Time duration window chosen for the tripping of the unit of Kudankulam was one minute thirty seconds and for Nepal earthquake, it was three minutes fifty seconds. Therefore, the primary response of the units to frequency excursion shall be measured after 30 to 60 seconds of the frequency excursion event.

(b) The input data for FRC calculation as indicated by NLDC in its calculations is at variance with the input data of SLDCs. The mismatch is to such a great extent that in certain cases the outcome gets totally reversed e.g in one case NLDC declares that the control area (Rajasthan) has helped the grid to some extent where as the SLDC, Rajasthan has explained that the control area has aggravated the situation. In view of the above facts, POSOCO shall guide SLDCs with regard to FRC calculations.

(c) Certain inadvertent mismatch of data/discrepancies has been observed in the FRC calculations submitted by the Petitioner i.e. "Net system Demand Met Before the Event" for Eastern Region has been indicated as 15484 MW at "FRC calculation for All India", whereas the same has been shown as 14994 MW at "FRC calculation for Eastern Region". Similarly, there is a mismatch of data in respect of "Internal Generation before the Event" at "FRC calculation for All India" and "FRC calculation for Regions". POSOCO shall look into such discrepancies and remove them in consultation with staff of the Commission.

(d) Notwithstanding mismatch of data in certain cases, it can be concluded from the results of the two events, namely tripping of one unit of Kudankulam and Earthquake in Nepal on 14.1.2015 and 25.4.2015, respectively that the desired response has not

been provided by the ISGS and intra-State generators as per the provisions of the Grid Code. Certain generating stations have been reported to aggravate the situation.

19. The role of primary response to contain frequency excursions through governor action is of utmost importance for operation of grid in safe and secure manner. Accordingly, the Commission vide office order dated 24.9.2014 constituted a Committee under the Chairmanship of Shri A. Velayutham, ex-Member, MERC consisting of representatives from CEA, CERC, POSOCO, ISTS generating station, BHEL and Alstom to look into the problems of the generating units in implementing FGMO with manual intervention, to suggest measures for implementation of FGMO with suitable modification/amendments in certain Regulations/Grid Code and any other recommendations to facilitate FGMO/RGMO operation. The Committee has recommended as under:

(a) It is highly desirable that urgent steps are taken for introducing the secondary control at the earliest to make primary response more effective. However, in the meantime, the primary control through RGMO/FGMO with manual intervention may continue for dealing with large frequency variations through collective efforts of the generators.

(b) The secondary and tertiary control may be introduced through operationalising Automatic Generation Control (AGC), Ancillary Support Services and Demand Response.

(c) It would not be advisable to do away with RGMO stipulations at present till the time secondary and tertiary controls are in place. The Commission may review switching over to FGMO after a period of one year.

(d) The Committee feels that there is no need for granting any exemption for the LMZ units from operation under RGMO/FGMO with manual intervention. The generator may decide on their own whether to go for retrofit for adopting RGMO features or continue with FGMO with manual intervention.

(e) The inadequate primary response should be dealt with through seeking strict compliance by way of regulatory measures such as imposing penalty for non-compliance. In this regard, the Committee recommends that periodic checkups to ensure desired RGMO/FGMO response be made mandatory and should be conducted at regular intervals, through independent third parties selected by POSOCO/SLDCs. The cost of such tests should be recovered by the RLDCs/SLDCs as part of RLDC/SLDC Fee and Charges.

(f) The unit may not be scheduled by RLDC/SLDC beyond ex-bus generation corresponding to 100% of the installed capacity. Further, units should not be allowed to operate with their valves wide open. However, these stipulations would require necessary amendment in the Grid Code. In case of gas/liquid fuel based units, adequate margins while scheduling should be kept by RLDCs/SLDCs in due consideration of prevailing ambient conditions of temperature and pressure vis-a-vis. site ambient conditions on which installed capacity of these units have been specified.

(g) The Commission may review Deviation Settlement Mechanism (DSM) so that units are incentivized to provide primary response.

(i) Gas/Liquid fuel based generating stations, which are currently exempted from RGMO/FGMO stipulations, shall be included in the list of eligible units capable of providing primary response and should be mandated accordingly by way of amendment to the Grid Code.

(j) 200 MW and above units of thermal captive power plants, which are connected to the grid, should also be explicitly brought under the relevant regulation of primary response.

(k) For widening the scope of RGMO/FGMO, the Commission should initiate discussions with stakeholders for including units of nuclear generating stations and renewable energy based generating stations.

(l) HVDC systems available in the country should also be asked to provide frequency response.

(m) The current lower limit of 10 MW for hydro generating stations for providing primary response through FGMO/RGMO should be increased to 25 MW.

20. Some of the above recommendations e.g. bringing gas based generating stations under the list of generating stations required to provide primary response, keeping over load margins by not scheduling units beyond 100% of MCR and periodic checkups of the generating stations through independent third parties selected by POSOCO/SLDCs to ensure desired RGMO/FGMO response, etc. have been put into practice by way of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Fifth Amendment) Regulations, 2017. The Committee has recommended that there is no need for granting any exemption for the LMZ units from operation under RGMO/FGMO with manual intervention. This issue has already been dealt with by the Commission vide order dated 13.2.2017 in Petition No. 65/MP/2014 filed by NTPC.

21. The Commission through the Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations, 2015 which have been effective w.e.f 1.4.2016, has already introduced Ancillary services in Indian Grid to stabilize the frequency of the grid

within the desired band of 49.90 to 50.05 Hz and is in the process of introducing the concept of "Spinning Reserves' through Automated Generation Control. In our view, the above measures would ensure that the primary response of the generators to frequency excursions would increase. Further, Ancillary Services and "Spinning Reserves" through Automated Generation Control would ensure that spent up primary reserve of the units after providing the primary response gets re-cooped for further frequency excursion eventuality.

22. In view of the above new developments during the proceeding of the instant petition, we are not taking any punitive action for the present against the generators who have not provided the desired response for the frequency excursion events during the year 2015 as reported by the Petitioner.

23. The Petitioner has prayed to direct all utilities to provide primary response compulsorily as per Regulation 5.2 (f), (g), (h) and (i) of the Grid Code. In this regard, the following is directed:

(a) Considering the fact that further measures have been put in place to facilitate desirable primary response, the Commission, starting from the month of September, 2017 shall be closely watching the primary response of ISGSs as reported by POSOCO/NLDCs. At the State level, SLDCs shall report the frequency response of intra-State generators to the concerned SERCs.

(b) NLDCs and SLDCs through the assistance of POSOCO shall start the process of selecting independent third parties capable of undertaking periodic checkups to monitor the RGMO/FGMO response. To start with selected independent third parties shall be sent to the generating stations which are not providing the desired RGMO/FGMO response. Independent Third Parties shall ensure that the

generator has not, in any way, prevented/disabled the governor from providing the desired response. In case, even after enabling the governors, units are not able to provide the desired response as per the provisions of the Grid Code, third parties, based on the submissions of the generators, shall bring out the technical constraints, if any, which limit the primary response of the units.

c). All ISGSs are directed to provide primary response compulsorily in terms of Regulation 5.2 (f), (g), (h) and (i) of the Grid Code failing which we would not hesitate in initiating action under Section 142 of Electricity Act, 2003 for not providing desired RGMO/FGMO response without any valid reasons.

24. With regard to the prayer of UPRVUNL in IA No. 36/2016 to keep in abeyance the provisions of the Grid Code as the response at certain generating stations are inadequate, we are of the view that UPRVUNL needs to understand the importance of the primary response for safe operation of the power system as it is the first line of defence to curtail the frequency deviation within safe limits. The Committee on FGMO has also observed that it is highly desirable that urgent steps are taken for introducing the secondary control at the earliest to make primary response more effective. However, in the mean time, the primary control through RGMO/FGMO with manual intervention may continue for dealing with large frequency variations through collective efforts of the generators. The Committee has also recommended that there is no requirement for granting any exemption even to LMZ units from operation under RGMO/FGMO with manual intervention and the generator should decide on its own whether to go for retrofit for adopting RGMO features or continue with FGMO with manual intervention. Therefore, UPRVUNL has the option of either expediting the R&M of old units which shall include installation of new EHG governors capable of providing adequate primary response or to

go in for retrofit of mechanical governors for adopting RGMO features or to operate on FGMO with manual intervention. In our view, there is no requirement to keep in abeyance the provisions of the Grid Code for the reason that certain old units of UPVRNL are not giving adequate primary response. Accordingly, the prayer of UPRVUNL in this regard is rejected.

25. The petition along with IA is disposed of in terms of the above.

Sd/-	sd/-	sd/-	sd/-
(Dr. M.K. Iyer)	**(A.S. Bakshi)**	**(A.K. Singhal)**	**(Gireesh B. Pradhan)**
Member	**Member**	**Member**	**Chairperson**

CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 42/GT/2015

Coram:
Shri Gireesh B. Pradhan, Chairperson
Shri A. K. Singhal, Member
Shri A. S. Bakshi, Member

DATE OF HEARING: 16.07.2015
DATE OF ORDER: 13.01.2016

IN THE MATTER OF

Approval of tariff of Khandong Hydro Electric Power Plant (2X25 MW) of North Eastern Electric Power Corporation Limited for the period from 1.4.2014 to 31.3.2019

AND

IN THE MATTER OF

North Eastern Electric Power Corporation Ltd
Brookland Compound
Lower New Colony
Shillong-793 003 .....**Petitioner**

Vs

1. Assam Power Distribution Company Ltd.
"Bijulee Bhawan", Paltanbazar
Guwahati-781 001

2. Meghalaya Energy Corporation Ltd.
Meter Factory Area, Short Round Road
Integrated Office Complex
Shillong-793 001

3. Tripura State Electricity Corporation Ltd.
Bidyut Bhavan, North Banamalipur
Agartala-799 001

4. Power and Electricity Department
Govt. of Mizoram
P&E Office Complex, Electric Veng,
Aizwal-796 001

5. Manipur State Power Distribution Company Ltd.,
Electrical Complex, Khawai Bazar,
Keishampat, Imphal-795 001

6. Department of Power
Govt. of Arunachal Pradesh
Vidyut Bhawan, Itanagar-791111

7. Department of Power
Govt. of Nagaland
Kohima-797 001

8. North Eastern Regional Power Committee
NERPC Complex, Dong Parmaw
Lapalang , Shillong-793 006

9. North Eastern Regional Load Despatch Centre
Dongtieh, Lower Nongrah
Lapalang, Shillong-793 006

...Respondents

Parties present:

Shri Rana Bose, NEEPCO
Shri Paresh Ch. Barman, NEEPCO
Shri Devapriya Choudhary, NEEPCO
Ms. Elizabeth Pyrbot, NEEPCO
Shri K. Goswami, APDCL
Shri M.K Adhikary, APDCL

ORDER

This petition has filed by petitioner, North Eastern Electric Power Corporation Ltd (NEEPCO) for approval of tariff of Khangong Hydro Electric Project (2 x 25 MW) (hereinafter referred to as "the generating station") for the period 2014-19, in terms of the provisions of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 ("the 2014 Tariff Regulations").

2. Kopili Hydro-electric Project Stage – I (hereinafter referred to as the "project") comprises two generating stations, viz Khandong Hydro-electric Generating Station (2 x 25 MW) and Kopili Hydro-electric Station (4 x 50 MW). The project comprises two concrete dams viz. Khandong Dam and Umrong Dam and two corresponding reservoirs with two separate water conduit systems and two power houses. Khandong dam is across river Kopili which is a perennial river. Water from this reservoir is diverted through a tunnel of 4.5 meter diameter and 2.76 km in length. The tail race discharge from the generating station is diverted to the Umrong reservoir through an open channel. First unit of the generating station was declared under commercial operation on 7.3.1984 and the second unit on 4.5.1984. The annual design energy of the generating station is 227.61 MUs.

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3. The tariff of the generating station for the period 2009-14 was determined by the Commission vide order dated 30.9.2011 in Petition No.297/2009 based on capital cost of ₹12194.00 lakh as on 1.4.2009. Thereafter, by order dated 2.7.2014 in Petition No.236/GT/2013, the annual fixed charges of the generating station was revised based on truing-up of the actual capital expenditure incurred during the years 2009-10 to 2011-12 and projected capital expenditure during the years 2012-13 and 2014. Subsequently, by Commission's order dated 6.10.2015 in Petition No.454/GT/2014, the tariff of the generating station for the period 2009-14 was revised after truing-up exercise with respect to capital expenditure including additional capital expenditure incurred during the period 2009-14. Accordingly, the annual fixed charges approved by Commission's order dated 6.10.2015 is as under:

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Return on Equity	1135.37	1183.04	1189.21	1209.56	1284.19
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Depreciation	505.05	515.42	525.80	549.38	554.05
Interest on Working Capital	80.53	84.39	87.54	91.41	96.20
O & M Expenses	926.39	979.38	1035.40	1094.62	1157.23
Total	**2647.34**	**2762.23**	**2837.94**	**2944.98**	**3091.67**

4. The petitioner vide affidavit dated 19.12.2014 has prayed for determination of tariff of the generating station for the period 2014-19 in accordance with the provisions of the 2014 Tariff Regulations. Accordingly, the annual fixed charges claimed by the petitioner for the period 2014-19 are as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	781.07	1482.03	2154.35	2563.48	3324.41
Interest on Loan	47.92	155.25	142.99	44.56	0.00
Return on Equity	1373.70	1797.51	2058.39	2130.12	2200.12
Interest on Working Capital	118.86	151.87	177.90	191.86	215.46
O & M Expenses	1233.87	1317.89	1405.45	1498.82	1598.41
Total	**3555.42**	**4904.55**	**5939.08**	**6428.84**	**7338.40**

5. Reply to the petition has been filed by the respondent No.1, APDCL. The petition was heard on 7.4.2015 and the Commission vide Record of proceedings directed the petitioner to file certain additional information. In response, the petitioner vide affidavit dated 10.6.2015 has

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filed the information with copy to the respondents. Thereafter, the matter was heard on 16.7.2015 and the Commission after directing the petitioner to file certain additional information, reserved its orders in the petition.

6. Based on the submissions of the parties and the documents available on record and on prudence check, we proceed to determine the tariff of the generating station for the period 2014-19 as stated in the subsequent paragraphs.

Capital Cost

7. Clause (1) of Regulation 9 of the 2014 Tariff Regulations provides that the capital cost as determined by the Commission after prudence check, in accordance with this regulation shall form the basis of determination of tariff for existing and new projects. Clause (3) of Regulation 9 provides as under:

> *"9(3) The Capital cost of an existing project shall include the following: (a)the capital cost admitted by the Commission prior to 1.4.2014 duly trued up by excluding liability, if any, as on 1.4.2014;*
>
> *(b) xxxx*
>
> *c) xxxx*

8. The Commission in its order dated 6.10.2015 in Petition No.454/GT2014 had approved the closing capital cost of ₹12438.28 lakh as on 31.3.2014. This has been considered as the opening capital cost as on 1.4.2014 for the purpose of determination of tariff of the generating station for the period 2014-19.

Additional Capital Expenditure

9. Clause (3) of Regulation 7 of the 2014 Tariff Regulations provides that the application for determination of tariff shall be based on admitted capital cost including any additional capital expenditure already admitted upto 31.3.2014 (either based on actual or projected additional capital expenditure) and estimated additional capital expenditure for the respective years of the tariff period 2014-15 to 2018-19. Clause (3) of Regulation 14 of the 2014 Tariff Regulations provides as under:

"14.(3) The capital expenditure, in respect of existing generating station or the transmission system including communication system, incurred or projected to be incurred on the following counts after the cut-off date, may be admitted by the Commission, subject to prudence check:
(i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court of law;

(ii) Change in law or compliance of any existing law;

(iii) Any expenses to be incurred on account of need for higher security and safety of the plant as advised or directed by appropriate Government Agencies of statutory authorities responsible for national security/internal security;

(iv) Deferred works relating to ash pond or ash handling system in the original scope of work;

(v) Any liability for works executed prior to the cut-off date, after prudence check of the details of such un-discharged liability, total estimated cost of package, reasons for such withholding of payment and release of such payments etc.;

(vi) Any liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments;

(vii) Any additional capital expenditure which has become necessary for efficient operation of generating station other than coal / lignite based stations or transmission system as the case may be. The claim shall be substantiated with the technical justification duly supported by the documentary evidence like test results carried out by an independent agency in case of deterioration of assets, report of an independent agency in case of damage caused by natural calamities, obsolescence of technology, up-gradation of capacity for the technical reason such as increase in fault level;

(viii)In case of hydro generating stations, any expenditure which has become necessary on account of damage caused by natural calamities (but not due to flooding of power house attributable to the negligence of the generating company) and due to geological reasons after adjusting the proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation;

(ix) In case of transmission system, any additional expenditure on items such as relays, control and instrumentation, computer system, power line carrier communication, DC batteries, replacement due to obsolesce of technology, replacement of switchyard equipment due to increase of fault level, tower strengthening, communication equipment, emergency restoration system, insulators cleaning infrastructure, replacement of porcelain insulator with polymer insulators, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system; and

(x) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receiving system arising due to non-materialization of coal supply corresponding to full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station:

Provided that any expenditure on acquiring the minor items or the assets including tools and tackles, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, computers, fans, washing machines, heat convectors, mattresses, carpets etc. brought after the cut-off date shall not be considered for additional capitalization for determination of tariff w.e.f. 1.4.2014:

Provided further that any capital expenditure other than that of the nature specified above in (i) to (iv) in case of coal/lignite based station shall be met out of compensation allowance:

Provided also that if any expenditure has been claimed under Renovation and Modernisation (R&M), repairs and maintenance under (O&M) expenses and Compensation Allowance, same expenditure cannot be claimed under this regulation."

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10. The year-wise breakup of the actual/ projected additional capital expenditure claimed by the petitioner is as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Additional Capital Expenditure claimed on gross basis	3191.31	3610.67	1112.00	955.00	1100.00
De-capitalization	(-) 351.00	(-) 58.03	(-) 27.00	(-) 127.00	(-) 61.00
Net Additional Capital Expenditure claimed	**2840.31**	**3552.64**	**1085.00**	**828.00**	**1039.00**

11. It is noticed that the petitioner has claimed an projected additional capital expenditure of ₹9968.98 lakh during the period 2014-19 which includes expenditure of ₹4643.82 lakh towards replacement of assets and ₹5325.16 lakh towards New assets/works. It is observed that major expenditure claimed on under replacement include machinery components which had worn out /corroded due to the acidic nature of water. It is pertinent to mention that the problem of acidic nature of water became evident during the period after June, 2006 when the same was tested by the Geological Survey of India NER, Meghalaya Pollution Control Board and the Centre for Soil and Material Research Station, New Delhi. Based on the recommendations of the expert committee comprising of CEA, CWC and CSMRS and since the assets are necessary for efficient operation of the generating station, the Commission by order dated 30.9.2011 in Petition No.297/2009 had allowed the expenditure for replacement of assets/repair of the assets and procurement of new assets on account of damage caused due to acidic nature of water in terms of Regulation 9(2)(iv) of the 2009 Tariff Regulations. It was also made clear in the said order that the expenditure towards treatment of assets should not be frequent and should be for a longer period failing which the expenses cannot be capitalized and would fall under the category of O&M expenses. The relevant portion of the order dated order dated 30.09.2011 is extracted as under:

> *"23. We now examine the claim of the petitioner for replacement of assets damaged due to acidic nature of water. It is observed that most of the items/assets which have been damaged and replaced or repaired due to acidic nature of water (pHvalue 3.36 to 5.44 instead of the normal pH value of 6.5 to 8.5) are sought to be replaced. The quality of the water became evident during the period after June,2006, when the same was tested by the Geological Survey of India, North Eastern Region, Shillong, the Meghalaya State Pollution Control Board and the Centre for Soil and Material Research Station (CSMRS), New Delhi. The expert committee comprising of the CEA, CWC and the CSMRS had also visited the project site during the period from 27.2.2009 to 3.3.2009 and has suggested for routine testing of water in the area, concrete core drilling at specified locations in Khandong Dam, test of silt & slush, monitoring of seepage etc., Repair and*

replacement of corroded machine components, replacement of guide vanes with stainless steel materials, replacement of cooling pipes and tubes with suitable materials with epoxy coating. The expert committee had also recommended various short-term and long-term measures to be taken up. In the light of the recommendations of the expert committee, the petitioner has sought the replacement of assets/repair of assets and procurement of new assets, on account of damage caused due to the acidic nature of water. Taking into consideration the recommendations of the expert committee and since these assets are necessary for the efficient operation of the generating station, we are of the view that the expenditure to be incurred for replacement of the assets/repair of the assets and the procurement of new assets on account of the damage caused due to the acidic nature of water should be allowed in terms of Regulation 9(2)(iv) of the 2009 regulations. We proceed accordingly. However, it is expected that the expenditure towards treatment of the assets in order to encounter the acidic nature of water should not be frequent (within a year or two) and should be for a longer period (more than five years), failing which, the expenses cannot be capitalized and would fall under the category of O & M expenses for which the petitioner may be required to approach the Commission separately with a detailed project report for carrying out the renovation works, which would be considered in accordance with law."

12. It is further noticed that against the projected additional capital expenditure of ₹7273.15 lakh allowed on projected basis, the petitioner had capitalized expenditure on assets amounting to ₹244.76 lakh during 2009-14. As regards the variation, the petitioner had clarified that certain expenditure of the nature of repairs and maintenance was allowed by the Commission as projected additional capital expenditure for the period 2009-14 considering the water acidity problems specific to the generating station causing damage to the underwater parts and the petitioner has already incurred a major portion of the expenditure allowed during the period 2009-14. However, the petitioner further submitted that considering the nature of such activities as well as to ensure compliance with the relevant accounting standards/policy, the expenditure has not been claimed as capital expenditure and has been excluded from the scope of the present petition for the purpose of revision of the annual fixed charges.

13. It is evident from the above submission that though the petitioner had incurred expenditure on replacement of corroded components during 2009-14, major portion of the expenditure which are in the nature of O&M expenses could not be capitalized. The expenses towards replacement of worn out/ corroded components have been charged to O&M expenses by the petitioner for the period 2009-14 and the same has been considered in the normative O&M expenses allowed to the generating station under the 2014 Tariff Regulations applicable for the period 2014-19. Accordingly, the projected additional capital expenditure claimed by the petitioner during the period 2014-19 i.e expenditure on replacement of cooler

tubes, small valves, MIV, etc., which are in the nature of O&M expenses have not been considered for capitalization for the purpose of tariff by this order.

14. In the light of the above, and based on the submissions of the parties and the documents available on record, the claims of the petitioner for the period 2014-19 are examined, on prudence check, as detailed in the subsequent paragraphs.

2014-15

(₹in lakh)

Sl. No.	Assets/ Works	Amount claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Replacement of Turbine parts for Khandong including erection & Commissioning, damaged due to acidic corrosion of reservoir water	1578.29	Till date, no acidic erosion / corrosion due to reservoir water observed in SS materials. So, it is expected that SS material will extend the life of the unit. e.g. Kopili Stage-II GV were made of SS material and commissioned in 2003. As, no acidic water impact observed in the Kopili Stage-II GV till date. Hon. CERC has already approved the items included in this Category	As the expenditure claimed is in the nature of O&M expenses and since the said expenditure for replacement of corroded components on account of acidification of reservoir water form part of the normative O&M expenses allowed to the generating station for the period 2014-19, the expenditure is **not allowed**.	**0.00**
2	Replacement of Generator components, including erection & Commissioning	912.34	Due to formation of cavity in stator in different locations and servicing 30 years, it is necessary to replace the old stator. So, the procurement was done. Materials already utilized in the machine and successfully synchronized with the grid with 25MW load w.e.f. 1.7.2014. As due to delay in supply of materials by BHEL the material could be put to commercial operation in period of 2014-15.CERC has already approved the items included in this category	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the replacement of assets was allowed vide order dated 30.9.2011 in Petition no. 297/2009 for the period 2009-14.	**912.34**

3	Replacement of Switch Yard spares for Khandong PS, including erection & Commissioning	45.96	As the Khandong PS is 30 years old and are equipped with MOCB of BHEL make. Now all the MOCBs are upgraded with SF6 CBs. As our existing MOCBs are obsolete and difficult to procure spares from OEM as they shifted from production of MOCB to SF6 breaker. So, the procurement was done. Material already received at site and will be utilized in 2014-15. Due to upgradation, it will provide reliability and safety of the grid. MOCB technology is obsolete now a days, Hon'ble CERC has already approved the items included in this category		**45.96**
4	Treatment of underwater parts like spiral casing, draft tube, embedded pipes, cones for protection from corrosion due to acidic nature of water with SS cladding by procuring SS plates or acid resistance coating.	72.01	Due to acidic nature of reservoir water, under water parts erodes severally. So, replicable parts already replaced with SS material. But embedded parts needs to protect from acidic water by providing SS plate cladding and application of anti-corrosive paint / coating. CERC already approved ₹50 lakh for 2010-11 and ₹50 lakh for 2011-12.Till date, no acidic erosion / corrosion due to reservoir water observed in SS materials. SS plates supplied vide order No. NEEPCO/KHEP/C&P(E /M)/T-166/2014-15/653 dated 23/5/14) Maintenance electrodes approximately 3000 kg procured vide several orders coatings in Spiral vide order No. NEEPCO/KHEP/C&P (E/M)/W217/KHD/ 2014-15/886 dated 3/6/14) to Ekka Press Ltd. Kolkata. Hon'ble CRCR has already approved a lumpsum amount of ₹50 lakh for treatment of	As the expenditure claimed is in the nature of O&M expenses and since the said expenditure for replacement of corroded components on account of acidification of reservoir water form part of the normative O&M expenses allowed to the generating station for the period 2014-19, the expenditure is **not allowed**.	**0.00**

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			underwater components		
5	Procurement of Isolators.	10.50	The old isolators of Khandong Switch yard has completed its normal service life and is being replaced phased wise. The old isolators are creating O&M problem for last few years and it is necessary to change the same for reliable performance of the plant	**Allowed under** Regulation 14(3)(viii) of the 2014 Tariff Regulations, as the asset will facilitate the successful and efficient operation of generating station. The gross value of old asset is indicated as ₹1.00 lakh.	**10.50**
6	Procurement of new slip ring, Dome, Brush gear Etc. For Khandong Unit I & II	65.72	Initially Khandong had PMG type Excitation system, which has already been replaced by Static Excitation System (SEE), but the Brush gear, the PMG armature & Dome etc were unnecessarily was attached to the machine, which led to additional rotary mass, and gave rise to mechanical problems. During the year 2014-15, the total system is modified and unnecessary components removed from the unit, resulting in better performance of the machines	**Not allowed** as capitalization of assets after the cut-off date is not allowed for the purpose of tariff. The cost of spares has been booked to O&M on consumption.	**0.00**
7	New assets: Procurement of Turbine Discharge measuring instrument, Electromagnetic Flow relays etc.	36.26	Statutory requirement as per new stringent energy efficiency requirements.	**Not allowed** as the assets are in the nature of Tools & Tackles.	**0.00**
8	Procurement of Online vibration monitoring system /Carbon Dust collector etc. Including erection & Commissioning Charges Unit I & II	97.97	New technology resulting in better monitoring & safety of the units. Also is a major step toward implementation of Condition based maintenance. With the new system, balancing of the unit and other vibration related troubleshooting can be done internally, which will to cost saving and development of in-house expertise in the long run	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, as the asset will facilitate the successful and efficient operation of the generating station.	**97.97**

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9	Procurement of turbine oil filter machine	7.50	Due to acidic nature of reservoir water i.e. cooling water, the cooler tubes fails frequently as a result water mixed with turbine oil in the bearing housing. So, it is necessary to separate the water from oil before re-use of oil and run the unit. So, procurement of turbine oil filter m/c is required for safety of the unit during mixing of water with turbine oil. M/c already procured from Alfa-Laval and utilized at site. It will extend the life of bearing, journal housing as well as efficiency of cooling.		**7.50**
10	Procurement of CS/gun metal gate valves for CW system	10.79	Due to acidic nature of reservoir water i.e. cooling water, the cooling water valves fail frequently. So, it is necessary to replace the same till any alternate solution came to resolved the acidic water problem. Order already placed for procurement the same for ₹6.27 lakh. Will increase efficiency of the unit by reducing m/c outage.	As the expenditure is in the nature of O&M expenses and since the said expenditure for replacement of corroded components on account of acidification of reservoir water form part of the normative O&M expenses allowed to the generating station for the period 2014-19, the expenditure is **not allowed**.	**0.00**
11	Procurement of LA 3rd harmonic leakage current tester	8.00	As per statutory requirement from RIO to forward the leakage current value of 132KV SY LAs. Order already placed with M/s SCOPE T&D for supply the equipment. It will increase the safety of the grid by measuring leakage current and through preventive maintenance.	**Not allowed** as the assets are in the nature of Tools & Tackles.	**0.00**
12	Hydro Mechanical Works (New Works) & commissioning of Khandong Surge Shaft Gate, Kopili HE Plant, NC Hills, Umrongso, Assam	253.00	For safe and independent operation of Khandong and Kopili Stage-II power station, the installation of Surge Shaft Gates are very essential	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the works/assets have been allowed vide order dated 30.9.2011 in Petition no. 297/2009 for the period 2009-14. (i.e	**253.00**

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				₹265.40 lakh allowed during 2009-14).	
13	Newly Instrumentation in Khandong Dam & Dyke	26.13	For day to day monitoring for safety of the structure instrumentation in the Dam is essential	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the works/assets have been allowed vide order dated 30.9.2011 in Petition no. 297/2009 for the period 2009-14. (I.e ₹45.00 lakh was allowed during 2009-14).	**26.13**
14	Pilot Project for remediation of Acid Mine Drainage in the Catchment of Kopili River at the upstream of Kopili Hydro Electric Plant (Khandong Dam).	66.83	For study of the Acid Mine Drainage of Kopili reservoir and its effect on the power station, the pilot project is essential.	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the works/assets have been allowed vide order dated 30.9.2011 in Petition no. 297/2009 for the period 2009-14. (i.e ₹18.00 lakh was allowed during 2009-14).	**66.83**
Total amount claimed		**3191.31**			
Total amount allowed					**1420.23**

2015-16

(₹in lakh)

Sl. No	Assets/ Works	Amount claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Procurement and replacement of all existing valves of cast steel with valves made of stainless steel for Unit-I	150.00	Due to acidic nature of reservoir water, it is necessary to replaced all the CS valves with SS material. So, the procurement was done. Material already utilized in the machine and successfully synchronized with the grid w.e.f. 01-07-2014. Honorable CERC already approved Rs. 50.00 lakh for the FY 2013-14 in the tariff period 2009-14. As due to delay in procurement process utilization period spilled to 2014-19. NIT already published and procurement will be done	As the expenditure is in the nature of O&M expenses and since the said expenditure for replacement of corroded components on account of acidification of reservoir water form part of the normative O&M expenses allowed to the generating station for the period 2014-19, the expenditure is **not allowed**.	**0.00**

			shortly.		
2	Replacement of cooler tubes(70:30 Cu:Ni)	25.00	Since the acidic water is used as Cooling medium for Bearing other coolers of at Khandong Power House, The life of Cooler tubes has greatly reduced, and till commissioning of closed loop System at Khandong Power House, These cooler tubes need to be replaced annually to provide reliability to the machines , The cooler tubes last for only one year approximately, therefore, to keep the units generating, there is no alternative but to replace the cooler tubes annually till no sustainable solution is not available.		**0.00**
3	Replacement of 6 Nos. of 600/1 CT & PT (132 kv) and installation of the same	22.00	As per new grid standards, Khandong need to upgrade line CTs to 600/1 ratio, in place of existing 300/1, which was decided in the Operation Co-ordination Committee's 87th meeting,	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, as the asset will facilitate the successful and efficient operation of the generating station.	**22.00**
4	Up-gradation of Battery bank / Charger (Planet type battery)	38.50	The existing 300 AH battery banks of Khandong Power station has already completed its stipulated life period, and the station DC being most vital component for a Power station, it is planned to upgrade the Battery bank to planet type batteries in place of conventional tubular batteries (Which is a major trend in latest power generation technology, And NEEPCO has already incorporated the same in its new plants) along with addition of capacity, as installation of new feeders and other components in the Power house has increased the load on the DC system. Recommended as per CERC norms and will enhance reliability and	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, as the asset will facilitate the successful and efficient operation of the generating station. The gross value of old asset is indicated as ₹5.00 lakh.	**38.50**

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			control		
5	Implementation of RGMO/FGMO enabled governing system for Khandong Unit I & II	60.00	As per new grid standards, all hydro governors need to be upgraded to RGMO/FGMO enabled mode. In this purview, an order has already been placed, and some material has been received. Statutory requirement as per grid standards and will allow more stability to grid parameters.	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, as the asset will facilitate the successful and efficient operation of the generating station. The gross value of old asset is indicated as ₹8.00 lakh.	**60.00**
6	Procurement of Field coils for replacement	56.50	As the Khandong hydro units were commissioned in 1984, the field coils of the units has already completed the normal service period. Conditions of four numbers of coils are found deteriorating during testing, which need to be replaced in the next opportunity. A procurement process has already been initiated.	**Allowed under** Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset will facilitate successful and efficient operation of plant.	**56.50**
7	Replacement of 33 kV CT/PT	9.00	This procurement will enhance the reliability of the station supply mechanism of Khandong Power house. . Mandatory Insurance spares, without which very long outages are envisaged in case of failure	**Not allowed** as the assets are in the nature of spares.	**0.00**
8	Up-gradation of UCB for Khandong PH	75.00	This is a new item. As the Khandong PS is 30 years old and are equipped with traditional electromagnetic relays of EE make. Now the protection system is upgraded with new generation numerical relays. As our existing electromagnetic relays are obsolete and difficult to procure spares as most the relays are stopped manufacturing by the OEM. In the last tariff period of 2009-14, only ₹10 lakh has been proposed for procurement of relays, However, because of absolution of the technology,	**Allowed under** Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset will facilitate the successful and efficient operation of plant.	**75.00**

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			it was needed to be upgraded to numerical system, and a proposal has already been initiated based on the offer from the OEM, M/S Alstom. The reason for proposing inclusion of this in additional capitalization may be summarized as, Adoption of new technology and withdrawing the components that are already obsolete and support is no longer available in the market.		
9	Procurement & installation of 28.5 MVA GT for Khandong power station	174.67	GT of Khandong Unit-I was commissioned in 08-03-1984. Since commissioning the GT fail three times during the year 1984, 1986 & 1989. In the year 1989, one LV/HV limb was replaced and since then it is in working condition. Due to above 01 no. of 28.5MVA spare GT from M/s Bharat Bijlee make was procured in 1991 which was utilized during commissioning of Kopili Stage-II unit in 2003. Recent furan analysis of oil revealed that there is deterioration of solid insulation of the transformer windings and tan-delta values of the GT is having an increasing trend. Since both the generator transformers of Khandong units exceeded the normal working life of 25 yrs and is indication of deterioration of solid insulation, there is every possibility that in case of failure of GT, the same shall not be attributable to any particular phase/winding ans consequently replacement by spare HV/LV coil will not suffice. One spare 28.5MVA GT has been already procured through Open tender at a cost involvement of ₹174.00 lakh and the same is planned to be put in commercial operation during this financial year. Will increase reliability of the unit	The useful life of the asset has expired. In consideration of the submissions of the petitioner and as the asset is considered necessary for efficient operation of plant, the is **allowed** under under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**174.67**

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			and provide support to the grid, will reduce outage substantially in case of failure of one generator transformer		
10	Design, Fabrication, Supply, Erection and commissioning of Spillway Gates operated by Rope Drum Hoist, Hoist Bridge including associated Civil works required for erection of the gates in Khandong Dam of Kopili H.E.P. Umrongso, Assam	3000.00	This is a new item. On raising the FRL of Kopili Reservoir to EL.725.00m from the present level of 719.30 m by installation of Spillway gates on Khandong Dam, the plant's efficiency is likely to be improved. Also, the raising of FRL will help in mitigating flood in the Kopili River which will ultimately safeguard the downstream structures and inhabitants.	The petitioner has claimed total expenditure of ₹3897.00 lakh (₹3000.00 in 2015-16 and ₹897.00 2016-17). In response to the directions of the Commission vide ROP of the hearing dated 7.4.2015, the petitioner vide its affidavit dated 15.6.2015 has submitted that the total amount of ₹3867.00 lakh claimed was based on the estimated value of the work and subsequently during the tendering process, the agency /party has quoted rates which are below the estimated amount. Accordingly, the petitioner has finalized the tender for ₹3040.95 lakh. In view of the submissions of the petitioner and since the asset will facilitate in successful and efficient operation of plant, the expenditure of ₹3000.00 lakh in 2015-16 and the balance amount of ₹40.95 lakh is allowed in 2016-17 under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**3000.00**
Total amount claimed		**3610.67**			
Total amount allowed					**3426.67**

2016-17

(₹ in lakh)

Sl. No.	Assets/ Works	Amount claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Replacement of 1 No. Generator shaft for Khandong	160.00	Runner disc of Khandong unit II has already failed once. It is not possible to fit a new runner disc at site, for which the generator shaft has to be sent to BHEL works, which calls for a shutdown of almost one year. Again, new technology has been developed to design Generator shafts without runner disc, which is being utilized in Kopili Stage II machine. Therefore, it is intended to buy one new Generator shaft and which will be used in any unit at the earliest opportunity and the other shaft will be kept as spare after getting repaired in BHEL works. Will greatly reduce downtime in case of failure of Runner disc or any component of the Generator shaft	**Allowed under** Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset will facilitate the successful and efficient operation of plant.	**160.00**
2	Procurement of SS pipes for replacement of existing MS piping	10.00	Almost all pipe lines of the plant are being converted to Stainless Steel phase wise, as a requirement to counter Acidic corrosion. Will increase reliability of the plant as a whole and reduce outage due to leakages	**Not allowed** as the claim is in the nature of revenue expenditure and expenditure for replacement of corroded components on account of acidification of reservoir water is already a part of normative O&M expenses allowed to the station for the period 2014-19	**0.00**
3	Replacement of Cooler tubes (Cu:Ni 70:30)	30.00	Since the acidic water is used as Cooling medium for Bearing other coolers of at Khandong Power House, The life of Cooler tubes has greatly reduced, and till commissioning of closed loop System at		**0.00**

			Khandong Power House, These cooler tubes need to be replaced annually to provide reliability to the machines The cooler tubes last for only one year approximately, therefore, to keep the units generating, there is no alternative but to replace the cooler tubes annually till no sustainable solution is not available.		
4	Installation of disaster Management system at Khandong	35.00	A hydro Power houses need to have Disaster management system basically for two purposes: 1. To protect the power house from the threats of submergence 2. Earliest restoration in case of Flooding or submergence Khandong power house doesn't have a inbuilt Disaster management system. It is of utmost necessity to establish a effective disaster management system at the plant to face any eventualities that may come in the future. Enhance reliability and squeeze down restoration time in case of flooding/ submergence, which is an anticipated hazard because of the damages on the water conductor system of the Plant by acidic water.	**Allowed** under Regulation 14(3) (viii) of the 2014 Tariff Regulations as the asset will facilitate the successful and efficient operation of plant.	**35.00**
5	Enhancing Dewatering capacity by incorporating additional Submersible pumps in dewatering system	10.00	The embedded pipings of the power house are also effected by acidic corrosion, and leakages have substantially increased during last few years due to acidic corrosion. The present dewatering system is designed to counter normal leakages in the plant, but in purview of present condition of embedded pipings, it is necessary to enhance the dewatering capacity	**Allowed under** Regulation 14(3) (viii) of the 2014 Tariff Regulations as the asset /work will facilitate the successful and efficient operation of plant.	**10.00**

			suitably to prevent disasters in the future. Increase reliability and reduces outages due to extra leakage water caused by failure of embedded parts of the plant		
6	Design, Fabrication, Supply, Erection and Commissioning of Spillway Gates operated by Rope Drum Hoist, Hoist Bridge including associated Civil works required for erection of the gates in Khandong Dam of Kopili H.E.P. Umrongso, Assam	867.00	This is a new item. On raising the FRL of Kopili Reservoir to EL.725.00m from the present level of 719.30m by installation of Spillway gates on Khandong Dam, the Plant's efficiency is likely to be improved. Also, the raising of FRL will help in mitigating flood in the Kopili River which will ultimately safeguard the downstream structures and inhabitants.	As stated earlier, expenditure of ₹3000.00 lakh for 2015-16 has been allowed. The balance amount for ₹40.95 lakh has been **allowed** in this year, based on the submissions of the petitioner, under Regulation 14(3)(viii) of the 2014 Tariff Regulations, as the work/asset will facilitate the successful and efficient operation of plant.	**40.95**
Total amount claimed		**1112.00**			
Total amount allowed					**245.95**

2017-18

(₹ in lakh)

Sl. No.	Assets/ Works	Amount claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Replacement of 2 nos. of Stainless Steel Turbine shafts for Khandong	235.00	During R&M and major overhauling of the Khandong & Kopili Stage II units, the turbine shaft of all the units are found severely damaged. Since procurement of the same was not possible within the shutdown period, the shafts were rebuilt and repaired locally and put back in use. However, these	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset will facilitate the successful and efficient operation of plant.	**235.00**

			being forge manufactured and one of the very critical components of the machines, this is not advisable to run the machines with repaired shaft for long. Considering acidic nature of water, it is planned to procure stainless steel shafts so that it can withstand acidic corrosion		
2	Replacement of existing MIV of Khandong with New valve made of Stainless Steel Khandong (One No)	600.00	All MIVs of Khandong units are found to be leaking as the acidic water has caused major damages to them, because of which several outages has occurred in the last few years. In this condition, there is no other option but to replace all the MIVs will SS made ones, to prevent outages as well as any eventualities that may occur in future	The useful life of the asset has expired. In view of the justification submitted by the petitioner and as the asset will facilitate the successful and efficient operation of plant, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations	**600.00**
3	Replacement of 132 kV CVT/PT	30.00	As per new grid standards, Khandong need to upgrade line CTs to 600/1 ratio, in place of existing 300/1, which was decided in the Operation Co-ordination Committee's 87th meeting,	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset will facilitate the successful and efficient operation of plant.	**30.00**
4	Up-gradation of Conductors in the Switch yard to Moose	50.00	As per norms of the Central Commission and PCC, the conductors at Khandong Switch yard need to be upgraded to Moose, as per new grid standards		**50.00**
5	Conversion of OFWF cooling to OFAF in generating transformers of	30.00	Failure of Generator transformer Coolers may lead to failure of transformer coils and long & Costly		**30.00**

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	Khandong & Stage II		outages, and because of acidic nature of cooling water failure of coolers is highly likely. Conversion of Coolers to Air cooled (AFOF) from water cooled (WFOF) will eliminate the problem permanently		
6	Implementation of flow reversal system in coolers for flushing out silt/sand	10.00	New technology, will introduce online self cleaning of the coolers, thereby increasing cooling efficiency and downtime. Reduce downtime, enhance cooling and enhance life of the bearings.	**Not allowed** as the asset is in the nature of O&M.	**0.00**
Total amount claimed		**955.00**			
Total amount allowed					**945.00**

2018-19

(₹ in lakh)

Sl. No.	Assets/ Works	Amount claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Replacement of damaged parts the stator of Khandong U# II	400.00	The old stator of Khandong Unit I was replaced by a new one, with due approval of Honorable CERC. Now the dismantled Stator is available, which may be repaired/ refurbished in Unit II, damages are already observed in Unit II stator. Will enhance the performance of the Stator, and will be able to generate desired load for next 25 years	**Not allowed,** as expenditure towards repair of damaged parts is in the nature of O&M expenses.	**0.00**

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2	Up-gradation of DC distribution system	50.00	The DC distribution system of Khandong is age old and most of the components has completed its useful service life. It is planned to change /upgrade the DC distribution system of Khandong, with modern equipments and technology, as several outages has already occurred sue to failure/ Problem in the DC system of the plant . A Healthy DC system of enhance the life of the plant and reduce outage for next 10/15 years	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset will facilitate the successful and efficient operation of plant.	**50.00**
3	Closed loop cooling water system for Khandong units	650.00	Acidic water of the reservoir is being used as a cooling medium for unit, leading to frequent failure cooler tubes, tube plates, pipes & valves, leading to frequent outages of the machines. In this purview, treated water in the secondary circuit will be a sustainable solution to the issue. There are instances in many power houses affected by silt in Himalayan basin. The closed loop cooling water system has successfully solved the issue of cooler failures. Machine reliability will increase and outages due to cooling failure will be minimized. Moreover, loss of lubricating oil, (which is also an environmental issue) will be greatly reduced.		**650.00**
Total amount claimed		**1100.00**			
Total amount allowed					**700.00**

Additional Capital Expenditure

15. Based on the above, the additional capital expenditure allowed for the period 2014-19 is summarized as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Additional capital expenditure claimed	3191.31	3610.67	1112.00	955.00	1100.00
Additional capital expenditure allowed	**1420.23**	**3426.67**	**245.95**	**945.00**	**700.00**

Deletion

16. The petitioner has claimed projected de-capitalization for the period 2014-19 as under:

(₹in lakh)

2014-15		
Sl. No.	**Name of Asset**	**Original value of asset**
1	Turbine Spares for Khandong including erection & Commissioning	(-) 212.00
2	Procurement of set of guide vanes made of SS material along with other turbine spares for Khandong Unit-II	(-) 123.00
3	Switch Yard spares for Khandong, including erection & Commissioning	(-) 6.00
4	Procurement of Isolators 132 kV	(-) 1.00
5	Procurement of new slip ring, Dome, Brush gear etc., for Khandong Unit I & II	(-) 9.00
Total de-capitalization projected for 2014-15		**(-) 351.00**
2015-16		
1	Procurement and replacement of all existing valves of cast steel with valves made of stainless steel for Khandong Units	(-) 20.03
2	Procurement of cooler tubes 70:30 Cu:Ni	(-) 3.00
3	Procurement 6 Nos. of 600/1 CT & PT (132 kV) and installation of the same	(-) 3.00
4	Up-gradation of Battery bank/Charger (Planet type battery)	(-) 5.00
5	Implementation of RGMO/FGMO enabled governing system for Khandong Units I & II	(-) 8.00
6	Procurement of Field coils	(-) 8.00
7	Procurement of 33 kV CT/PT	(-0 1.00
8	Up-gradation of UCB for Khandong PH	(-)10.00
Total de-capitalization projected for 2015-16		**(-) 58.03**
2016-17		
1	Spare generator shaft 1 No	(-) 22.00
2	Procurement of SS pipes	(-) 1.00
3	Procurement of Cooler tubes	(-) 4.00
Total de-capitalization projected for 2016-17		**(-) 27.00**
2017-18		
1	Procurement of 2 Numbers of Stainless Steel Turbine shafts for Khandong	(-) 31.00
2	Procurement of MIV made of SS for Khandong (One no)	(-) 81.00
3	Procurement of 132 kV CVT/PT	(-) 4.00
4	Up-gradation of Conductors in the Switch yard to Moose	(-) 7.00
5	Conversion of WFOF cooling to AFOF in generating transformers of Khandong & Stage II	(-) 4.00
Total de-capitalization projected for 2017-18		**(-) 127.00**
2018-19		
1	Procurement/Repairing of Stator of Unit II	(-) 54.00
2	Upgradation of DC distribution system	(-) 7.00
Total de-capitalization projected for 2018-19		**(-) 61.00**

17. Considering the fact that the capitalization of expenditure on replacement of assets i.e. the replacement of cooler tube, spares, valves, etc., is in the nature of O&M expenses, the same has not been allowed as additional capital expenditure and the corresponding deletions have been ignored for the purpose of tariff. However, it is pertinent to mention that in case any asset is de-capitalized from the books of accounts, the same would be de-capitalized for the purpose of tariff, provided that the said asset forms part of the capital base of the generating station, for the purpose of tariff. In case the petitioner is able to establish that the de-capitalized asset do not form part of the capital base for the purpose of tariff, the de-capitalization shall be ignored for the purpose of tariff. As such, the onus of establishing the fact that the de-capitalized asset do not form part of the capital base for the purpose of tariff lie with the petitioner during the process of revision of tariff of the generating station based on truing-up exercise.

18. It is observed that the petitioner has claimed expenditure of ₹174.67 lakh towards the Procurement & Installation of 28.5 MVA Generator Transformer (GT). The petitioner vide ROP of the hearing dated 7.4.2015 was directed to furnish the Reasons for the replacement of generator transformer along with details of the old asset to be removed from service as per Form 9 Bi. In response, the petitioner vide affidavit dated 15.6.2015 has submitted as below:

> *'The 28.5 MVA transformer is procured as spare, the new one is already installed in Khandong unit-I and the old transformer is kept as spare for the units of Khandong as well as Kopili Stage-II units. So, no old assets will be de-capitalized in this case'.*

19. It is pertinent to mention that capitalization of any asset/work on replacement basis for the purpose of tariff, for a particular year is allowed if the de-capitalization of the old asset is also considered in the same year. In case the capitalization of the asset (on replacement) is allowed, the methodology of arriving at a fair value of the de-capitalized asset (wherever no gross value of old asset has been furnished) requires prominence. Accordingly, the escalation rate of 5% per annum of the value from the COD has been considered in order to work out the gross value of old asset as compared to the cost of new asset. In this background, an expenditure of (-) ₹68.50 lakh has been considered as the de-capitalized value of old GT in the

present case. The petitioner is however directed to furnish the actual value of de-capitalization of the GT at the time of revision of tariff based on truing-up in terms of Regulation 8 of the 2014 Tariff Regulations. In view of the above, the de-capitalization considered for the purpose of tariff (as against those projected by the petitioner) corresponding to the assets allowed under replacement is summarized as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19	Total
De-capitalization projected	(-) 351.00	(-) 58.03	(-) 27.00	(-)127.00	(-) 61.00	(-) **624.03**
De-capitalization considered	**(-)130.00**	**(-)102.50**	**(-) 22.00**	**(-)127.00**	**(-) 7.00**	**(-) 388.50**

20. Based on the above discussions, the additional capital expenditure allowed for the period 2014-19 after considering de-capitalization, is summarized as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Additional capital expenditure allowed	1420.23	3426.67	245.95	945.00	700.00
De-capitalization considered	(-)130.00	(-)102.50	(-) 22.00	(-)127.00	(-) 7.00
Net Additional capital expenditure allowed	**1290.23**	**3324.17**	**223.95**	**818.00**	**693.00**

Capital Cost for 2014-19

21. As stated, the closing capital cost as on 31.3.2014 is ₹12438.28 lakh. The same has been considered as the opening capital cost as on 1.4.2014. Accordingly, the capital cost considered for the purpose of tariff for the period 2014-19 is as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	12438.28	13728.51	17052.68	17276.63	18094.63
Additional Capital expenditure allowed	1290.23	3324.17	223.95	818.00	693.00
Capital Cost as on 31st March of the year	**13728.51**	**17052.68**	**17276.63**	**18094.63**	**18787.63**

Return on Equity

22. Regulation 24 of the 2014 Tariff Regulations provides as under:

> ***"24. Return on Equity**: (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 19.*

(2) Return on equity shall be computed at the base rate of 15.50% for thermal generating stations, transmission system including communication system and run of the river hydro generating station, and at the base rate of 16.50% for the storage type hydro generating stations including pumped storage hydro generating stations and run of river generating station with pondage:

Provided that:

i) in case of projects commissioned on or after 1st April, 2014, an additional return of 0.50 % shall be allowed, if such projects are completed within the timeline specified in Appendix-I:

ii) the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever:

iii) additional RoE of 0.50% may be allowed if any element of the transmission project is completed within the specified timeline and it is certified by the Regional Power Committee/National Power Committee that commissioning of the particular element will benefit the system operation in the regional/national grid:

iv). the rate of return of a new project shall be reduced by 1% for such period as may be decided by the Commission, if the generating station or transmission system is found to be declared under commercial operation without commissioning of any of the Restricted Governor Mode Operation (RGMO)/ Free Governor Mode Operation (FGMO), data telemetry, communication system up to load dispatch centre or protection system:

v) as and when any of the above requirements are found lacking in a generating station based on the report submitted by the respective RLDC, RoE shall be reduced by 1% for the period for which the deficiency continues:

vi) additional RoE shall not be admissible for transmission line having length of less than 50 kilometers.

23. Regulation 25 of the 2014 Tariff Regulations provides as under:

"Tax on Return on Equity

(1) The base rate of return on equity as allowed by the Commission under Regulation 24 shall be grossed up with the effective tax rate of the respective financial year. For this purpose, the effective tax rate shall be considered on the basis of actual tax paid in the respect of the financial year in line with the provisions of the relevant Finance Acts by the concerned generating company or the transmission licensee, as the case may be. The actual tax income on other income stream (i.e., income of non generation or non transmission business, as the case may be) shall not be considered for the calculation of "effective tax rate".

(2) Rate of return on equity shall be rounded off to three decimal places and shall be computed as per the formula given below:

Rate of pre-tax return on equity = Base rate / (1-t)

Where "t" is the effective tax rate in accordance with Clause (1) of this regulation and shall be calculated at the beginning of every financial year based on the estimated profit and tax to be paid estimated in line with the provisions of the relevant Finance Act applicable for that financial year to the company on pro-rata basis by excluding the income of non-generation or non-transmission business, as the case may be, and the corresponding tax thereon. In case of generating company or transmission licensee paying Minimum Alternate Tax (MAT), "t" shall be considered as MAT rate including surcharge and cess.

(3) The generating company or the transmission licensee, as the case may be, shall true up the grossed up rate of return on equity at the end of every financial year based on actual tax paid together with any additional tax demand including interest thereon, duly adjusted for any refund of tax including interest received from the income tax authorities pertaining to the tariff period 2014-15 to 2018-19 on actual gross income of any financial year. However, penalty, if any, arising on account of delay in deposit or short deposit of tax amount shall not be claimed by the generating company or the transmission licensee as the case may be. Any under-recovery or over-recovery of grossed up rate on return on equity after truing up, shall be recovered or refunded to beneficiaries or the long term transmission customers/DICs as the case may be on year to year basis."

24. The Return on Equity (RoE) claimed by the petitioner is as under:

	2014-15	2015-16	2016-17	2017-18	2018-19
Base Rate	16.500%	16.500%	16.500%	16.500%	16.500%
Effective Tax Rate	20.961%	30.795%	33.990%	33.990%	33.990%
Rate of ROE (pre-tax)	20.876%	23.842%	24.996%	24.996%	24.996%

25. With regard to tax rate claimed for the purpose of grossing up of RoE, the Commission vide ROP dated 7.4.2015 directed the petitioner to submit clarification/information on the following:

"The applicable tax rate for grossing up of Return on Equity as claimed by the petitioner is Minimum Alternate Tax rate for the year 2014-15 and Corporate Tax rate for the years 2015-16 to 2018-19. Clarification/ justification for the change in applicable tax rate claimed"

26. In response, the petitioner vide affidavit dated 10.6.2015 has submitted as under:

2014-15

After availing available MAT credit during the financial year 2014-15, it is estimated that the effective tax rate applicable for NEEPCO for the FY 2014-15 is expected to be the MAT rate only and accordingly the same has been considered.

2015-16

It is estimated that the during the FY 2015-16, the balance of the MAT credit available will be exhausted resulting in the expected effective tax rate for NEEPCO considered, which is more than MAT rate but lower than corporate tax rate

2016-17 to 2018-19

It is expected that total MAT credit available will be exhausted during the FY 2015-16. Accordingly, NEEPCO will continue to paying normal corporate tax since the FY 2016-17 and accordingly, the same has been considered

27. As per Regulation, effective tax rate is to be considered on the basis of actual tax paid in the respect of the financial year. Accordingly, the tax rates as claimed by the petitioner on projection basis have not been considered for the purpose of determination of tariff. Tax Rate as applicable for 2014-15 is considered for all the years of tariff. However, the petitioner is

directed to furnish the detailed calculation of the effective tax rate, duly certified by Auditor and supported by tax audit report for the respective years, at the time of revision of tariff based on truing-up exercise in terms of the 2014 Tariff Regulations. Return on Equity has been computed as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Notional Equity	6154.10	6541.17	7538.42	7605.61	7851.01
Addition due to additional capital expenditure	387.07	997.25	67.19	245.40	207.90
Closing Equity	6541.17	7538.42	7605.61	7851.01	8058.91
Average Equity	6347.63	7039.79	7572.01	7728.31	7954.96
Rate of ROE (pre-tax)	20.876%	20.876%	20.876%	20.876%	20.876%
Return on Equity	**1325.11**	**1469.60**	**1580.71**	**1613.33**	**1660.65**

Interest on Loan

28. Regulation 26 of the 2014 Tariff Regulations provides as under:

"26. Interest on loan capital: (1)The loans arrived at in the manner indicated in regulation 19 shall be considered as gross normative loan for calculation of interest on loan.

(2) The normative loan outstanding as on 1.4.2014 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2014 from the gross normative loan.

(3) The repayment for each of the year of the tariff period 2014-19 shall be deemed to be equal to the depreciation allowed for the corresponding year/period. In case of de-capitalization of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of de-capitalisation of such asset.

(4) Notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the depreciation allowed for the year or part of the year.

(5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio after providing appropriate accounting adjustment for interest capitalized:

Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered:

Provided further that if the generating station or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered.

(6) The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.

(7) The generating company or the transmission licensee, as the case may be, shall make every effort to re-finance the loan as long as it results in net savings on interest

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and in that event the costs associated with such re-financing shall be borne by the beneficiaries and the net savings shall be shared between the beneficiaries and the generating company or the transmission licensee, as the case may be, in the ratio of 2:1.

(8) The changes to the terms and conditions of the loans shall be reflected from the date of such re-financing.

(9) In case of dispute, any of the parties may make an application in accordance with the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999, as amended from time to time, including statutory re-enactment thereof for settlement of the dispute:

Provided that the beneficiaries or the long term transmission customers /DICs shall not withhold any payment on account of the interest claimed by the generating company or the transmission licensee during the pendency of any dispute arising out of re-financing of loan."

29. Since the actual loan has been repaid in the year 2010-11, the weighted average rate of interest on loan for the said year i.e 7.940% has been considered for the years 2014-15, 2015-16 and 2016-17.Based on this, the Interest on loan during the period 2014-19 is worked out and allowed as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Normative Loan	6284.18	7187.34	9514.26	9671.03	10243.63
Cumulative Repayment upto Previous Year	6284.18	6874.08	7598.63	8386.62	9089.02
Net Loan-Opening	-	313.26	1,915.63	1284.41	1154.60
Repayment during the year	589.90	724.55	787.99	702.40	559.35
Addition due to Additional Capitalization	903.16	2326.92	156.77	572.60	485.10
Net Loan-Closing	313.26	1915.63	1284.41	1154.60	1080.35
Average Loan	156.63	1114.44	1600.02	1219.51	1117.48
Weighted Average Rate of Interest on Loan	7.940%	7.940%	7.940%	7.940%	7.940%
Interest on loan	**12.44**	**88.49**	**127.04**	**96.83**	**88.73**

Depreciation

30. Regulation 27 of the 2014 Tariff Regulations provides as under:

***"27. Depreciation:** (1) Depreciation shall be computed from the date of commercial operation of a generating station or unit thereof or a transmission system including communication system or element thereof. In case of the tariff of all the units of a generating station or all elements of a transmission system including communication system for which a single tariff needs to be determined, the depreciation shall be computed from the effective date of commercial operation of the generating station or the transmission system taking into consideration the depreciation of individual units or elements thereof.*

Provided that effective date of commercial operation shall be worked out by considering the actual date of commercial operation and installed capacity of all the units of the generating station or capital cost of all elements of the transmission system, for which single tariff needs to be determined.

(2) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission. In case of multiple units of a generating station or multiple elements of transmission system, weighted average life for the generating station of the transmission system shall be applied. Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis.

(3) The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset:

Provided that in case of hydro generating station, the salvage value shall be as provided in the agreement signed by the developers with the State Government for development of the Plant:

Provided further that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciated value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff:

Provided also that any depreciation disallowed on account of lower availability of the generating station or generating unit or transmission system as the case may be, shall not be allowed to be recovered at a later stage during the useful life and the extended life.

(4) Land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.

(5) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in ***Appendix-II*** *to these regulations for the assets of the generating station and transmission system:*

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 12 years from the effective date of commercial operation of the station shall be spread over the balance useful life of the assets.

(6) In case of the existing projects, the balance depreciable value as on 1.4.2014 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31.3.2014 from the gross depreciable value of the assets.

(7) The generating company or the transmission license, as the case may be, shall submit the details of proposed capital expenditure during the fag end of the project (five years before the useful life) alongwith justification and proposed life extension. The Commission based on prudence check of such submissions shall approve the depreciation on capital expenditure during the fag end of the project.

(8) In case of de-capitalization of assets in respect of generating station or unit thereof or transmission system or element thereof, the cumulative depreciation shall be adjusted by taking into account the depreciation recovered in tariff by the de-capitalized asset during its useful services."

31. The COD of generating station is 4.5.1984. The generating station has completed 12 years of operation as on 4.5.1996. And accordingly, the spread over of depreciation commenced. With the COD of the generating station being 4.5.1984, the useful life of the station (35 years) will expire on 30.4.2019.

32. The station at present is in the fag end of its life, and the petitioner has proposed to incur additional capital expenditure during this period i.e. 2014-19. In absence of any information for the proposed life extension vide Regulation 27 (7), the depreciation on additional capitalization as allowed for the period 2014-19 has been considered separately by allowing depreciation at the rate of 5.28% as per the rates in Appendix-II of the 2014 Regulation. Similar view was taken by the Commission in the order dated 9.8.2012 in petition no. 225-2009 in the matter of tariff determination of Singrauli Super Thermal Power Station, as below:

51. We have given a serious thought on this issue. Since these assets are being capitalized during the terminal year of the generating station, we are of the view that allowing 90% of the depreciation would not be in the interest of the beneficiaries and therefore these assets should be depreciated at the rates specified in Appendix-III of the 2009 Tariff Regulations. The petitioner has not indicated the period for which the life of the generating station would be extended beyond its useful life. In the absence of the said information, the Commission cannot decide as to how the expenditure incurred on DAETP and Ash water recirculation system during the terminal year of the life of the generating station would be serviced in tariff. Therefore, the Commission considers it appropriate to allow the depreciation of the assets capitalized during the terminal year as per the rate specified in Appendix-III of the 2009 Tariff Regulations. The petitioner would be required to run the generating station for sufficiently longer period to recover the full depreciation of the said assets. This will be in the interest of the beneficiaries as they will not be overburdened with payment of admissible depreciation during the terminal year of the generating station.

33. According to the methodology set by the Commission in the above quoted order, the depreciation on the additional capitalisation in the instant case also is being allowed in the similar manner, i.e. as per the rates in Appendix-III of the 2009 Regulation. However, for the original gross block depreciable value as on 1.4.2014, the depreciation has been allowed in the regular manner i.e. by spreading over the balance useful life. Accordingly, the depreciation has been computed as follows:

(₹ in lakh)

			2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation on the original Gross Block (i.e. without considering the additional capitalisation)							
Gross Block as on 31.3.2014		12438.28	12438.28	12438.28	12438.28	12438.28	12438.28
Additional capitalisation (considered nil)			-	-	-	-	-
Closing Gross block			12438.28	12438.28	12,438.28	12438.28	12438.28
Average gross block			12438.28	12438.28	12,438.28	12438.28	12438.28
land related cost			176.00	176.00	176.00	176.00	176.00
Depreciable Value	90%		11036.05	11036.05	11036.05	11036.05	11036.05
Balance Useful life of the asset	5.09		5.09	4.09	3.09	2.09	1.09

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Remaining Depreciable Value			2830.16	2326.79	1664.66	889.68	264.62
Depreciation on the original gross block (A)			**555.84**	**568.67**	**538.43**	**425.34**	**242.40**
Depreciation on the additional capitalisation							
Opening value			0.00	1290.23	4614.40	4838.35	5656.35
Additional capitalisation during the year			1290.23	3324.17	223.95	818.00	693.00
Closing value			1290.23	4614.40	4838.35	5656.35	6349.35
Average			645.12	2952.32	4726.38	5247.35	6002.85
Rate of depreciation			5.28%	5.28%	5.28%	5.28%	5.28%
Depreciation on the additional capitalisation (B)			**34.06**	**155.88**	**249.55**	**277.06**	**316.95**
Depreciation on the entire gross block (incl. additional capitalisation) (A+B)			**589.90**	**724.55**	**787.99**	**702.40**	**559.35**
Adjustment on account of decapitalised assets			(-)86.54	(-)62.41	(-)13.00	(-)77.35	(-)4.30)
Adjusted Cumulative Depreciation/ Advance against Depreciation after taking into account the pro-rata adjustment of decapitalized assets		8205.89	8709.26	9371.40	10146.38	10771.43	11326.48

Operation & Maintenance Expenses

34. Regulation 29 (3) (a) of the 2014 Tariff Regulations provides as under:

> ***29. Operation and Maintenance Expenses:***
>
> *(3) Hydro Generating Station*
>
> *(a) Following operations and maintenance expense norms shall be applicable for hydro generating stations which have been operational for three or more years as on 01.04.2014:*

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
1233.87	1317.89	1405.45	1498.82	1598.41

35. The petitioner has claimed the O&M expenses as per the above norms. The generating station is in operation for three or more years as on 1.4.2014. Accordingly, in terms of sub-section (a) of clause (3) of Regulation 29 of the 2014 Tariff Regulations, the year-wise O&M expense norms claimed by the petitioner as above is allowed for the period 2014-19.

Interest on working capital

36. Sub-section (c) of Clause (1) of Regulation 28 of the 2014 Tariff Regulations provides as under:

> ***28. Interest on Working Capital:***
>
> *(1) The working capital shall cover*
>
> *(a) Hydro generating station including pumped storage hydro electric generating Station and transmission system including communication system:*
>
> *(i) Receivables equivalent to two months of fixed cost;*
>
> *(ii) Maintenance spares @ 15% of operation and maintenance expense specified in regulation 29; and*
>
> *(iii) Operation and maintenance expenses for one month.*

37. Clause (3) of Regulation 28 of the 2014 Tariff Regulations provides that the rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2014 or as on 1st April of the year during the tariff period 2014-15 to 2018-19 in which the generating station or a unit thereof or the transmission system including communication system or element thereof, as the case may be, is declared under commercial operation, whichever is later.

38. Accordingly, receivables equivalent to two months of fixed cost is allowed as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
545.64	620.98	672.71	674.95	674.76

39. Maintenance spares @15% of the O&M expenses is worked out and allowed as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
185.08	197.68	210.82	224.82	239.76

40. O&M Expenses for one month is worked out and allowed as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
102.82	109.82	117.12	124.90	133.20

41. In terms of the above regulations, Bank Rate of 13.50% (Base Rate + 350 Basis Points) as on 1.4.2014 claimed by the petitioner has been considered in the calculations for working capital.

42. Necessary computations in support of interest on working capital are as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Maintenance Spares	185.08	197.68	210.82	224.82	239.76
O & M expenses	102.82	109.82	117.12	124.90	133.20
Receivables	545.64	620.98	672.71	674.95	674.76
Total	833.54	928.49	1,000.65	1,024.68	1,047.73
Interest on Working Capital @13.50%	**112.53**	**125.35**	**135.09**	**138.33**	**141.44**

43. Accordingly, the annual fixed charges allowed for the generating station for the period from 1.4.2014 to 31.3.2019 is summarized as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Return on Equity	1325.11	1469.60	1580.71	1613.33	1660.65
Interest on Loan	12.44	88.49	127.04	96.83	88.73
Depreciation	589.90	724.55	787.99	702.40	559.35
Interest on Working Capital	112.53	125.35	135.09	138.33	141.44
O & M Expenses	1233.87	1317.89	1405.45	1498.82	1598.41
Annual Fixed Charges	**3273.85**	**3725.87**	**4036.27**	**4049.72**	**4048.58**

Normative Annual Plant Availability Factor

44. Clause (4) of Regulation 37 of the 2014 Tariff Regulations provides for the Normative Annual Plant Availability Factor (NAPAF) for hydro generating stations already in operation. Accordingly, the NAPAF of 69% has been considered for this generating station.

Design Energy

45. The Commission in its order dated 30.9.2011 in Petition No.297/2009 had approved the annual Design Energy (DE) of 227.61 Million units for the period 2009-14 in respect of this generating station. This DE has been considered for this generating station for the period 2014-19 as per month-wise details as under:

Month	Design Energy (MUs)
April	10.08
May	37.21
June	36.00
July	37.20
August	37.20
September	36.00
October	33.23
November	10.03
December	10.42

January	10.42
February	9.40
March	10.42
Total	**227.61**

Enhancement of O&M expenses

46. The petitioner in the petition has submitted that the salary & wages of the employees of the petitioner will be due from 1.1.2017. It has further submitted that the petition has been submitted considering the O&M expenses in terms of Regulation 29(3)(a) of the 2014 Tariff Regulations and the yearly escalation provided in the O&M expenses may not cover the enhanced employee cost due to the aforesaid pay revision. Accordingly, the petitioner has sought liberty to approach the Commission for seeking enhancement in the O&M expenses with effect from 1.1.2017 due to pay revision, if any, under Regulation 54 and 55 of the 2014 Tariff Regulations. The matter has been examined. On this issue, the Commission in the Statement of Reasons to the 2014 Tariff Regulations has observed as under:

> *"29.26 Some of the generating stations have suggested that the impact of pay revision should be allowed on the basis of actual share of pay revision instead of normative 40% and one generating company suggested that the same should be considered as 60%. In the draft Regulations, the Commission had provided for a normative percentage of employee cost to total O&M expenses for different type of generating stations with an intention to provide a ceiling limit so that it does not lead to any exorbitant increase in the O&M expenses resulting in spike in tariff. The Commission would however, like to review the same considering the macro economics involved as these norms are also applicable for private generating stations. In order to ensure that such increase in employee expenses on account of pay revision in case of central generating stations and private generating stations are considered appropriately, the Commission is of the view that it shall be examined on case to case basis, balancing the interest of generating stations and consumers"*

47. Accordingly, the prayer of the petitioner for enhancement of O&M expenses if any, due to pay revision may be examined by the Commission, on a case to case basis, subject to the implementation of pay revision as per DPE guidelines and the filing of an appropriate application by the petitioner in this regard.

Application Fee and Publication Expenses

48. The petitioner has sought the reimbursement of filing fee and also the expenses incurred towards publication of notices for application of tariff for the period 2014-19. The petitioner has deposited the filing fees for the period 2014-19 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. The

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petitioner has incurred charges towards publication of the said tariff petition in the newspapers. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations and the decision of the Commission in order dated 6.1.2016 in Petition No.232/GT/2014, the petitioner is entitled to recover the filing fees and the expenses incurred on publication of notices for the period 2014-19 directly from the respondents. Accordingly, the expenses incurred by the petitioner towards tariff application filing fees and publication of notices in connection with the present petition shall be directly recovered from the respondent beneficiaries on pro rata basis.

49. The annual fixed charges approved as above for the period 2014-19 as above are subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.

50. Petition No. 42/GT/2015 is disposed of in terms of the above.

-Sd/-	***-Sd/-***	***-Sd/-***
(A.S. Bakshi)	**(A.K.Singhal)**	**(Gireesh B.Pradhan)**
Member	**Member**	**Chairperson**

ANNEXURE-2.1

Dinesh Mahato <dinesh.mahato@jsw.in>

Fwd: BQ for CDCS system and carbon brushes

1 message

Durvesh Kumar <durvesh.kumar@jsw.in> Fri, Dec 21, 2018 at 4:47 PM
To: vikas gupta <vikas.gupta@jsw.in>
Cc: Dinesh Mahato <dinesh.mahato@jsw.in>

Dear Sir,

As discussed, please find CDCS system Budgetary Offer.

Best Regards,

Durvesh Kumar | Plant Engineer (O&M Baspa II-HEP) | JSW Hydro Energy Ltd.

Sholtu Colony, P.O. Tapri, District Kinnaur , H.P. – 172104 | India

M +91 9816654323 | +91 1786 261696

E-mail : durvesh.kumar@jsw.in | **Website** : www.jsw.in

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——— Forwarded message ———
From: **AGARWAL Mm** <mm.agarwal@mersen.com>
Date: Tue, Dec 11, 2018 at 6:26 PM
Subject: BQ for CDCS system and carbon brushes
To: Durvesh Kumar <durvesh.kumar@jsw.in>

Dear Mr. Durvesh ,

Ref. to our discussion , we are sending herewith the Budgetary quote for CDCS system and Carbon brushes for your necessary action .

MERSEN

Best Regards,

Man Mohan Agarwal

Regional Marketing Manager- North Zone

Power Transfer Technology

M +91 9910253672

T +91 80 30946124/125

JSW Hydro Energy Limited

F +91 80 30946130

Mersen India Private Limited

Plot No5, Bommasandra Industrial Area,

Bangalore - 560099, Karnataka, INDIA

sales.ea.india@mersen.com

CIN: U14294KA1995PTC016996

To answer your technical queries on Electrical Rotating Machines please visit us at www.eaindiainfo.com and www.mersen.com

Ref:[MERSEN#001]

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2 attachments

CDCS BQ OFFER BASPA 2 - Dec.,2018.pdf
43K

HIMACHAL BASPA-18000086.pdf
66K

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Annexure 2-2

MERSEN

Quotation Number: M/MDC/BQ/DB/BASPA/DEC 18/3
Dated – 10th- Dec ,18

Baspa (Stage II) Hydro-Electric Power Station
HBPCL, Sholtu, Post Tapri
Tehsil – Nichar, Dist - Kinnaur
HP-172104

Dear Sir

With reference to the discussion , we are pleased to submit the Budgetary quote for Designing, Supply and Installation of Mersen Carbon Dust Collection System for Baspa Hydro Project one unit Siemens make Hydro Generator – 100 MW as below.

Technical offer

Carbon Dust Collection System (MDC) operating principle:

Carbon Brush Dust Collection system is provided to avoid drop in insulation resistance over time due to carbon dust accumulation in the generator area , thus decreasing the risk of short circuits. The MDC system is designed to collect carbon dust near to its source of generation , near the carbon brushes, which is the best possible way to extract the Carbon Dust being generated and avoiding dust to float and accumulate inside the Slip ring chamber and generator winding.

For MDC, each brush-holder needs to be equipped with a polymer suction shoe, to collect the carbon dust with high efficiency to an external dust collector. Tubes are connected from the polymer suction shoe to a manifold. Each tube is carefully insulated to avoid any short circuit.

The dust collector is designed to work continuously 24 hours a day with the machine .

The Carbon Dust Collection Systems

- Collects dust from the source, near the brushes.
- Provide protection against carbon dust and short circuit between active coils and ground.
- Low noise operation.

For a good efficiency:

- No oil or grease should be there near the MDC or the carbon brushes (major clogging risk).
- Out of round has to be less than 0.03 mm on one round, one wave.

JSW Hydro Energy Limited

MERSEN India Private Limited
EARLIER CARBONE LORRAINE INDIA PVT. LTD.
5, BOMMASANDRA INDUSTRIAL AREA, BANGALORE – 560099, INDIA
T : +91(0)80 30946121/24/25 – F : + 91(0)80 30946130
www.mersen.com
CIN : U14294KA1995PTC016956

MERSEN

Scope

The scope of the job includes designing the above Carbon Brush Dust Collection system, supply of the (MDC) system, supply of Carbon Brush, Brush Holder installed with dust extraction system, fitment of the carbon brush with proper seating of brush contact surface, Diagnostic check and reporting on Slip ring profile, surface roughness.

Technical data:

A) Dust Collection System

a. Properties of dust exhaust system :

Three phase mobile industrial vacuum with side channel blower for liquids & solids.

- 3 Phase vacuum units
- Container release system for emptying operation
- Gravity unload (GU)
- Efficient filter cleaning system
- L Class filters (this last on the GU FM version)
- Filter blockage level monitoring
- Container with castors & handle
- Electrical Filter Shaker
- Highly maneuverable
- Heavy duty tubular steel body and painted with epoxy powder to prevent corrosion.

b. Technical Specifications

- IP Protection Class - 55
- Insulation Class - F
- Motor rated power (KW) – 7.5
- Airflow without hose (L/sec) - 534
- Vacuum max (mBar) - 430
- Main filter type – L class Polyester star filter

B. Properties of Suction Hose:

Semi-rigid silicone-free hose - non-electrically-conductive. Working temperature: min -40℃ / max +100℃

C. Brush Holders:

Constant Spring Pressure Brush holder with pocket Size 25mm x 32mm jacketed for dust exhausting system, suitable for the existing brush holder rocker system.

MERSEN India Private Limited
EARLIER CARBONE LORRAINE INDIA PVT. LTD
5, BOMMASANDRA INDUSTRIAL AREA, BANGALORE – 560099, INDIA
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CIN : U14284KA1995PTC016996

JSW Hydro Energy Limited

i) **Brush Holder Body**: Brush holder shall be manufactured by gravity metal die-casting and shall conform to respective material grade as per the type of Brush holder covered under the specification. The physical and chemical properties of the material shall conform to material of the brush holder referred in the drawing. The pockets into the brush holder should be made by broaching process with tolerances as mentioned in the relevant drawing.

ii) **Materials** – Brass Alloy (**CuZn38Al**)

iii) **Chemical Composition**: The Brush holder body shall be manufactured by Gravity die-casting as per following specification

SL.No	Metal	Min	Max
1	Copper	59%	64%
2	Zinc	Remainder	
3	Aluminium	0.1%	0.8%
4	Impurities		

iv) **Physical properties:** Physical properties of the brush holder body manufactured by brass alloy conforming to following physical properties –

Hardness (BHN)	Tensile Strength (N/mm2)	Yield Strength (N/mm2)
min 75	min 380	min 130

v) **Brush Holder Pocket:** Brush Holder pocket should be made by broaching machine and shall conform to tolerance grade E10.

vi) **Constant Pressure Spring**: The material of spring should conform to DIN 17224 having steel grade X12CrNi17 7 or equivalent. Brush Holder Spring pressure within the range of 180 cN/cm² ± 10%

D. Carbon brushes:

Supply of Carbon Brush - as per specified grade details.

Grade:	EG34D
Size:	25X32x64mm
Family:	Electro Graphite.
Allowable current density:	12 A/cm²
Maximum linear speed:	50m/s

JSW Hydro Energy Limited

MERSEN India Private Limited
EARLIER CARBONE LORRAINE INDIA PVT. LTD
5, BOMMASANDRA INDUSTRIAL AREA, BANGALORE – 560099, INDIA
T : +91(0)80 30946121/24/25 – F : + 91(0)80 30946130
www.mersen.com
CIN : U14294KA1995PTC016996

MERSEN

E. Installation

Mersen MDC installation need complete shutdown of the unit, necessary electrical ,mechanical and civil work support to set up the system & the electrical connection to the network will be provided by Baspa –II HEP.

Mersen will deploy 3 Expert technicians/ engineer. Baspa – II HEP need to provide necessary manpower, electrical power and service support. The Installation time is approximately 5 to 7 working days.

F. Warranty

We warrant that the goods will be free from manufacturing defects and workmanship for the period of twelve months only from the date of commissioning.

a) Vacuum system and parts: One year.
b) Brush Holder & Springs: One year.
c) Carbon Brush being a consumable will last for its normal operating life under normal operating conditions.
d) Other components: 3 months.

The material has to be stored properly avoiding contamination from corrosive atmosphere, water and its vapour etc..

G. References:

Mersen have proven records of supplying similar equipment's globally to various Hydro Electric Plants and Hydro Generators OEMs. The list is attached for reference

H. Bill of Materials (for one 100MW Generator)

1) Carbon Dust Collection Assembly – An integrated Dust Collection System with the Dust exhaust System and Brush holders equipped with polymer suction enclosure, special plastic flexible piping with different diameters, manifolds, connections, screws, separator and filter, vacuum station.

2) Brush Holder Assembly – Customised 24 Nos Brush Holder, Type BUNG2532 with the dust collecting polymer jacket.

3) Pipes, Hoses and other components as required.

4) Carbon Brush – 48 Nos Carbon brush in grade EG34D

5) Operational and Maintenance Manual – 1 No.

JSW Hydro Energy Limited

MERSEN India Private Limited
EARLIER CARBONE LORRAINE INDIA PVT. LTD.
5, BOMMASANDRA INDUSTRIAL AREA, BANGALORE – 560099, INDIA
T : +91(0)80 30946121/24/25 – F : + 91(0)80 30946130
www.mersen.com
CIN : U14294KA1995PTC016956

MERSEN

6) Installation - MDC installation (need complete shutdown of the unit, necessary electrical mechanical and civil work support to set up the system, the electrical connection to the network will be provided by Baspa –II HEP).
   a. Mersen will deploy 3 Expert technicians/ engineers
   b. Installation time - 5 to 7 working days following below planning is required:
      (i) Safety procedure, work preparation, brush-holder dismantling etc.
      (ii) MDC installation, carbon brush contact surface seating
      (iii) Tests, site cleaning, assistance for production start.

7) Service report -
   a. Installation Report
   b. One free check after six months of Installation within the guarantee period. One day shut down will be required to carry the checks.

Price Terms: Ex Works, M/s MERSEN India Pvt. Ltd, Bangalore and unless otherwise stated are exclusive of taxes, duties, transportation, and demurrage at destination and bank charges. All such charges are to buyers account. The prices quoted are based on the prevailing rates of raw materials indigenous and imported and on the present rate of foreign exchange (USD and Euro), petroleum cost or cost of energy or other such charges related to direct production.

Commercial Offer

A. Unit Price
Carbon Dust Collection System with Electrical Filter Shaker
Rs. 35,76,000/- (Rupees Thirty five Lacs seventy six Thousands only)

Price Basis – Exworks, Bangalore

Standard Terms & Conditions of Sales.

a. GST
   i. Carbon Brush @ 18%
   ii. Dust Collectors,Brush Holders – 18%
   iii. Others (if any) as applicable at the time of dispatch .
b. Other Taxes and Surchages – To be borne by customer as applicable at the time of dispatch.
c. SVC applicable.
d. Packing & Forwarding Charges – 2 %
e. Freight Charges- Extra at actuals. Will be charged in the bill.
f. Delivery - Within 30 Weeks from the date of receipt of your technically and commercially acceptable order.
g. The company shall not be responsible for any delay due to non-availability of power, raw materials, lock out, strike, natural calamities or reasons subject to standard force de-majeure clause

MERSEN India Private Limited
EARLIER CARBONE LORRAINE INDIA PVT. LTD
5, BOMMASANDRA INDUSTRIAL AREA, BANGALORE – 560099, INDIA
T : +91(0)80 30946121/24/25 – F : + 91(0)80 30946130
www.mersen.com
CIN : U14294KA1995PTC016996

JSW Hydro Energy Limited

MERSEN

h. At least 60 days' written notice is required of any modification or suspension of scheduled deliveries. Any suspension will be limited to a maximum period of three months after which deliveries may be resumed at the former rate.
i. The material will be dispatched by Road/Rail Baspa Project on freight paid basis (to be charged in the invoice) up to destination in your stores. Your purchase order must specify the Name of the transporter and accompany with waybill.
j. Inspection- By Consignee (at our factory in Bangalore with prior intimation).
k. Insurance – Insurance to be borne by you.
l. Payment Terms- 30% advance with order and balance within 30 days after successful installation.
m. Validity - This quotation will be valid up to 60 days and thereafter subject to our confirmation.
n. Cancellation- Orders once placed cannot be altered or cancelled without our prior consent in writing and in no case if any progress has been made in the process for the material for the execution of the subject order.
o. All disputes are subject to jurisdiction of Bangalore Court only.

Statutary Details

GST No: 29AAACE3191K1ZF
PAN No: AAACE3191K

Bank Details- BNP PARIBAS,
A/C No- 09067-011011-00120
Type of account – Current A/c
Address– Landmark Building, M G Road, Bangalore- 001
Code of Bank – BNPA 0009067

Thanking You .,

For Mersen India Private Limited ,

(M.M.Agarwal)
Regional Marketing Manager

JSW Hydro Energy Limited

MERSEN India Private Limited
EARLIER CARBONE LORRAINE INDIA PVT. LTD.
5, BOMMASANDRA INDUSTRIAL AREA, BANGALORE – 560099, INDIA
T : +91(0)80 30946121/24/25 – F : + 91(0)80 30946130
www.mersen.com
CIN : U14294KA1995PTC018996

ANNEXURE-3.1

Dinesh Mahato <dinesh.mahato@jsw.in>

Fwd: Regarding Cirrus Air Compressor Spare Parts

2 messages

mahesh negi <mahesh.negi@jsw.in> Wed, Dec 26, 2018 at 10:03 AM
To: Dinesh Mahato <dinesh.mahato@jsw.in>

FYIP...

---------- Forwarded message ---------
From: **Satyendra Sinha** <satyendra.sinha@jsw.in>
Date: Mon, Jul 17, 2017 at 4:40 PM
Subject: Fwd: Regarding Cirrus Air Compressor Spare Parts
To: ravindra rana <ravindra.rana@jsw.in>, mahesh negi <mahesh.negi@jsw.in>
Cc: Himanshu Puri <himanshu.puri@jsw.in>, Rohit Verma <rohit.verma@jsw.in>, Mahesh Chand Sharma <maheshchand.sharma@jsw.in>

Dear Sir,
Please Find quotation of Cirrus Air compressor.

Regards
Satyendra Kumar
Sr.Engineer |O&M| HBPCL
M +91 9816026783
E mail : satyendra.sinha@jsw.in | Website : www.jsw.in

JSW Energy

---------- Forwarded message ---------
From: **Christelle SONDAG Cirrus** <cirrus.rechange@orange.fr>
Date: Mon, Jul 17, 2017 at 3:50 PM
Subject: RE: Regarding Cirrus Air Compressor Spare Parts
To: Satyendra Sinha <satyendra.sinha@jsw.in>

Good morning

Please find enclosed our

quotation DC1700573.

Best regards.

Christelle SONDAG

Service Pièces de Rechange

JSW Hydro Energy Limited

CIRRUS COMPRESSEURS

115 Route du Robinson

FR - 74150 Vallières

Tél. :+33 (0)4 50 68 20 02
Fax. : +33(0)4 50 68 19 87

cirrus.rechange@orange.fr

www.cirrus-compresseurs.fr

Permanence téléphonique :

Du lundi au jeudi de 8h à 12h30

De : Satyendra Sinha [mailto:satyendra.sinha@jsw.in]
Envoyé : samedi 15 juillet 2017 05:13
À : Christelle SONDAG (rechange)
Objet : Re: Regarding Cirrus Air Compressor Spare Parts

Dear Sir,

Please send quotation on E-mail as early as possible.

Adress;

Baspa Power House,HBPCL (JSW Energy ltd.)

P.O.- Tapri, Tehshil - Nichar,

Distt- Kinaaur, HimachalPradesh-172104.

Regards

Satyendra

Kumar

Sr.Engineer |O&M| HBPCL

M +91 9816026783

E mail : satyendra.sinha@jsw.in | Website : www.jsw.in

JSW Energy

On Thu, Jul 6, 2017 at 11:57 AM, Christelle SONDAG Cirrus <cirrus.rechange@orange.fr> wrote:

Good morning

In order to send you the quotation, please indicate complete adress.

Best regards.

Christelle SONDAG

Service Pièces de Rechange

CIRRUS COMPRESSEURS

115 Route du Robinson

FR - 74150 Vallières

Tél. :+33 (0)4 50 68 20 02
Fax. : +33(0)4 50 68 19 87

cirrus rechange@orange.fr

www.cirrus-compresseurs.fr

Cirrus

Permanence téléphonique :

Du lundi au jeudi de 8h à 12h30

De : Satyendra Sinha [mailto:satyendra.sinha@jsw.in]
Envoyé : samedi 1 juillet 2017 07:02
À : philippe Martinod CIRRUS
Cc : mahesh negi
Objet : Re: Regarding Cirrus Air Compressor Spare Parts

JSW Hydro Energy Limited

Dear Sir,

Details of Air Compressors:

1)Serial No-00-737/3

Total Operating hrs. of Main Compressor -001186 hrs.(Where as operation Frequency for overhauling :9000 hrs to 12000 hrs.)

2)Serial No-00-737/1

Total Operating hrs. of Spare Compressor -00627 hrs.(Where as operation Frequency for Overhauling :9000 hrs to 12000 hrs.)

and kindly provide Indian supplier and vendor for Spare Parts because off its very essential System of our Hydro Electric Project.

Regards

Satyendra

Kumar

Sr.Engineer |O&M| HBPCL

M +91 9816026783

E mail : satyendra.sinha@jsw.in | Website : www.jsw.in

JSW Energy

On Fri, Jun 30, 2017 at 3:49 PM, philippe Martinod CIRRUS <cirrus.service@orange.fr> wrote:

Dear Sir ,

Please send us the number of operating hours of each compressor and their serial number.

Regards

Cirrus Compresseurs

De : Cirrus Compresseurs
Envoyé : lundi 26 juin 2017 08:19
À : Philippe MARTINOD

JSW Hydro Energy Limited

Cc : Christelle SONDAG (rechange)
Objet : TR: Regarding Cirrus Air Compressor Spare Parts

De : Satyendra Sinha [mailto:satyendra.sinha@jsw.in]
Envoyé : dimanche 25 juin 2017 08:30
À : Cirrus Compresseurs
Objet : Regarding Cirrus Air Compressor Spare Parts

Dear Sir,

We are required Cirrus compressors parts and Services for Cirrus make Compressor, Type-74GECC4-F-07,Serial No-00-737/3,Service Pressure-400 bar,MFG Year-01/01. Can You please provide the Overhauling of three no.s' Compressors . Which was installed at Baspa-II H.E.P Site through Andriz and MCE Austria.Please Find enclosed Document for your reference. We are waiting for your Valuable reply.

Thanks &

Regards

Satyendra

Kumar

Sr.Engineer |O&M| HBPCL

M +91 9816026783

E mail : satyendra.sinha@jsw.in | Website : www.jsw.in

JSW Energy

Confidentiality Notice

JSW Hydro Energy Limited

Confidentiality Notice

The information contained in this electronic message and any attachments to this message are intended for the exclusive use of the addressee(s) and may contain confidential or privileged information. If you are not the intended recipient, please notify the sender at JSW or System Manager (admin@jsw.in) immediately and destroy all copies of this message and any attachments. Recipients must check this email and its attachments for the presence of viruses before downloading them. JSW Group accepts no liability for any damage caused by any virus transmitted by this email.

--

With Best Regards,

Mahesh Chander Negi | Dy. Chief Engineer (O&M Baspa-II) | **JSW Hydro Energy Ltd.**

Sholtu Colony, PO -Tapri, District. Kinnaur – 172104 | Himachal Pradesh | India

M +91 9805724444 | Office +91 1786 261696 Extn 200

www.jsw.in

JSW Energy

D573.pdf
179K

mahesh negi <mahesh.negi@jsw.in> Wed, Dec 26, 2018 at 10:25 AM
To: Dinesh Mahato <dinesh.mahato@jsw.in>

FYIP..

-------- Forwarded message ---------
From: **Satyendra Sinha** <satyendra.sinha@jsw.in>
Date: Mon, Aug 7, 2017 at 3:10 PM
Subject: Fwd: RE: Regarding Cirrus Air Compressor Spare Parts
To: mahesh negi <mahesh.negi@jsw.in>

Dear Sir,
As per mail of Christelle Sodang, Cirrus have no distributor in india.

-------- Forwarded message --------
From:
Date: 7 Aug 2017 2:19 p.m.
Subject: Fwd: RE: Regarding Cirrus Air Compressor Spare Parts
To: <satyendra.sinha@jsw.in>
Cc:

JSW Hydro Energy Limited

---------- Forwarded message ----------
From: "Christelle SONDAG Cirrus" <cirrus.rechange@orange.fr>
Date: 7 Aug 2017 12:02 p.m.
Subject: RE: Regarding Cirrus Air Compressor Spare Parts
To: "Satyendra Sinha" <satyendra.sinha@jsw.in>
Cc:

Good morning

We have no distributor in India.

Do you want the quotation ?

Best regards.

Christelle SONDAG

Service Pièces de Rechange

CIRRUS COMPRESSEURS

115 Route du Robinson

FR - 74150 Vallières

Tél. :+33 (0)4 50 68 20 02
Fax. : +33(0)4 50 68 19 87

cirrus.rechange@orange.fr

www.cirrus-compresseurs.fr

Permanence téléphonique :

Du lundi au jeudi de 8h à 12h30

De : Satyendra Sinha [mailto:satyendra.sinha@jsw.in]
Envoyé : vendredi 4 août 2017 04:53
À : Christelle SONDAG (rechange)
Cc : mahesh negi; Himanshu Puri

Objet : Re: Regarding Cirrus Air Compressor Spare Parts

JSW Hydro Energy Limited

Dear Sir,

Thanks for your prior and immediate response in reference to our queries and requirements.

Further in reference to the trailing mails, i would like to request you to provide your Indian subsidiary/distributor address and contact details for placing supply/service orders on to your firm through them.This will help us in making the payments on our local currency and avoiding Forex / import glitches.

Detailed list of compressor spares required by us is also attached herein for your ready reference.

Thanks in advance for your understanding and kind support.

Best Regards/Cordialement

Satyendra

Kumar

Sr.Engineer |O&M| HBPCL

M +91 9816026783

E mail : satyendra.sinha@jsw.in | Website : www.jsw.in

JSW Energy

On Tue, Jul 18, 2017 at 3:37 PM, Christelle SONDAG Cirrus <cirrus.rechange@orange.fr> wrote:

Good morning

Please find enclosed our quotation DC1700577.

Best regards.

Christelle SONDAG

Service Pièces de Rechange

CIRRUS COMPRESSEURS

JSW Hydro Energy Limited

115 Route du Robinson

FR - 74150 Vallières

Tél. :+33 (0)4 50 68 20 02
Fax. : +33(0)4 50 68 19 87

cirrus.rechange@orange.fr

www.cirrus-compresseurs.fr

Permanence téléphonique :

Du lundi au jeudi de 8h à 12h30

De : Satyendra Sinha [mailto:satyendra.sinha@jsw.in]
Envoyé : lundi 17 juillet 2017 13:33
À : Christelle SONDAG (rechange)
Cc : mahesh negi
Objet : Re: Regarding Cirrus Air Compressor Spare Parts

Dear Sir,

Please provide quotation of Filter Assembly with back pressure regulator.

1)Part No of Filter- 44/C.310.216.15 and Cartridge 5R628 -49/C13079205

Detail present on filter assembly
(EURO RESERVOIR, 23170 CHAMBON SUR VOUEIZE,
N° Fab-13830
CODE CODAP
REV-08-12
CATEG- B-0, 85
FLUIDE-AIR
ANNEE 2001)

2) Back Pressure Regulator

Part No- 51/C.230.061.21

Min-100 b

Max-200 b

Maximum Delivery-150 m3/h.

Please Find relevant doc., details of above mention Item in Page no- 12,13, &14.

JSW Hydro Energy Limited

Regards

Satyendra

Kumar

Sr.Engineer |O&M| HBPCL

M +91 9816026783

E mail : satyendra.sinha@jsw.in | Website : www.jsw.in

JSW Energy

[Quoted text hidden]
[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

JSW Hydro Energy Limited

SRI KRISHNA ENGINEERING SERVICES PVT. LTD.
ENGINEERING SOLUTIONS FOR HYDRO POWER

AN ISO:9001:2015 CERTIFIED COMPANY

S.K.E.S.P.L/2018-19/HBPCL/001
Date: 22nd December, 2018

M/s JSW Hydro Energy Ltd.
Sholtu Colony, PO -Tapri,
District. Kinnaur – 172104 | Himachal Pradesh | India
M +91 9805724444 |
Office +91 1786 261696 Extn 200

Kind Attention:- Mr. Mahesh Chander Negi [Dy. Chief Engineer (O&M Baspa-II)]

Subject:- Letter regarding the delay in response from M/s Cirrus compressuer for material supply.

Ref:- Your email enquiry below dated 21st December, 2018.

Respected Sir,

This has further to your kind mail dated 21st December, 2018 below and our telecon in the same regard. We thank you for the same and wish to inform you that the same has been taken up with the concerned team at Cirrus. We are hopeful to get the proposal in a few days because most offices are closed on account of Christmas Holidays.

Just to re-iterate sir, we are already executing an Order for supply of Compressor Spares for your reputed company via ***PO No. HBPCL/2017-18/0870001902*** dated ***6th December, 2017***.

The company does not have any exclusive authorized channel partners for INDIA and hence we have to communicate with the main office only. We wish to bring to your kind notice that it has been very difficult to contact the concerned team at Cirrus and to book this particular order and to technically convey the complete matter to them. The team is very slow to respond and have most of the items ordered are now replaced with new range of products from M/s Cirrus.

Only method to contact the technical and commercial team has been through emails and many matters are still not clear because of language issues. Although, the mutual language of communication is English, however, still many matters are not closed easily. However, after lot of efforts, finally things are in line and we hope to receive the matter soon.

To summarize, we wish to put forward the concern that due to the delays from the client end to understand technical points and because of the problems in communication with them, delivery of goods is being delayed. This situation may remain the same for any future orders for Cirrus Spares and may cause delays for spares at your power project.

Hence, we humbly request you to kindly take the above points in consideration while placing further orders. We will also try to find alternate vendors (technically equivalent) to match your requirements.

Looking forward to a long term business association with your esteemed organization.

Regards,

For M/s Sri Krishna Engineering Services Pvt. Ltd.

Authorized Signatory

Enclosed:- Your email enquiry for Cirrus Spares and New Compressor Units.

Sri Krishna Engineering Services Pvt. Ltd.

- **Corp. Office:** JC-19, 1st Floor, Puri VIP Floors, Sector-81, Greater Faridabad, Haryana - 121004, INDIA
- **Reg. Address:** House No. 1094, Sector-16, Faridabad, Haryana - 121002, INDIA
- +91 9971303366, +91 9599644200
- md@srikrishnaengineering.com; hydronepal@srikrishnaengineering.com
- www.srikrishnaengineering.com

JSW Hydro Energy Limited

---------- Forwarded message ---------
From: **mahesh negi** <mahesh.negi@jsw.in>
Date: Fri, Dec 21, 2018 at 9:23 AM
Subject: Re: Request for offer to purchase new Ciruss Compressor
To: philippe Martinod CIRRUS <cirrus.service@orange.fr>
Cc: Satyendra Sinha <satyendra.sinha@jsw.in>, Dinesh Mahato <dinesh.mahato@jsw.in>

Dear Sir,

In continuation to trailing mail.please send quotation on E-mail as early as possible

ADDRESS :-
JSW Hydro Energy Limited
BASPA -II H. E.P
Sholtu Colony, P.O. -Tapri
District -Kinnaur
Pin -172104
Himachal Pradesh (India)

On Thu, Dec 20, 2018 at 5:09 PM mahesh negi <mahesh.negi@jsw.in> wrote:

Dear Sir,

We are a hydro power plant from India, At our Hydro power plant we are using three CIRRUS Air Compressors.These compressors are used to feed compressed air into OPU (Oil Pressure unit) of unit Governor system which is a heart of any running power station. Additionally, these compressors also provide compressed air to mechanical air brake and cooling water auto flushing system.

Compressor Details:

Type- 74/GECC4-HV-01,
Service pressure- 200 bar-33 m³/4
Sl.Nr. 00-737/1,00-737/2, 00-737/3,
Block No-3062,3058
Make: Cirrus

We wish to inform you that we have a a requirement of two new compressors of the same model with the two sets of essential spares .

Please send us the quotation for new compressors as earliest.

With Best Regards,
Mahesh Chander Negi | Dy. Chief Engineer (O&M Baspa-II) | **JSW Hydro Energy Ltd.**
Sholtu Colony, PO -Tapri, District. Kinnaur – 172104 | Himachal Pradesh | India
M +91 9805724444 | Office +91 1786 261696 Extn 200

www.jsw.in

JSW Hydro Energy Limited

ANNEXURE-3.2

S.A.S. au CAPITAL de 225 400€
SIRET: 51139104700020
TVA: FR07511391047

DEVIS N° DC1700573
Estimate #

JSW ENERGY

BASPA POWER HOUSE HBPCL
PO TAPRI, TEHSHIL - NICHAR
DISTT-KINAAUR
172104 HIMACHAL PRADESH
INDE

To the attention of Mr SINHA SATYENDRA

Vallières, le 17/07/2017

N/Réf. Fourn. :
Our supplier ref.

V/ N° TVA :
Your VAT #

V/Code Client : 1985
Customer code

V/Référence : MAIL 01/07/2017
Your ref.

Validité du 17/07/17 au 31/12/17

1	59/C24015650 KIT ENTRETIEN PURGEUR CLAPET PLAT POUR C310061*5	6 UN	38.50 UN	231.00
2	59/C24037100 BACK PRESSURE MAINTENANCE KIT	1 UN	46.00 UN	46.00
3	49/C23014004 MOLECULAR SIEVES 3A CARTRIDGE 3M413	1 UN	335.50 UN	335.50
4	0J/C29000224 O'RING D44.04X3.53 N90S (1"1/2)	1 UN	11.34 UN	11.34
5	0J/C29000227 O-RING GASKET D53.57X3.53 N90S	2 UN	5.66 UN	11.32
6	0J/C29080227 LOCK RING D54.53X3 N90S	2 UN	5.04 UN	10.08
7	0F/C14070202 COALESCING FILTER CARTRIDGE 1050X	1 UN	150.50 UN	150.50
8	0J/C29205500 O-RING GASKET D55*2 N80S	2 UN	3.15 UN	6.30
9	0J/C29202300 O-RING GASKET D23X2 N90S	2 UN	1.25 UN	2.50
10	0R/C28002508 NON-RETURN VALVE M1/8G D8S V>T	2 UN	63.00 UN	126.00
11	91/X64715010 JOINT INFERIEUR CLAPET 1 ET. 84	2 UN	44.90 UN	89.80

JSW Hydro Energy Limited

S.A.S. au CAPITAL de 225 400€
SIRET: 51139104700020
TVA: FR07511391047

DEVIS N° DC1700573
Estimate #

N/Réf. Fourn. :
Our supplier ref.

V/ N° TVA :
Your VAT #

V/Code Client : 1985
Customer code

V/Référence : MAIL 01/07/2017
Your ref.

JSW ENERGY

BASPA POWER HOUSE HBPCL
PO TAPRI, TEHSHIL - NICHAR
DISTT-KINAAUR
172104 HIMACHAL PRADESH
INDE

To the attention of Mr SINHA SATYENDRA

Vallières, le 17/07/2017

Validité du 17/07/17 au 31/12/17

12	91/X65370210 CLAPET 1ER ET. SV450	2 UN	757.50 UN		1515.00
13	91/X64716810 JOINT SUPERIEUR CLAPET 1 ET. S4	2 UN	3.50 UN		7.00
14	91/X69333500 JOINT INFERIEUR CLAPET 2 ET. S3 & S4	2 UN	6.90 UN		13.80
15	91/X69603200 CLAPET 2E ET. S 3/4	2 UN	560.30 UN		1120.60
16	91/X69332700 JOINT SUPERIEUR CLAPET 2 ET. S3 & S4	2 UN	10.40 UN		20.80
17	91/X62708100 ALUMINIUM WASHER	4 UN	3.50 UN		14.00
18	91/X62822300 COPPER WASHER	8 UN	6.90 UN		55.20
19	91/X63858000 3RD STAGE DISCHARGE VALVE	4 UN	456.60 UN		1826.40
20	91/X62823100 COPPER WASHER	4 UN	6.90 UN		27.60
21	91/X63857100 3RD STAGE INTAKE VALVE	4 UN	456.60 UN		1826.40
22	91/X62824000 COPPER WASHER	4 UN	6.90 UN		27.60

JSW Hydro Energy Limited

S.A.S. au CAPITAL de 225 400€
SIRET: 51139104700020
TVA: FR07511391047

DEVIS N° DC1700573
Estimate #

N/Réf. Fourn. :
Our supplier ref.

V/ N° TVA :
Your VAT #

V/Code Client : 1985
Customer code

V/Référence : MAIL 01/07/2017
Your ref.

JSW ENERGY

BASPA POWER HOUSE HBPCL
PO TAPRI, TEHSHIL - NICHAR
DISTT-KINAAUR
172104 HIMACHAL PRADESH
INDE

To the attention of Mr SINHA SATYENDRA

Vallières, le 17/07/2017

Validité du 17/07/17 au 31/12/17

23	0F/X30302900 CARTOUCHE FILTRE A AIR S4-U15-VK60	2 UN	76.50 UN	153.00

DELIVERY TIME : 8 WEEKS FROM DATE OF ORDER INCOMING
(August and week 52 excepted)

Incoterm : EX-WORKS (EXW)

Paiement : SWIFT TRANSFER
PAYMENT BEFORE DELIVERY

Responsible:
Mme SONDAG CHRISTELLE
Tél: 0450682920 E-mail: cirrus.rechange@orange.fr

TOTAL H.T. *Net total* **7627.74 EUR**

TOTAL T.T.C. *Net to pay* **7627.74 EUR**

PID No - 26105

20th Oct 2017

To,
Mr. Dhanni Ram
Himachal Baspa Power Company Ltd,
Sholtu Colony, PO : Tapri,
Distt : Kinnaur – 172104,
Himachal Pradesh, India,

Subject: **Offer for supply of Cirrus make spares for Baspa HEP**

Reference: **Your Enquiry vide letter no. 4100170152 dated 31st Aug 2017**

Dear Sir,

We thank you for your enquiry for the supply of Cirrus make spare for Baspa HEP.

We are pleased to submit our techno-commercial offer as per given below annexures:

Annexure – I : Price Schedule
Annexure – II: Commercial Terms & Condition

We trust that you will find our offer in order. However should you require any other information, please feel free to write to us for the same.

Looking forward to receive your valued order on us at the earliest

Thanking you and assuring you our best services and attention at all times.

Yours Truly,

For ANDRITZ HYDRO Pvt. Ltd

ANDRITZ Hydro Pvt. Ltd.

Deepak Raj
Sales & Marketing
Services & Rehab Division

Ajay Aggarwal
HOD - Sales & Marketing
Services & Rehab Division

Regd.Office & Correspondence Address
ANDRITZ HYDRO Private Ltd
CIN – U04010MP1996PTC011430
Location – Mandideep
D-17, MPAKVN Industrial Area
Mandideep, District Raisen – 462 046
Near Bhopal (M.P.) INDIA
Phone: +91 (7480) 400400-401
Fax: +91 (7480) 403393
www.andritz.com

ANDRITZ HYDRO Private Ltd.
Location - Prithla
49/5, Mathura Road, Village Prithla,
District Palwal – 121 102
(Haryana) INDIA
Phone: +91 (1275) 262161-163
Fax: +91 (1275) 262055
www.andritz.com

Company Seat: Vienna
Reg. of Companies FN 61833 g
Vienna Commercial Court
VAT-No. ATU 14756806

Headquarters:
ANDRITZ HYDRO GmbH
Eibesbrunnergasse 20, 1120 Vienna, Austria

JSW Hydro Energy Limited

ANDRITZ Hydro

ANNEXURE – I

Price Schedule:

Our scope of work will be to supply below mention items only, however any work other than mention below shall be treated as extra with extra time, delivery etc.

Sl.No	Item Description	Qty	Units	Total Amount (INR)
1	SFTY VLV ;VOEST-ALPINE MCE ASSY/PARTS,OEM GENERAL,ITEM NAME:SAFETY VALVE ;PART NO:0S/C28035208;DRAWING NUMBER:4/GECC4HV-GB1/02.01;MAKE:VOEST-ALPINE MCE. **The above items is obsolete the same will be replaced by OS/C28035209**	1	EA	2,28,290
2	SFTY VLV ;VOEST-ALPINE MCE ASSY/PARTS,OEM GENERAL,ITEM NAME:SAFETY VALVE ;PART NO:0S/C280353340;DRAWING NUMBER:4/GECC4HV-GB1/02.01;MAKE:VOEST-ALPINE MCE **The above items is obsolete the same will be replaced by OS/C28035640**	1	EA	10,086
3	SFTY VLV ;VOEST-ALPINE MCE ASSY/PARTS,OEM GENERAL,ITEM NAME:SAFETY VALVE ;PART NO:0S/C28036150;DRAWING NUMBER:4/GECC4HV-GB1/02.01;MAKE:VOEST-ALPINE MCE **The above items is obsolete the same will be replaced by OS/C28036155**	1	EA	1,66,513
4	FLTR SEPERATOR;OF/C.251.985.00;CIRRUS ASSY/PARTS,ITEM NAME:FILTER SEPERATOR;PART NO:OF/C.251.985.00;MAKE:CIRRUS;MAJOR EQUIPMENT:AIR COMPRESSOR;MAJOR EQUIPMENT MODEL:74G ECC-F-07;MAJOR EQUIPMENT MAKE:CIRRUS	1	EA	40,915
5	MNTCE KIT;59/C24037100;CIRRUS ASSY/PARTS,ITEM NAME:MAINTENANCE KIT;PART NO:59/C24037100;MAKE:CIRRUS;MAJOR EQUIPMENT:AIR COMPRESSOR;MAJOR EQUIPMENT MODEL:74 GECC -F-07;MAJOR EQUIPMENT MAKE:CIRRUS	2	EA	15,985
6	BPRS RGLTR;51/C.230.061.21 ASSY/PARTS,ITEM NAME:BACK PRESSURE REGULATOR;PART NO:51/C.230.061.21;DRAWING NUMBER:4GECC;POSITION NUMBER:FINAL STAGE;DIMENSION:IN LET DIA-20MM,OUTLET-F1/4 G;APPLICATION:FILTER;MAJOR EQUIPMENT:AIR COMPRESSOR;MAJOR EQUIPMENT PART NO:44/C.310.216.15;MAJOR EQUIPME NT MODEL:74/GECC4--07;MAJOR EQUIPMENT MAKE:CIRRUS	2	EA	2,64,137

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Sl.No	Item Description	Qty	Units	Total Amount (INR)
7	FLTR CRTDG;49/C13079205;5R628;CIRRUS ASSY/PARTS,ITEM NAME:FILTER CARTRIDGE;PART NO:49/C13079205;DRAWING NUMBER:4GECC4HV;POSITION NUMBER:AIR FILER;MODEL NUMBER:5R628;MAJOR EQUIPMENT:CIRUS COMPRESSOR;MAJOR EQUIPMENT MODEL:COMP-2X33M3/HK1L00;MAJOR EQUIPMENT MAKE:CIRRUS	2	EA	1,67,464
8	MACRO DRN MCHNSM;CIRRUS;GECC4 HV ASSY/PARTS,ITEM NAME:MACRO DRAIN MECHANISM;PART NO:30/C.310.061.15 BP;DRAWING NUMBER:4GECC REV A PAGE 10/17;MAKE:CIRRUS;MAJOR EQUIPMENT:CIRRUS;MAJOR EQUIPMENT MODEL:GECC4 HV;MAJOR EQUIPMENT MAKE:CIRRUS	1	EA	1,28,072
9	MACRO DRN MCHNSM;CIRRUS;GECC4 HV ASSY/PARTS,ITEM NAME:MACRO DRAIN MECHANISM;PART NO:30/C.310.061.25 HP;DRAWING NUMBER:4GECC REV A PAGE 10/17;MAKE:CIRRUS;MAJOR EQUIPMENT:CIRRUS;MAJOR EQUIPMENT MODEL:GECC4 HV;MAJOR EQUIPMENT MAKE:CIRRUS	1	EA	1,28,072
10	MACRO DRN MCHNSM;CIRRUS;GECC4 HV ASSY/PARTS,ITEM NAME:MACRO DRAIN MECHANISM;PART NO:30/C.310.061.55 HPP;DRAWING NUMBER:4GECC REV A PAGE 10/17;MAKE:CIRRUS;MAJOR EQUIPMENT:CIRRUS;MAJOR EQUIPMENT MODEL:GECC4 HV;MAJOR EQUIPMENT MAKE:CIRRUS	1	EA	1,28,072
11	NON RTN VLV;0R/628002508;M1/4G ASSY/PARTS,OEM GENERAL,ITEM NAME:NON RETURN VALVE;PART NO:0R/628002508;DRAWING NUMBER:4/GECC4HV;POSITION NUMBER:2;MAKE:CIRRUS;TYPE :M1/4G;DIMENSION STANDARD:D8S V-8	2	EA	11,799
12	SFTY VLV;OS/C.280.371.00;THIRED STG ASSY/PARTS,ITEM NAME:SAFETY VALVE;PART NO:OS/C.280.371.00;MAJOR EQUIPMENT:COMPRESSOR;MAJOR EQUIPMENT MODEL:4GECC4 HV;MAJOR EQUIPMENT MAKE:CIRRUS **The above items is obsolete the same will be replaced by OS/C28039214**	2	EA	1,25,598
	Grand Total in figures – INR			**14,15,003/-**
	Grand Total in Words	**Indian Rupees Fourteen Lacs, Fifteen Thousand, Three Only**		

JSW Hydro Energy Limited

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Effectiveness of contract

The effective date of the contract shall be:

- Placement of techno-commercial clear purchase order along with drawings by PURCHASER and the date of acceptance of the same by us in writing.

Delivery period:

- FOR Site (Baspa HEP) delivery period of shall be **19 weeks** (approx.) reckoned from the effective date of contract as defined above.

ANDRITZ Hydro Pvt. Ltd.

JSW Hydro Energy Limited

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ANNEXURE - II

COMMERCIAL TERMS & CONDITIONS:

Prices Basis

- The prices quoted above are on FOR Baspa HEP Site basis inclusive of Packing & forwarding and exclusive of transportation and transit insurance.
- All taxes and duties, GST shall be payable extra at actual, as applicable on the date of dispatch by PURCHASER.

Offer Validity

Our offer is valid for 90 days from the date of submission of this offer.

Payment Terms

100% of the order value along with 100% taxes, duties & levies shall be paid through RTGS/DD/Cheque against Performa invoice before dispatch.

Warranty

The supply item shall be warranted for any material and /.or any manufacturing defect for a period of 12 months from the date of commissioning or 18 months from the dispatch of material from our works whichever is earlier.

Defect Liability conditions (Warranty) by supplier do not cover for any normal wear and tear of parts, improper operations and or maintenance, for third party repairs or modifications and defects developed due to misuse or abuse by the client or third parties (not employed by supplier). However there is no warranty for any rubberized items or any items whose self-life is less than above. All implied and or any statutory warranty is also excluded.

Any defects during warrantee period will be rectified within one month or as applicable from the receipt of intimation of defects / failure.
You shall notify all defects in writing to supplier within 5 days of occurrence of defects within the defect liability period.

Limitation of Liability

The aggregate liability of the Supplier in this Contract to the Employer, whether under the contract, in tort or otherwise including the cost of repairing or replacing defective equipment, shall not exceed 100% of our contract price.
Under no circumstances supplier shall be liable for any consequential or indirect damages incurred by the Employer, including but not limited to loss of profit or loss of production etc.

JSW Hydro Energy Limited

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Force Majeure

Force majeure is herein defined as any cause which is beyond the control of the BIDDER or PURCHASER, as the case may be which they could not foreseen or with a 'reasonable amount of diligence could not have been foreseen and which substantially affect the performance of the "Contract" Such as but not limited to:

a) Acts of God, natural calamities, including but not limited to floods, droughts, earthquakes and epidemics,
b) of any Government, domestic or foreign, including but not limited to war, declared or undeclared priorities, quarantines, embargoes
c) Acts of public enemy, terrorism, accidents and disruptions including but not limited to fires, explosions, breakdown of essential machinery or equipment
d) Transportation delay due to accidents
e) Strikes, lockouts and sabotage
f) Riots, terrorism and civil commotions

Provided either party shall within fifteen (15) days from the occurrence of such a cause notify the other in writing of such causes.
The Bidder or the purchaser shall not be liable for delay in performing his obligations resulting from any force majeure cause as referred to and / or defined above.
If the performance in whole or part by the PURCHASER/ BIDDER or any obligation under the Contract is prevented or delayed by "Force Majeure' conditions for a period exceeding 90 days, the PURCHASER and / or BIDDER may at his option terminate the contract by notice in writing.
If the Force majeure period last for 90 days at a stretch or cumulatively for 90 days, Supplier will be entitled to terminate the contract by giving notice to the Purchaser. PURCHASER shall pay to Supplier as per our comments to Foreclosure below

Arbitration Clause

Resolution of all disputes shall be first settled amicably between both sides. However all un-resolved disputes shall be settled through Arbitration only. The dispute when referred to arbitration shall be resolved under the provisions of Indian Arbitration and Conciliation Act 1996. The Purchaser and the Supplier shall each appoint one arbitrator, and these two arbitrators shall jointly appoint a third arbitrator, who shall chair the arbitration panel. If the two arbitrators do not succeed in appointing a third arbitrator within twenty-eight (28) days after the latter of the two arbitrators has been appointed, the third arbitrator shall, at the request of either party, be appointed by the Appointing Authority. The President, Institution of Engineers (India) in New Delhi shall be the "Appointing Authority".

JSW Hydro Energy Limited

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Thanking you and assuring you our best services and attention at all times.

Yours Truly,

For ANDRITZ HYDRO Pvt. Ltd

Deepak Raj
Sales & Marketing
Service Rehab Division

ANDRITZ Hydro Pvt. Ltd.

JSW Hydro Energy Limited

ANNEXURE-3.3

ELGi **Sauer Compressors**

PROFORMA INVOICE

Customer Postal Address :(Invoice to)	Customer delivery Address : (Ship to)	Invoice No : ESCL/711006
JSW Hydro Energy Limited BASPA-II H.E.P., Sholtu Colony, P.O.-Tapri, District-Kinnaur PIN 172104-Himachal Pradesh (India)	JSW Hydro Energy Limited BASPA-II H.E.P., Sholtu Colony, P.O.-Tapri, District-Kinnaur PIN 172104-Himachal Pradesh (India)	Date : 04/11/2018 Your Order No / Date: JSWHEL/2018-19/0840000203 Date :20/10/2018
	Our Bankers:	Terms of Payment :
Fright: Paid Basis Mode of Transport: By Road Mode of sales: Origin: Coimbatore	BANK-STATE BANK OF INDIA ACCOUNT NAME- ELGI SAUER COMPRESSORS LTD ACCOUNT NUMBER- 30500697995 IFSC CODE -SBIN0007536 MICR NO- 641002023 BRANCH CODE- 07536	20% payment advance against ABG, 70% Plus 100 % taxes against supply of material within 07 days, Balance 10% against PBG

Sl. No.	ITEM CODE	ITEM DESCRIPTION	QTY	Basic Price Per Unit	PO Value	20% advance payment
1		High Pressure Air Compressor WP4325 with e-motor, starter cum control panel & standard accessories & Mandatory Spares (Filter Element & Lub Oil)	1	16,42,000.00	16,42,000.00	3,28,400.00
		Taxes will be applicable at time of billing				
						328400.00
						TOTAL AMOUNT

Payable Amount In Words : THREE LAKHS TWENTY EIGHT THOUSAND FOUR HUNDRED ONLY

Goods once sold cannot be be taken back.
Disputes subject to Coimbatore Juridiction only
Supply subject to the terms and condition as mentioned in the order acceptance

Received the goods in good condition NA

Prepared by

For ELGI SAUER COMPRESSORS LTD

Authorised Signatory

ELGI SAUER COMPRESSORS LIMITED, ELGI INDUSTRIAL COMPLEX III, TRICHY ROAD, SINGANALLUR, COIMBATORE 641005

JSW Hydro Energy Limited

Annexure 3.4

CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 231/GT/2014

Coram:
Shri Gireesh B. Pradhan, Chairperson
Shri A.K.Singhal, Member
Shri A. S. Bakshi, Member
Dr. M. K. Iyer, Member

Date of Order: 30th August, 2016

In the matter of

Revision of tariff for the period 2009-14 after truing up exercise and determination of tariff for 2014-19 in respect of Dulhasti Hydroelectric Power Station (390 MW).

AND

In the matter of

NHPC Ltd,
NHPC Office Complex, Sector 33,
Faridabad – 121003

.....Petitioner

Vs

1. Punjab State Power Corporation Ltd
The Mall, Near Kali Badi Mandir,
Patiala – 147 001

2. Haryana Power Utilities,
Shakti Bhawan, Sector, 6
Panchkula – 134 109

3. BSES Rajdhani Power Ltd
BSES Bhawan, Nehru Place,
New Delhi – 110 019

4. Uttar Pradesh Power Corporation Ltd
Shakti Bhawan, 14, Ashok Marg,
Lucknow – 226 001

5. BSES Yamuna Power Ltd
Shakti Kiran Building,
Karkardooma, New Delhi – 110 072

6. Engineering Department, 1 st Floor,
UT Secretariat, Sector 9D,
Chandigarh – 160 009

7. Tata Power Delhi Distribution Ltd
33 kV Sub-station,
Hudson Lane, Kingsway Camp
Delhi – 110 009

8. Power Development Department,
Civil Secretariat,
Jammu-180001 (J & K)

9. Jaipur Vidyut Vitran Nigam Ltd
Vidyut Bhawan, Janpath,
Jaipur – 302 205

10. Jodhpur Vidyut Vitran Nigam Ltd
New Power House, Industrial Area,
Jodhpur – 342 003

11. Uttranchal Power Corporation Ltd
Urja Bhawan, Kan wali Road,
Dehradun – 248 001

12. Ajmer Vidyut Vitran Nigam Ltd
Old Power House,
Hatthi Bhatta, Jaipur Road,
Ajmer – 305 001 .....**Respondents**

Parties Present

Shri. A.K Pandey, NHPC
Shri. Piyush Kumar, NHPC
Shri Naresh Bansal, NHPC
Shri Jitendra Kumar Jha, NHPC
Shri R.B. Sharma, Advocate, BRPL
Shri S.K Agarwal, Advocate, Rajasthan Discoms
Shri G.L Verma, Advocate, Rajasthan Discoms
Ms Neelam, Advocate, Rajasthan Discoms

ORDER

The petition has been filed by NHPC Ltd for revision of tariff of Dulhasti Hydroelectric Station (3 x 130 MW) ('the generating station') for the period 2009-14 after truing-up exercise in terms of Regulation 6(1) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 ("the 2009 Tariff Regulations") and for determination of tariff for the period 2014-19 in terms of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 ("the 2014 Tariff Regulations")

2. The generating station was declared under commercial operation on 7.4.2007. Petition No. 60/2010 was filed by the petitioner for determination of tariff of the generating station for the period 2009-14 and the Commission by order dated 30.5.2011 had determined the annual fixed charges for the generating station for the said period based on the capital cost of ₹511605.50 lakh as on 1.4.2009. Thereafter, by order 13.2.2014 in Petition No.141/GT/2013, the annual fixed charges of the generating station for 2009-14 were revised after truing-up exercise based on the actual additional capital expenditure incurred during the period 2009-12 and the projected additional capital expenditure for the period 2012-14. The annual fixed charges allowed for the period 2009-14 by the said order dated 13.2.2014 are as under:

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Return on Equity	46649.39	46111.00	45582.54	34729.27	34729.27
Interest on Loan	20851.70	18553.98	17078.16	14736.57	12697.92
Depreciation	26572.78	26629.31	26709.59	26767.60	26795.26
Interest on Working Capital	2702.23	2686.72	2691.46	2465.06	2473.27
O & M Expenses	14824.24	15672.19	16568.64	17516.36	18518.30
Total	**111600.34**	**109653.19**	**108630.38**	**96214.86**	**95214.01**

Revision of Annual Fixed Charges for 2009-14

3. Clause (1) of Regulation 6 of the 2009 Tariff Regulations provides as under:

> *"6. Truing up of Capital Expenditure and Tariff (1) The Commission shall carry out truing up exercise along with the tariff petition filed for the next tariff period, with respect to the capital expenditure including additional capital expenditure incurred up to 31.3.2014, as admitted by the Commission after prudence check at the time of truing up.*
>
> *Provided that the generating company or the transmission licensee, as the case may be, may in its discretion make an application before the Commission one more time prior to 2013-14 for revision of tariff."*

4. The petitioner in this petition has claimed revision of tariff for 2012-14 based on the actual additional capital expenditure incurred during the period 2012-14 after truing up exercise in terms of Regulation 6(1) of the 2009 Tariff Regulations. Accordingly, the annual fixed charges claimed by the petitioner for the period 2012-14 are as under:

(₹ in lakh)

	2012-13	2013-14
Return on Equity	39115.87	41474.07
Interest on Loan	14909.66	12788.17
Depreciation	26755.88	26787.71
Interest on Working Capital	2559.85	2615.57
O & M Expenses	17516.36	18518.30
Total	**100857.63**	**102183.82**

Capital cost

5. Regulation 7 (1) (a) of the 2009 Tariff Regulations provides as under:

"7. Capital Cost. (1) Capital cost for a project shall include: (a) the expenditure incurred or projected to be incurred, including interest during construction and financing charges, any gain or loss on account of foreign exchange risk variation during construction on the loan - (i) being equal to 70% of the funds deployed, in the event of the actual equity in excess of 30% of the funds deployed, by treating the excess equity as normative loan, or (ii) being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed, up to the date of commercial operation of the project, as admitted by the Commission, after prudence check;"

6. The Commission in order dated 13.2.2014 in Petition No. 141/GT/2013 had considered the closing capital cost of ₹515196.48 lakh as on 31.3.2012. Accordingly, this capital cost of ₹515196.48 lakh has been considered as the opening capital cost as on 1.4.2012 for revision of tariff for 2012-14.

Actual Additional Capital Expenditure

7. Regulation 9 (2) of the 2009 Tariff Regulations provides as under:

"9. (2) The capital expenditure incurred or projected to be incurred on the following counts after the cut-off date may, in its discretion, be admitted by the Commission, subject to prudence check:

(i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court;

(ii) Change in law;

(iii) Deferred works relating to ash pond or ash handling system in the original scope of work;

(iv) In case of hydro generating stations, any expenditure which has become necessary on account of damage caused by natural calamities (but not due to flooding of power house attributable to the negligence of the generating company) including due to geological reasons after adjusting for proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation; and

JSW Hydro Energy Limited

(v) In case of transmission system any additional expenditure on items such as relays, control and instrumentation, computer system, power line carrier communication, DC batteries, replacement of switchyard equipment due to increase of fault level, emergency restoration system, insulators cleaning infrastructure, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system:

Provided that in respect sub-clauses (iv) and (v) above, any expenditure on acquiring the minor items or the assets like tools and tackles, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, fans, washing machines, heat convectors, mattresses, carpets etc. brought after the cut-off date shall not be considered for additional capitalization for determination of tariff w.e.f. 1.4.2009.

(vi) In case of gas/liquid fuel based open/ combined cycle thermal generating stations, any expenditure which has become necessary on renovation of gas turbines after 15 year of operation from its COD and the expenditure necessary due to obsolescence or non-availability of spares for successful and efficient operation of the stations. Provided that any expenditure included in the R&M on consumables and cost of components and spares which is generally covered in the O&M expenses during the major overhaul of gas turbine shall be suitably deducted after due prudence from the R&M expenditure to be allowed.

(vii) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receipt system arising due to non-materialization of full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station.

(viii) Any un-discharged liability towards final payment/withheld payment due to contractual exigencies for works executed within the cut-off date, after prudence check of the details of such deferred liability, total estimated cost of package, reason for such withholding of payment and release of such payments etc.

(ix) Expenditure on account of creation of infrastructure for supply of reliable power to rural households within a radius of five kilometres of the power station if, the generating company does not intend to meet such expenditure as part of its Corporate Social Responsibility."

8. The projected additional capital expenditure allowed for the period 2012-14 in order dated 13.2.2014 in Petition No.141/GT/2013 and the actual additional capital expenditure claimed in this petition are as under:

(₹in lakh)

	2012-13	2013-14
Projected additional capital expenditure allowed in order dated 13.2.2014 in Petition No. 141/GT/2013	870.52	195.00
Actual additional capital expenditure claimed	645.05	519.37

9. The re-conciliation of actual additional capital expenditure claimed in this petition with respect to additional capital expenditure as per books of accounts duly certified by auditor for the period 2012-13 and 2013-14 is as under:

(₹ in lakh)

Sl No		2012-13	2013-14
1	**Additional Capitalization (claimed for purpose of tariff)**		
(a)	**Additions**		
i	Additional Capitalization against works projected and allowed for additional capitalization for 2012-13 and 2013-14	482.81	24.77
ii	Additional Capitalization against works projected and allowed in the years 2009-10, 2010-11 and 2011-12	205.96	371.39
iii	Additional capitalization not projected/not allowed but capitalized due to actual site requirements (being claimed for additional capitalization)	36.82	3939.29
	Total (a)	**725.59**	**4335.45**
(b)	**Deletion / Deduction**		
i	Deletion of assets on account of sale of assets/assets written off during the year	(-) 56.57	(-) 7.31
ii	Deletion of assets on account of rectification (item wrongly capitalized in earlier years)	0.00	(-) 17.97
iii	Consumption of capital spares (deletion to be claimed)	0.00	(-) 33.06
iv	Transfer to Obsolete account	(-2.95	0.00
	Total (b)	**(-) 59.52**	**(-) 58.34**
(c)	**Net additional capitalization to be claimed (c)=(a)+(b)**	**666.07**	**4277.11**
2	**Additional Capitalization (not claimed for the purpose of tariff)**		
(d)	**Addition**		
i	Not projected/not allowed but capitalized due to actual site requirements (not being claimed for additional capitalization / Under exclusion category)	1092.78	69.32
ii	Transfer to obsolete	2.95	0.00
iii	Inter head adjustments	8.73	0.00
iv	IUT Transfer	5.10	0.00
	Total (d)	**1109.57**	**69.32**
(e)	**Deletion**		
i	Consumption of capital spares (deletion not be claimed/Under exclusion category)	(-) 84.20	(-) 284.96
ii	Deletion under exclusion category (deletion for minor assets/tools/tackles etc. which were not considered for additional capitalization)	(-)1.87	0.34
iii	Inter head adjustments	(-) 7.11	0.00
iv	IUT Transfer	(-) 2.33	0
	Total (e)	(-) **95.50**	(-) **285.30**
(f)	**Net additional capitalization under Exclusion category (f)=(d)+(e)**	**1014.06**	(-) **215.98**
(g)	Net additional capitalization (including IUT) as per books of accounts (g)=((c)+(f)	1680.14	4061.13
3	**Net Additional Capitalization claimed for tariff purpose**		
	Net additional capitalization as above (c)	666.07	4277.11
	Add: Assumed deletions	(-) 16.97	(-) 1.89
	Add: Liability existing as on 31.3.2009 and discharged	0.10	0.00
	Add : Liability discharged during the year for additional capitalization in 2009-14	49.43	58.48
	Less: Un-discharged liability for the additional capitalization 2009-14	53.59	3814.34
	Net additional capital expenditure claimed	**645.05**	**519.37**

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10. The respondent, UPPCL in its reply affidavit dated 2.9.2014 has submitted that the additional capital expenditure due to actual site requirement which were not allowed /projected (inverter, replacement of equipment etc.,) claimed during the years 2012-13 and 2014 may not be allowed since the same were neither allowed nor projected earlier otherwise the process of prudence check will have no meaning. It has also submitted that the petitioner may meet the said expenditure out of the O&M expenses allowed. Further, the respondent vide reply affidavit dated 7.1.2015 has submitted that the petitioner may be directed to submit the audited certificate of the payment of amount towards electricity charges during construction period but not capitalized upto 2012-13. It has also submitted that the justification of balance amount of ₹151.11 lakh included in the amount of ₹3939.29 lakh in 2012-14 may be submitted by the petitioner. In response, the petitioner 24.9.2014 has submitted that the additional capital expenditures claimed for 2012-13 are required for successful operation of the generating station and as per site conditions. It has also submitted that all the assets are capital assets and may be allowed by the Commission. The petitioner vide reply affidavit dated 4.2.2015 has clarified that out of the additional capitalization of ₹3939.29 lakh in 2013-14, an amount of ₹3788.18 lakh is on account of electricity bill payable to J&K during construction of the project. It has also submitted that this amount was under dispute and has been settled in 2013-14. The petitioner has further stated that the amount is still under un-discharge and will have not effect in tariff as the same is not paid as indicated earlier. The petitioner has further clarified that the balance amount is on account of purchase of additional equipments during the year.

11. The respondent, BRPL has submitted that some of the claim of the petitioner for ₹36.82 lakh in 2012-13 are minor in nature and some are in the nature of replacement and hence not permissible under the 2009 Tariff Regulations. As regards the claim of the petitioner for 2013-14, the respondent has submitted that the claim towards electricity charge shall be booked in the revise cost estimates of the project since it pertains to the pre-commissioning period. It has also submitted that the balance items covered under Regulation 9(2)(iv) of the 2009 Tariff Regulations

are minor and/or in the nature of tools and tackles and are not permissible under the said regulations. In response the petitioner in its rejoinder has submitted that the replacement of inverter has been necessitated due to unavailability of spare parts. It has also submitted the DG set which was earlier part of capital cost was deleted from the balance sheet by mistake in 2011-12 and was reinstated during 2012-13. The petitioner has also clarified that the electricity charges claimed has been indicated as under un-discharged liability which has been discharged in 2014-15.

12. The submissions of the parties have been considered. Based on the above reconciliation, the year-wise admissibility of the additional capital expenditure under various heads is discussed in the subsequent paragraphs.

Additions against works already approved

2012-13

(₹in lakh)

Sl. No.	Assets/works	Projected expenditure allowed in order dated 13.2.2014	Actual expenditure claimed	Remarks on admissibility
1	Landscaping at Power House & HRT area including reclamation of muck disposal area	0.00	94.70	The Commission in order dated 30.5.2011 in Petition No. 60/2010 had allowed the total amount of ₹ 211.50 lakh (₹21.50 lakh in 2009-10, ₹70.00 lakh in 2010-11, ₹70.00 lakh in 2011-12 and ₹50.00 lakh in 2012-13).Against this, the petitioner has claimed total additional capital expenditure of ₹94.70 lakh under this head. Since the assets/works were allowed on projection basis in order dated 30.5.2011, the actual expenditure same **is allowed** on prudence check.
2	Treatment of sinking zone at Dam and regarding of approach road leading to Dam	150.00	165.52	The Commission in order dated 30.5.2011 in Petition No. 60/2010 had allowed the capitalization of these assets/works on projected

3	Hill slope stabilization at both bank of Dam (Protection of left bank (downstream) of Dul Dam by way of providing concrete abutment near T-402.	50.00	186.72	basis. However, we are of the considered view that these works are of recurring nature and the expenses towards these works shall be met from O&M expenses allowed to the generating station. Accordingly, the actual additional capital expenditure claimed is **not allowed.** However, in case the petitioner is not able to meet the expenses from the admissible O&M expenses, it is at liberty to approach the Commission with proper justification at the time of truing-up of tariff.
4	Payment of compensation of land	5.00	35.86	Since the assets/works were allowed on projection basis in order dated 30.5.2011, the actual expenditure same **is allowed** on prudence check.
	Total claimed		**482.81**	
	Total allowed			**130.56**

2013-14

(₹in lakh)

Sl. No.	**Assets/works**	**Projected expenditure allowed in order dated 13.2.2014**	**Actual expenditure claimed**	**Remarks on admissibility**
1	Treatment of sinking zone at Dam and approach road leading to Dam	150.00	6.98	The Commission in order dated 30.5.2011 in Petition No. 60/2010 had allowed the capitalization of these assets/works on projected basis. However, we are of the considered view that these works are of recurring in nature and the expenses towards these works shall be met from O&M expenses allowed to the generating station. Accordingly, the actual additional capital expenditure claimed is **not allowed.** However, in case the petitioner is not able to meet the expenses from the admissible O&M expenses, it is at liberty to approach the Commission with proper justification at the time of truing-up of tariff.
2	Treatment of sinking zone at Tamuruchi, Dul		12.95	
3	Hill slope stabilization at both bank of Dam. (Construction of retaining wall for stabilization of hill slope near vent shaft.)	5.00	4.84	
	Total claimed		**24.77**	
	Total allowed			**0.00**

Works allowed in 2009-10, 2010-11 and 2011-12 but capitalized in 2012-13 & 2013-14

13. The details of works/assets, the additional capital expenditure allowed for these works / actual additional capital expenditure against these works along with reasons for admissibility of the actual additional capital expenditure in terms of 2009 Tariff Regulations are as under:

2012-13

(₹in lakh)

Sl. No.	Assets/works	Projected expenditure allowed in order dated 13.2.2014	Actual expenditure claimed	Submissions of petitioner	Remarks for admissibility
1	Construction of additional block (ground floor) including electric wiring at KV, DPS Kishtwar	20.00	64.80	The petitioner has submitted that the actual cost has gone up due to the fact that additional space was required to accommodate growing number of students as well as for creating modern smart class room. The work was actually completed in 2012-13. Further, one more tender was added as per requirement by KV school for providing smart class room. It has been submitted that the work was awarded in 2011-12 but completed by vendor in 2012-13.	Considering the fact that the expenditure incurred is for the benefit/ welfare of the employees which in turn will contribute to the efficient operation of the project, the expenditure is **allowed** under Regulation 9(2)(iv) of the 2014 Tariff Regulations, on prudence check.
2	Construction of permanent boundary wall behind office complex at Chenab Nagar.	150.00	22.13	The Commission in order dated 30.5.2011 in Petition No. 60/2010 had allowed the total projected capitalization of ₹150 lakh (₹50.00 lakh in 2010-11 and ₹100.00 lakh in 2011-12). Against this, the total	Since the expenditure incurred is for the safety of the generating station which in turn will facilitate the successful and efficient operation of the generating station, the actual
3	Construction of security fencing at KV, Semina Colony and in the periphery of Chenab Nagar Sector-I.		22.01		

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4	Construction of security wall behind villa 81-85 & C-0 in Chenab Nagar, Sector-II.		8.75	expenditure in 2012-13 is ₹135.00 lakh including this expenditure of ₹5.01 lakh in 2010-11, ₹77.10 lakh in 2011-12 and ₹52.89 lakh in 2012-13.	expenditure is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations.
5	Undergrounding of power cable in A, B, C, D & S Type Qtrs, G. House and office area.	20.00	25.21	The Commission in order dated 30.5.2011 in Petition No. 60/2010 had allowed the total projected capitalization of ₹20.00 lakh in 2009-10. It has also submitted that the total expenditure incurred under this head up to 2012-13 is ₹25.21 lakh including this expenditure claimed in 2012-13. The work was awarded at lowest rates of bidder and escalation is above the awarded cost being higher than projected cost as per market rates.	Since the expenditure incurred is for the safety of the generating station which in turn will facilitate the successful and efficient operation of the generating station, the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations.
6	Laying of 150 mm dia GI pipe line for integrated water supply scheme of DPS Kishtwar.	10.00	1.92	The petitioner has submitted that the total the Commission in order dated 30.5.2011 in Petition No. 60/2010 had allowed the total projected capitalization of ₹10.00 lakh in 2010-11. It has also submitted that the actual expenditure claimed under this head is ₹ 1.92 lakh in 2012-13.	Considering the fact that the expenditure incurred is necessary for efficient and successful operation of the project, the actual expenditure is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations, on prudence check.

7	Providing & Fixing security fencing of right bank from central store to CISF line at Shalimar Nallah.	100.00	15.74	The petitioner has submitted that the total amount allowed under this head was ₹100.00 lakh. Out of this, the total expenditure under this head upto 2012-13 is ₹85.16 lakh including the present claim of ₹ 50.42 lakh in 2010-11 & ₹34.74 lakh in 2012-13). It has further submitted that the work was approved under the head 410301 and since work is of similar nature, the expenditure of sl no 6 & 7 above are clubbed with the expenditure of sl. no. 8 though sl no 6 & 7 belong to head 410325.	In consideration of the submissions and since the expenditure incurred is for the safety of the generating station which in turn will facilitate the successful and efficient operation of the generating station, the expenditure incurred is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations.
8	Construction of permanent security wall at diesel pump Shalimar		9.96		
9	Construction of permanent boundary wall at power house area near barrier no. 3 & above TRT gate.		9.04		
10	Construction of pucca morcha and watch tower at Semna, Shalimar and DSB.	46.20	4.40	The total amount allowed under this head was ₹46.20 lakh (₹16.20 lakh in 2009-10 and ₹30.00 lakh in 2010-11). The total expenditure under this head up to 2012-13 is ₹ 11.33 lakh including the present claim (₹6.93 lakh in 2009-10 & ₹ 5.37 lakh in 2012-13). It has further submitted that the work was approved under the head 410325 and since work is of similar nature, the expenditure of sl. no 9 & 10 are clubbed though sl. no 10 pertain to head 410328.	In consideration of the submissions and since the expenditure incurred is for the safety of the generating station which in turn will facilitate the successful and efficient operation of the generating station, the actual expenditure incurred of ₹5.37 lakh is **allowed** for the year under Regulation 9(2)(iv) of the 2009 Tariff Regulations
11	Security post/pucca morcha for Dul dam		0.97		
12	Chassis for fire	29.00	7.39	The petitioner has	In consideration of

	tender-4 KL TATA / SFC 709 EX BSIII/38 COWL			submitted that against amount allowed under this head amounting to total ₹29.00 lakh, the expenditure upto 2012-13 is ₹33.32 lakh including the present claim (₹8.20 lakh in 2009-10, ₹ 17.73 lakh in 2011-12, ₹7.39 lakh in 2012-13. It has been further submitted that the increase on account of purchase of two fire tenders as per requirement of disaster management.	the submissions and since the expenditure incurred is for the safety of the generating station which in turn will facilitate the successful and efficient operation of the generating station, the expenditure incurred is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations
13	Chassis for truck TATA model SE 1613 TC 42	11.20	13.62	The petitioner has submitted that against the total approved amount of ₹11.20 lakh in the year 2009-10 by CERC, expenditure under this head upto 2012-13 is ₹13.62 lakh .	Considering the fact that the expenditure incurred is necessary for efficient and successful operation of the project, the actual expenditure is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations
	Total claimed		**205.96**		
	Total allowed				**205.96**

2013-14

(₹in lakh)

Sl. No.	Assets/works	Projected expenditure allowed in order dated 13.2.2014	Actual expenditure claimed	Submissions of petitioner	Remarks on admissibility
1	Security wall for 33/11KV near power house area at Hasti	100.00	39.40	The petitioner has submitted that expenditure under this head up to 2013-14 is ₹124.55 lakh including the present claim (₹50.42 lakh in 2010-11, ₹34.74 lakh in 2012-13 & ₹39.40 lakh in 2013-14). It has also submitted that the work has been awarded through open tender on lowest cost basis. The petitioner has further submitted that the increase is attributed to rise in prevailing market rates. It has stated that the work was taken up in phases since the area was encroached and removal of encroaches was required with the help of local Authority. The petitioner has submitted that there are still some places where security wall is required and for security of establishments of power station, the IB and CISF has recommended the security fencing at various critical locations. It has also submitted that the same work will spill over to the period 2014-19.	In consideration of the submissions and since the expenditure incurred is for the safety of the generating station which in turn will facilitate the successful and efficient operation of the generating station, the expenditure actually incurred is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations

2	Channelization of nallah for landscaping of muck disposal area at Hasti	211.50	4.43	The petitioner has submitted that the total amount allowed by Commission's order dated 30.5.2011 is ₹211.50 lakh in 2009-13 and the total expenditure incurred under this head upto 2013-14 is ₹99.13 lakh including the claim. The petitioner has stated that the work could be started only after all the temporary structure in the area was removed, work is under progress.	Since the asset/works were approved by the Commission vide order dated 30.5.2011 in petition No. 60/2010 and the same is necessary for efficient operation of the generating station, the actual expenditure of ₹9.93 lakh incurred for the year is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations after prudence check.
3	Two room accommodation building for security bhawan near Chenab Bhawan	10.00	6.52		
4	Construction of mess and store at CISF HQ at Shalimar, DPS, Kishtwar	46.20	9.38	The petitioner has submitted that the total expenditure under this head up to 2013-14 is 16.31 lakh including this claim (₹6.93 lakh in 2009-10 & 9.38 lakh in 2013-14).	Since the asset/ work had been approved by Commission's order dated 30.05.2011 in petition no. 60/2010, the actual expenditure incurred is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations after prudence check
5	Construction of municipal chamber for dumping and segregation of MSW at DSB Colony.	150.00	11.61	The petitioner has submitted that the total approved amount by Commission under this head was ₹150 lakh (₹75 lakh in 2010-11 & ₹75 lakh in 2011-12). The total expenditure under this head upto 2013-14 is 14.11 lakh	Since the asset/ work had been approved by Commission's order dated 30.05.2011 in petition no. 60/2010, the actual expenditure incurred is

				including this claim(₹2.5 lakh in 2011-12 & 11.61 lakh in 2013-14) .	**allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations after prudence check.
6	Boundary wall in semna colony along outer periphery of OTC C-Bhawan and Dulhasti Bhawan	150.00	20.07	The petitioner has submitted that the total expenditure under this head up to 2013-14 is ₹155.07 lakh (₹5.01 lakh in 2010-11, ₹77.10 lakh in 2011-12 & ₹52.89 lakh in 2012-13 & ₹20.07 lakh in 2013-14). The work awarded through open tender on lowest cost basis. The increase is only due to increase in prevailing market rates.	Since the asset/ work had been approved by Commission's order dated 30.05.2011 in petition no. 60/2010, the actual expenditure incurred is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations after prudence check
7	Extension ramp in T-402 at Dul Dam site DPS Kishtwar	15.00	6.24	The petitioner has submitted that the total approved amount by Commission under this head was ₹15 lakh in 2010-11. The total expenditure under this head upto 2013-14 is ₹6.24 lakh including this claim	
8	Invert concrete work in surge shaft adit and surge escape gallery at Hasti	40.00	21.96	The petitioner has submitted that the total approved amount by Commission under this head was ₹40 lakh (₹10 lakh in 2009-10 & ₹30 lakh in 2010-11). The Total expenditure under this head upto 2013-14 is ₹39.21 lakh including this claim (₹17.25 lakh in 2011-12 & ₹21.96 lakh in 2013-14)	
9	Reclamation of muck disposal area in d/s of HRT adit	211.50	18.04	The petitioner has submitted that the total expenditure under this head upto 2013-14 is 112.74 lakh including this claim (₹94.70 lakh in 2012-13 & ₹18.04 lakh in 2013-14).	Since the asset/ work had been approved by Commission's order dated 30.05.2011 in petition no. 60/2010, the actual expenditure

					incurred is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations after prudence check
10	Loader cum excavator, Make Escorts Model DIGMAX-II 4X4	20.00	22.21	The petitioner has submitted that the total approved amount by CERC under this head was ₹20 lakh in 2009-10.The Total expenditure under this head upto 2013-14 is 22.21 lakh including this claim'	Since the asset/ work had been approved by Commission's order dated 30.05.2011 in petition no. 60/2010, the actual expenditure incurred is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations after prudence check
11	Rough terrain hydraulic mobile crane 20MT-Make: TIL Model: HUSKY 620 with mandatory tools and spares	131.00	118.17	The petitioner has submitted that the total approved amount by Commission under this head was ₹131 lakh in 2009-10.The Total expenditure under this head upto 2013-14 is ₹118.17 lakh including this claim'	
12	Mobile Crane: 12.5 MT, 360 Degree Slew type along with stand. Tools & FOC Spares, Escorts, IF 15	115.00	81.95	The petitioner has submitted that the total approved amount by CERC under this head was ₹131 lakh in 2009-10.The Total expenditure under this head upto 2013-14 is ₹118.17 lakh including this claim'	
13	Freight charges on mobile crane : 12.5 MT, 360 Degree SLEW Type		2.25		
14	Hydraulic Mobile Floor Crane 3T, United Make		1.89		
15	Tata Winger (Ambulance) HI Roof (A.C.), 3200 MM Wheel Base EURO-III	20.50	7.27	The petitioner has submitted that the total approved amount by CERC under this head was ₹20.50 lakh in 2011-12.The Total expenditure under this head upto 2013-14 is ₹7.27 lakh including this claim'	
	Total claimed		**371.39**		
	Total allowed				**371.39**

Capital expenditure not projected/allowed by the Commission, but incurred and claimed

14. The details of the actual additional capital expenditure incurred against new works/ assets along with admissibility of the actual additional capital expenditure in terms of 2009 Tariff Regulations is as under:

2012-13

(₹in lakh)

Sl. No.	Assets/works	Actual Expenditure Claimed	Submissions of petitioner	Remarks for admissibility
1	Inverter, capacity-10KVA, Input - 110VDC, Output - 240V AC, Single phase, 50Hz	21.32	The petitioner has submitted that this was taken on replacement of existing one. Due to non availability of spares the existing inverter was beyond repair. The gross value of existing inverter is not available. Derived original value of the asset is ₹15.03 lakh considering the de-accelerate rate @ 6% p.a.	As the asset/ work is considered necessary for efficient and successful operation of the generating station, the expenditure **is allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations. The de-capitalized value of the old asset is considered under "Assumed Deletions".
2	Energy Conserver , 7.5 KVA, 3 phase, 4 wire, 50 Hz (street light controller)	0.81	The petitioner has submitted that, during the energy audit suggestion for energy saving was recommended. In compliance to this it was decided to procure and install energy conserver in street light circuit for energy saving.	The expenditure is in nature of minor assets and hence **not allowed**
3	Tata Tipper 1616/32 BS III,SK 4.5 cubic meter	14.63	The petitioner has submitted that, tripper is taken against the replacement of TATA Truck.	As the asset/ work is considered necessary for efficient and successful operation of the generating station, the expenditure **is allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations. The

				de-capitalized value of the old asset is considered under "Assumed Deletions".
4	40 KVA Generator	0.05	The petitioner has submitted that the asset was traced & reinstated in books. Asset shown shortage during 2011-12 & deleted from asset.	From the submission of the petitioner it is not clear as to whether the traced asset is useable. In view of this, the expenditure being minor, the same is **not allowed**.
	Total claimed	**36.82**		
	Total allowed			**35.95**

2013-14

(₹ in lakh)

Sl. No.	Assets/works	Actual Expenditure Claimed	Submissions of petitioner	Remarks for admissibility
1	Tailrace Tunnels	44.68	The petitioner has submitted that electricity charge of ₹37.88 crore pertaining to construction period. Since this amount pertains to pre-commissioning period, this amount has been distributed among the major head and has been claimed under additional capitalization. It is pertinent to mention that this was also disclosed under the head of Contingent liability in the tariff petition filed as on COD. In reply to the information sought by the Commission vide ROP of the hearing	After prudence check of the details of such deferred liability, total estimated cost of package, reason for such withholding, it is noticed that while capitalization has been made in the year 2013-14 for an amount of ₹37.88 crore, the same has been shown as un-discharged liability as on 31.3.2014. Accordingly, the capitalization
2	Power Tunnels and Pipelines	1530.60		
3	Building containing hydro electric generating plant	177.90		
4	Dams and Barrages	208.60		
5	Hydro mechanical Works - Dams and Barrages	236.64		
6	Hydro mechanical Works- Tunnels and canals	155.27		
7	Hydro mechanical Works- Tail Race including draft tube	6.37		
8	Main generating Equipment	652.91		
9	Generator set up	148.96		

	Transformer		dated 17.11.2015, the petitioner vide its affidavit dated 28.01.2016 has submitted that the total amount settled between NHPC & JKPDD vide Minutes of Meeting dated 28.11.2013 was ₹96.29 crore pertaining to pre-commissioning period capitalized to various assets heads and rest amount ₹58.41 crore was charged as revenue expenditure under the head "Electricity-Expenditure". The balance amount of ₹37.88 crore is capitalized under Regulation 9(2)(viii) but shown as "un-discharged liability" in 2013-14.	of the amount is allowed under Regulation 9(2)(viii) of the 2009 Tariff Regulations.
10	Cooling water systems	36.10		
11	EHV Switchgear Systems	243.46		
12	DC Systems/ Battery Systems	52.58		
13	Power and control cables	37.27		
14	Air conditioning and ventilation systems	25.57		
15	Power line carrier communication systems	16.13		
16	Control, Metering and protection systems	123.57		
17	Auxiliary and ancillary systems	27.92		
18	Miscellaneous power plant equipments (through capitalization of major works)	63.65		
19	Star delta control panel for submersible pump 400 M3/H AT 65 M head, model BCTPL XFP-200M (2 nos)	7.14	The petitioner has submitted that the Installation of three nos. dewatering pumps along with pipeline was done to enhance the dewatering capacity, to avoid any flooding situation in powerhouse and dewatering of Turbine during annual maintenance.	Since the asset is considered necessary for successful and efficient operation of the generating station, the expenditure is allowed under Regulation 9(2)(iv) of the 2009 Tariff Regulations
20	Star delta control panel for submersible pump 300M3/H AT 65M head, model BCTPL XFP-200M	2.81		
21	Sub-slurry/Non Clog Pump 150HP, 300M3/H AT 65M head & 40M cable,	19.10		
22	Sub. Slurry/Non Clog Pump 180HP,400M3/H 65M head & 40M cable, Lift, Chain, FLYGT, XFP-200M-CH2,50 HZ (2 Nos)	43.41		
23	Sub. Slurry/ Non clog Pump 180HP,400M3/H 65M HEAD & 40M Cable, Lift, Chain, FLYGT, XFP-200M-CH2,50HZ	19.92		

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24	Treatment of sinking zone at Tamuruchi, Dul	17.97	The petitioner has submitted that this is a rectification entry and corresponding deletion is shown in 2012-13.	Since this rectification entry is for the asset/work which has not been allowed in this order in 2013-14, the rectification entry is **not allowed**
25	Hoist- Manual,6 Ton Capacity, 3.0 M Lift	2.29	The petitioner has not submitted any details regarding the claim.	The expenditure is in nature of tools & tackles and hence **not allowed**
26	Portable diesel filtration Cart equipped with motorized pump	1.68		
27	Hollow plunger hydraulic cylinder, Cap 10T	6.42		
28	Ultrasonic level transmitter with transmitter with transducer and hand held programmer -MR200	1.44		
29	Dewatering Pump (18.65 KW, 36.0 AMP 415V 3-Phase, 50 Hz)	8.67	The petitioner has submitted that, though power house dewatering system is operating but no provision has been kept earlier for dewatering of different pits for power house like transformer pit, turbine pit, MIV Servo motor pit. Further for inspection of radial gate buckets, dewatering is essential for which no pump was available. As such these pumps have been procured.	Since the asset is considered necessary for successful and efficient operation of the generating station, the expenditure incurred is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations.
30	Transformer Oil Filtration Plant, ,500 LPH Capacity, VPI Make	4.54	The petitioner has submitted that, it is required for filtration of transformer oil installed in 33/II KV substation and Distribution transformer.	

31	Capitalization to S Type quarter.	12.49	The petitioner has submitted that as per new guidelines of contingent liability, provision has been made for management agreed amount payable to the contractor for construction of S-type quarter of generating station	The petitioner has claimed the expenditure under Regulation 9(2)(viii) of the 2009 Tariff Regulations It is noticed that the actual payment could not be made in the year 2013-14 as an amount of ₹12.49 lakh has been shown as un-discharged liability. Accordingly, the expenditure incurred is **allowed.**
32	Chassis for tuck TATA Model SE 1613 TC 42	3.23	The petitioner has submitted that the expenditure is for replacement of deleted such type of asset in the year 2010-11.	Since the asset is considered necessary for successful and efficient operation of the generating station, the expenditure incurred is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations. The de-capitalized value of the old asset is considered under "Assumed Deletions".
	Total claimed	**3939.29**		
	Total allowed			**3909.49**

Deletions

15. The following year-wise expenditure has been de-capitalized by the petitioner on account of Sale of Assets/Assets written off/ new assets purchased during the year, replacement and deemed deletion. The details of deletions claimed are as follows:

(₹in lakh)

	2012-13	2013-14
Deletion of Assets on account of Sale of Assets/Assets written off during the year	(-) 56.57	(-) 7.31
Deletion of Assets on account of Rectification (item wrongly capitalized in earlier years)	0.00	(-) 17.97
Consumption of capital spares (deletion to be claimed)	0.00	(-) 33.06
Transfer to Obsolete Account	(-) 2.95	0.00
Total	**(-) 59.52**	**(-) 58.34**

16. The petitioner has de-capitalized an amount of (-) ₹17.97 lakh in 2013-14 on account of rectification for the expenditure on item wrongly capitalized in earlier years (Treatment of sinking zone at Tamuruchi, Dul). Since the capitalization of this amount has not been allowed, the corresponding deletion has also been excluded for the purpose of tariff to avoid double deduction.

17. As the corresponding assets other than the above do not render any useful service in the operation of the generating station, the de-capitalization of the above said expenditure as reflected in the books of accounts has been allowed for the purpose of tariff. Accordingly, the following amounts have been deleted for the purpose of tariff:

(₹in lakh)

	2012-13	2013-14
Deletion of assets on account of Sale of assets/assets written off during the year	(-) 56.57	(-) 7.31
Consumption of capital spares (deletion to be claimed)	0.00	(-) 33.06
Transfer to Obsolete a/c	(-) 2.95	0.00
Total	**(-) 59.52**	**(-) 40.37**

Exclusions in additions (incurred, capitalized in books but not to be claimed for tariff purpose)

18. The following year-wise expenditure has been incurred by the petitioner on replacement of minor assets, purchase of capital spares, purchase of miscellaneous assets, additions on inter-unit transfers, minor assets, etc.,

(₹in lakh)

	2012-13	2013-14
Exclusions in additions (incurred, capitalized in books but not to be claimed for tariff purpose)	1109.57	69.32

19. The expenditure incurred towards procurement/replacement of minor assets and procurement of capital spares after the cut-off date is not permissible for the purpose of tariff in terms of the 2009 Tariff Regulations. Accordingly, the petitioner has considered these additions under exclusion category. As such, the exclusions of the positive entries under the head are in order and are allowed.

Exclusions in deletions (de-capitalized in books but not to be considered for tariff purpose)

20. The petitioner has de-capitalized following amounts in books of accounts pertaining to capital spares, minor assets such as computers, office equipment, furniture, ladders, pumps, fixed assets of minor value less than ₹5000, etc., as these are not in use on account of their becoming unserviceable/obsolete and also deletion on account of inter-unit transfer of minor assets, as under :

(₹in lakh)

	2012-13	2013-14
Consumption of capital spares (deletion to not be claimed/Under exclusion category)	(-) 84.20	(-) 284.96
Deletion under exclusion category (deletion for minor assets/tools/tackles etc. which are not considered for additional capitalization)	(-) 1.87	(-) 0.34
Inter head adjustments	(-) 7.11	0.00
IUT Transfer	(-) 2.33	0
Total	**(-) 95.50**	**(-) 285.30**

21. The petitioner has prayed that the negative entries may be ignored/ excluded for the purpose of tariff as the corresponding positive entries for purchase of such assets are not being allowed for the purpose of tariff in terms of the provisions of the 2009 Tariff Regulations. In support of this, the petitioner has referred to the observations of the Commission in order dated 7.9.2010 in Petition No.190/2009 as under:

> *"20. After careful consideration, we are of the view that the cost of minor assets originally included in the capital cost of the projects and replaced by new assets should not be reduced from the gross block, if the cost of the new assets is not considered on account*

of implication of the regulations. In other words, the value of the old assets would continue to form part of the gross block and at the same time the cost of new assets would not be taken into account. The generating station should not be debarred from servicing the capital originally deployed on account of procurement of minor assets, if the services of those assets are being rendered by similar assets which do not form part of the gross block."

22. The respondent, BRPL vide its reply dated 30.12.2015 has submitted that the minor assets/spares which are de-capitalized is required to be adjusted in the capital cost as per proviso under Regulation 7(1)(c) of the 2009 Tariff Regulations. It has also submitted that the order dated 7.9.2010 cannot undermine the express provisions of the proviso to Regulation 7(1)(c) of the 2009 Tariff Regulations. Referring to the judgment of the Tribunal dated 1.7.2014 in Appeal No.169/2013, the respondent has submitted that the Commission has no power to add, substitute or delete any provisions of the regulation. Accordingly, the respondent has stated that the order dated 7.9.2010 followed by the petitioner is not applicable on this issue and the same may be rejected by the Commission.

23. We have examined the matter. It is noticed that the provisions of both the 2004 and the 2009 Tariff Regulations provide that the expenditure on minor items/assets, tools and tackles etc procured after the cut-off date shall not be considered for additional capitalization for determination of tariff. The minor assets are not considered as capital assets and are not permitted to be capitalised after the cut-off date. In our view, since the cost of new assets would not be taken into account by implication of the regulations, the value of old assets should be permitted to continue to form part of the gross block. In other words, if the cost of the new assets is not considered on account of implication of the regulations, the cost of minor assets originally included in the capital cost of the projects and replaced by new assets should not be reduced from the gross block. The generating station should not be debarred from servicing the capital originally deployed on account of procurement of minor assets, if the services of these assets are being rendered by similar assets which do not form part of the gross block. In this background and in line with the decision of the

Commission in order dated 7.9.2010, the negative entries corresponding to the deletion of minor assets are allowed to be excluded/ ignored for the purpose of tariff.

24. The petitioner has excluded amounts of (-) ₹84.20 lakh and (-) ₹284.96 lakh for the years 2012-13 and 2013-14 respectively for de-capitalization of capital spares. As regards the prayer of the petitioner for exclusion of negative entries corresponding to de-capitalization of capital spares, it is observed that the expenditure on capital spares are not allowed to be capitalized after the cut-off date in terms of the 2009 Tariff Regulations. While the recovery of expenditure on capital spares is allowed through O&M expenses on consumption, the recovery of additional expenditure on minor assets beyond the cut-off date is neither allowed to be capitalized nor permissible under O&M expenses. Hence, the observations of the Commission in order dated 7.9.2010 cannot be made applicable in respect of de-capitalization of spares. Accordingly, the claim of the petitioner for exclusion of negative entries arising out of de-capitalization of capital spares is justifiable provided that the de-capitalized spares are the ones which were not considered in the capital base for the purpose of tariff in the year of capitalization. On verification of the details in the Petition filed by the petitioner for the period 2009-12 and this petition, it is observed that the capital spares de-capitalized in books during the period 2012-14 are the ones which were not allowed in the capital cost for the purpose of tariff. In other words, positive entries arising out of their purchase were also excluded/ ignored for the purpose of tariff. In view of the above discussions, the amounts have been allowed to be excluded/ ignored for the purpose of tariff. The exclusion of negative entries arising due to inter-head adjustments is also allowed as the positive adjustments have also been excluded/ ignored. Similarly, exclusion of negative entries arising due to inter unit transfer of minor are allowed as the capitalization of these minor assets are not allowed after the cut-off date. Accordingly, the following amounts have been excluded/ ignored for the purpose of tariff as under.

(₹in lakh)

	2012-13	**2013-14**
Exclusions in additions	1109.57	69.32
Exclusions in deletions	(-) 95.50	(-) 285.30
Total exclusions allowed	**1014.07**	**(-) 215.98**

Assumed Deletions

25. As per consistent methodology adopted by the Commission, expenditure on replacement of assets, if found justified is allowed for the purpose of tariff provided that the capitalization of the said asset is followed by the de-capitalization of the original value of the old asset. However, in certain cases where de-capitalization is affected in books during the following years, to the year of capitalization of new asset, the de-capitalization of the old asset for the purpose of tariff is shifted to the very same year in which the capitalization of the new asset is allowed. Such de-capitalization which is not a book entry in the year of capitalization is termed as "Assumed deletion". The amounts considered by the petitioner under this head are as under:

(₹in lakh)

2012-13	2013-14
(-)16.97	(-)1.89

26. It has been observed that the petitioner has considered de-capitalization of (-) ₹15.03 lakh and (-) ₹1.94 lakh against the replacement of Inverter and Tata Tipper respectively during the year 2012-13. Considering the fact that the plant is only 7 years old, the de-capitalized value furnished by the petitioner for these assets seems to be on the lower side. Similarly, the gross value of (-) ₹1.89 lakh against the de-capitalization of Chassis for truck TATA under assumed deletions in 2013-14 is not acceptable. Therefore, as per consistent methodology adopted by the Commission for arriving at the fair value of the de-capitalized asset, i.e. escalation rate of 5 % per annum from the COD has been considered in order to arrive at the gross value of old asset in comparison to the cost of new asset. In view of the above, the assumed deletion considered for the purpose of tariff for the period 2012-14 are as follows:

(₹in lakh)

	Additional capitalization claimed	De- capitalization claimed	De-capitalization considered
2012-13			
Inverter, capacity-10KVA	21.32	(-) 15.03	(-) 16.70
Tata Tipper	14.63	(-) 1.94	(-) 11.46
Total	**35.95**	**(-) 16.97**	**(-) 28.17**
2013-14			
Chassis for truck TATA	3.23	(-) 1.89	(-) 2.41
Total	**3.23**	**(-) 1.89**	**(-) 2.41**

Un-discharge and discharge of liabilities

27. The petitioner has submitted the details of un-discharged liabilities in the actual additional capital expenditure for 2012-14 and discharge of liabilities as under:

(₹in lakh)

	2012-13	2013-14
Liability existed as on 31.3.2009 discharged during the year	0.10	0.00
Liability discharged during the year for additional capital expenditure in 2009-14	49.43	58.48
Un-discharged liability in additional capital expenditure for 2009-14	53.59	3814.34

28. The un-discharged liabilities and the discharge of liabilities as furnished by the petitioner as above have been considered for working out the admissible capital expenditure for the period 2012-14. Accordingly, the actual additional capital expenditure allowed for the period 2012-14 for the purpose of tariff is as under:-

(₹in lakh)

	2012-13	2013-14
Capitalization against works projected and allowed for additional capital expenditure	130.56	0.00
Capitalization against works projected and allowed in previous year (2009-10, 2010-11 & 2011-12)	205.96	371.39
Not projected/not allowed but capitalized due to actual site requirements	35.95	3909.49
Total additions allowed **(a)**	**372.46**	**4280.88**
Deletions allowed **(b)**	(-) 59.52	(-) 40.37
Assumed deletions considered **(c)**	(-) 28.17	(-) 2.41
Total additional capital expenditure allowed before un-discharged/ discharged liabilities **(d)=(a)+(b)+(c)**	**284.77**	**4238.10**
Add: Liability existed as on 31.3.2009 discharged during the year (e)	0.10	0.00
Add: Liability discharged during the year for additional capital expenditure in 2009-14 **(f)**	49.43	58.48
Less: Un-discharged liability for additional capital expenditure in 2009-14 **(g)**	53.59	3814.34
Additional capital expenditure allowed (h)=(d)+(e)+(f)-(g)	**280.71**	**482.24**

Capital cost for 2012-14

29. The Commission in order dated 13.2.2014 in Petition No. 141/GT/2013 had considered the closing capital cost of ₹515196.48 lakh as on 31.3.2012. Accordingly, the capital cost considered for the purpose of the tariff is as under:

(₹in lakh)

	2012-13	2013-14
Opening capital cost as on 31.3.2012	515196.48	515477.19
Additional capital expenditure allowed	280.71	482.24
Closing capital cost	**515477.19**	**515959.43**

Debt-Equity Ratio

30. In accordance with clause (2) of Regulation 12 of the Tariff Regulations 2009, in case of the generating stations declared under commercial operation prior to 1.4.2009, debt-equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2009 is considered.

31. The Commission in order dated 9.3.2010 in Petition No. 204/2009 while approving tariff for the generating station for the period ending 31.3.2009 had directed as under:

> *"24. The petitioner has stated that the additional capital expenditure has been financed through internal resources. As per the approved revised cost estimate (RCE-II) of the Govt. of India letter dated 22.8.2008, corresponding to an approved capital cost of ₹522849.00 lakh, the equity was frozen at ₹198668.67 lakh. The Commission in its order dated 30.11.2009 in Petition No. 72/2009 had allowed the equity of ₹198668.67 lakh on the date of commercial operation for the purpose of tariff. Accordingly, any additional capital expenditure incurred after the date of commercial operation, till the admitted capital cost becomes ₹522849.00 lakh, is to be considered as debt. After consideration of the admitted additional capital expenditure of ₹3188.55 lakh and ₹567.58 lakh during the year 2007-08 and 2008- 09 respectively, the admitted capital cost for works out to ₹511037.92 lakh and ₹511605.50 lakh for the year 2007-08 and 2008-09 respectively, which is below the admitted capital cost of ₹522849.00 lakh. Accordingly, the admitted additional capital expenditure has been considered as debt for the purpose of tariff."*

32. In line with the above decision, the entire additional capital expenditure has been considered as debt, since the total estimated cost of completion is less than the approved Revised Cost Estimate of ₹522849.00 lakh.

Return on Equity

33. In terms of Regulation 15 (3) of the 2009 Tariff Regulations, the Return on Equity is computed as under:

(₹in lakh)

	2012-13	2013-14
Gross Notional Equity	198668.67	198668.67
Addition due to Additional Capitalization	0.00	0.00
Closing Equity	198668.67	198668.67
Average Equity	198668.67	198668.67

Return on Equity (Base Rate)	15.750%*	16.500%
Tax rate for the year	20.008%	20.961%
Rate of Return on Equity	19.689%	20.876%
Return on Equity	**39115.87**	**41474.07**

*Note-*Base rate for April- December 2012 @ 15.5% and for January-March 2013 @16.5%*

Interest on Loan

34. The opening gross normative loan as on COD of each unit has been arrived at in accordance with Regulation 16 of the 2009 Tariff Regulations. The weighted average rate of interest has been worked out on the basis of the actual loan portfolio of respective years applicable to the project. The repayment for the period 2009-14 has been considered equal to the depreciation allowed for the respective year. The interest on loan has been calculated on the normative average loan of the year by applying the weighted average rate of interest. Accordingly, Interest on loan has been calculated as under:

(₹in lakh)

	2012-13	**2013-14**
Gross Normative Loan	316527.81	316808.52
Cumulative Repayment	119111.75	145858.17
Net Loan-Opening	197416.07	170950.35
Repayment during the year	26746.43	26767.84
Addition due to Additional Capitalization	280.71	482.24
Net Loan-Closing	170950.35	144664.76
Average Loan	184183.21	157807.55
Weighted Average Rate of Interest on loan	8.09%	8.09%
Interest on loan	**14895.31**	**12758.78**

Depreciation

35. The weighted average rate of depreciation of 5.190% and 5.190% for the year 2012-13 and 2013-14 respectively have been considered for the calculation of depreciation. Accordingly, the depreciation has been computed as under:

(₹in lakh)

	2012-13	**2013-14**
Opening Gross Block	515196.48	515477.19
Additional capital expenditure	280.71	482.24
Closing gross block	515477.19	515959.43
Average gross block	515336.84	515718.31
Rate of Depreciation	5.190%	5.190%
Depreciable Value	463803.16	464146.48
Remaining Depreciable Value	344692.40	318289.31
Depreciation	**26746.43**	**26767.84**

O & M Expenses

36. The O & M expenses allowed in order dated 13.2.2014 in Petition No. 141/GT/2013 has been considered as under:

(₹ in lakh)

2012-13	2013-14
17516.36	18518.30

Interest on Working Capital

37. The petitioner is entitled to claim interest on working capital as per Regulation 18 of the 2009 Tariff Regulations. The components of the working capital and the petitioner's entitlement to interest thereon are discussed hereunder.

(i) Receivables

As per Regulation 18(1) (c) (i) of the 2009 Tariff Regulations, receivables as a component of working capital are equivalent to two months" of fixed cost. In the tariff being allowed, receivables have been worked out on the basis of "2 months" fixed cost.

(ii) Maintenance spares

Regulation 18 (1) (c) (ii) of the 2009 Tariff Regulations provides for maintenance spares @ 15% per annum of the O & M expenses as part of the working capital. The value of maintenance spares has accordingly been worked out.

(iii) O & M expenses

Regulation 18(1) (c) (iii) of the 2009 Tariff Regulations provides for operation and maintenance expenses for one month to be included in the working capital. The petitioner has claimed O&M expenses for 1 month of the respective year. This has been considered in the working capital.

(iv) Rate of interest on working capital

In accordance with clause (3) of Regulation 18 of the tariff regulations, as amended, rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on 1.4.2009 or on 1st April of the year in which the generating station or a unit thereof is declared under commercial operation, whichever is later. Accordingly, SBI PLR of 12.25% as on 1.4.2009 has been considered in for working out Interest on Working Capital.

38. Accordingly, Interest on Working Capital has been calculated as under:

(₹in lakh)

	2012-13	2013-14
Maintenance Spares	2627.45	2777.74
O & M expenses	1459.70	1543.19
Receivables	16805.55	17022.25
Total	20892.70	21343.19
Interest on working capital @ 12.25%	**2559.36**	**2614.54**

Annual Fixed Charges

39. The annual fixed charges allowed for generating station for the period 2012-14 are summarized as under:

(₹in lakh)

	2012-13	2013-14
Return on Equity	39115.87	41474.07
Interest on Loan	14895.31	12758.78
Depreciation	26746.43	26767.84
Interest on Working Capital	2559.36	2614.54
O & M Expenses	17516.36	18518.30
Annual Fixed Charges	**100833.33**	**102133.52**

40. The difference between the annual fixed charges recovered by the petitioner and the annual fixed charges determined by this order as above shall be adjusted in terms of Clause (6) of Regulation 6 of the 2009 Tariff Regulations.

Determination of Annual Fixed Charges for the period 2014-19

41. As stated, the petitioner in this petition has also prayed for the determination of annual fixed charges of the generating station for the period 2014-19 in accordance with the provisions of the 2014 Tariff Regulations. Accordingly, the annual fixed charges claimed by the petitioner for the period 2014-19 are as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Return on Equity	41474.07	41474.07	41474.07	41480.65	41510.83
Interest on Loan	10731.78	8884.33	6857.93	4610.45	2249.60
Depreciation	26911.10	27046.68	27095.81	27134.06	27168.41
Interest on Working Capital	2580.53	2591.58	2599.88	2,606.56	2614.90
O & M Expenses	13746.97	14660.32	15634.36	16673.10	17780.86
Total	**95444.45**	**94656.98**	**93662.05**	**92504.83**	**91324.60**

42. In response to the directions of the Commission, the petitioner has submitted additional information and has served copies of the same on the respondents. The respondents JVVNL, JDVVNL, AVVNL, UPPCL and BRPL have filed replies to the petition and the petitioner has filed its rejoinder to the said replies filed by the respondents. Based on the submissions of the parties and

the documents available on record, we proceed to determine the tariff of the generating station for the period 2014-19 as stated in the subsequent paragraphs.

Capital Cost

43. Clause (1) of Regulation 9 of the 2014 Tariff Regulations provides that the capital cost as determined by the Commission after prudence check in accordance with this regulation shall form the basis of determination of tariff for existing and new projects. Clause (3) of Regulation 9 provides as under:

> *"9(3) The Capital cost of an existing project shall include the following:*
>
> *(a) the capital cost admitted by the Commission prior to 1.4.2014 duly trued up by excluding liability, if any, as on 1.4.2014;*
> *(b) xxxx*
> *(c) xxxx*

44. The closing capital cost considered by the Commission as on 31.3.2014 in this order is ₹515959.43 lakh. This amount has been considered as the opening capital cost as on 1.4.2014 for computation of tariff for the period 2014-19.

Projected Additional Capital Expenditure for the period 2014-19

45. Clause (3) of Regulation 7 of the 2014 Tariff Regulations provides that the application for determination of tariff shall be based on admitted capital cost including any additional capital expenditure already admitted upto 31.3.2014 (either based on actual or projected additional capital expenditure) and estimated additional capital expenditure for the respective years of the tariff period 2014-15 to 2018-19. Regulation 14 (3) of the 2014 Tariff Regulations, provides as under.

> *"14.(3) The capital expenditure, in respect of existing generating station or the transmission system including communication system, incurred or projected to be incurred on the following counts after the cut-off date, may be admitted by the Commission, subject to prudence check:*
>
> *(i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court of law;*
>
> *(ii) Change in law or compliance of any existing law;*

(iii)Any expenses to be incurred on account of need for higher security and safety of the plant as advised or directed by appropriate Government Agencies of statutory authorities responsible for national security/internal security;

(iv) Deferred works relating to ash pond or ash handling system in the original scope of work;

(v) Any liability for works executed prior to the cut-off date, after prudence check of the details of such un-discharged liability, total estimated cost of package, reasons for such withholding of payment and release of such payments etc.;

(vi) Any liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments;

(vii) Any additional capital expenditure which has become necessary for efficient operation of generating station other than coal / lignite based stations or transmission system as the case may be. The claim shall be substantiated with the technical justification duly supported by the documentary evidence like test results carried out by an independent agency in case of deterioration of assets, report of an independent agency in case of damage caused by natural calamities, obsolescence of technology, up-gradation of capacity for the technical reason such as increase in fault level;

(viii) In case of hydro generating stations, any expenditure which has become necessary on account of damage caused by natural calamities (but not due to flooding of power house attributable to the negligence of the generating company) and due to geological reasons after adjusting the proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation;

(ix) In case of transmission system, any additional expenditure on items such as relays, control and instrumentation, computer system, power line carrier communication, DC batteries, replacement due to obsolesce of technology, replacement of switchyard equipment due to increase of fault level, tower strengthening, communication equipment, emergency restoration system, insulators cleaning infrastructure, replacement of porcelain insulator with polymer insulators, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system; and

(x) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receiving system arising due to non-materialization of coal supply corresponding to full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station:

Provided that any expenditure on acquiring the minor items or the assets including tools and tackles, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, computers, fans, washing machines, heat convectors, mattresses, carpets etc. brought after the cut-off date shall not be considered for additional capitalization for determination of tariff w.e.f. 1.4.2014

Provided further that any capital expenditure other than that of the nature specified above in (i) to (iv) in case of coal/lignite based station shall be met out of compensation allowance:

Provided also that if any expenditure has been claimed under Renovation and Modernisation (R&M), repairs and maintenance under (O&M) expenses and Compensation Allowance, same expenditure cannot be claimed under this regulation."

JSW Hydro Energy Limited

46. The petitioner vide affidavit dated 16.7.2015 has revised the actual/projected additional capital expenditure for the period 2014-19. Accordingly, the year-wise breakup of the projected additional capital expenditure claimed by the petitioner is as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Projected additional capital expenditure on gross basis	464.62	1105.08	1381.50	280.00	678.50
Proposed de-capitalization	40.64	267.34	26.88	0.00	5.00
Net projected additional capital expenditure claimed	**423.98**	**837.74**	**1354.62**	**280.00**	**673.50**

47. The respondent, UPPCL has submitted that out of the total claim of ₹399 lakh for additional capitalization, ₹191.20 lakh in 2014-15 may not be allowed as there is no information about capitalization of items like water treatment plant, skid loader and ambulance in 2013-14. It has also submitted that additional dry type transformer and accommodation for CISF may not be allowed as the transformer has been allowed in 2013-14 and the concession of new mess building for CISF has nothing to do with its activity. Similarly, out of the claim for capitalization of ₹1475 lakh in 2015-16 ₹695 lakh may not be allowed as some of the amounts claimed are beyond the amount approved during 2009-14 and some items may be charged to O&M. For the year 2016-17 the respondent has submitted that ₹584 lakh may not be allowed as some of the items may be charged to O&M expenses. The respondent has also submitted that an amount of ₹420 lakh for 2017-18 and ₹400 lakh for 2018-19 may not be allowed as some of the items have been claims in the previous years.

48. The respondent, BRPL has submitted that some of the projected additional capitalization in the year 2014-15 (five items) were approved by the Commission during 2009-14 is covered under Regulation 14(3)(vi) of the 2014 Tariff Regulations and the petitioner should justify the claim. As regards expenditure towards dry type transformer, the claim is required to be made under Regulation 14(3)(vii) for deterioration of assets, obsolescence of technology etc. and the petitioner should support its claim with technical justification duly supported with documentary evidence like test results carried out by independence agency. Similar submission has been made by the

respondent in respect of projected additional capital expenditure claimed by the petitioner for the year 2016-19. The petitioner has filed its rejoinder clarifying the objections made by the above respondents and has prayed that the tariff of the generating station may be determined as claimed in the petition in terms of the provisions of the 2014 Tariff Regulations.

49. We have examined the matter. It is noticed that the petitioner has also claimed capitalization of the expenditure under Regulation 14(3)(viii) of the 2014 Tariff Regulations which also provides for capitalization of expenditure incurred due to additional work which has become necessary for successful and efficient operation of plant. The respondent, BRPL has submitted that Regulation 14(3)(viii) should be read with Regulation 14(3)(vii) in respect of expenditure incurred on replacement assets and that the same should be supported by documentary evidence like test results carried out by independent agency in case of deterioration of the assets. We have examined the matter. In our view, the requirement of documentary evidence like test results etc., carried out by independent agency will be necessary in case of assets which have deteriorated prior to the expiry of useful life and accordingly sought to be replaced. In the instant case, these assets are being replaced on account of obsolescence /deterioration etc., after expiry of its useful life in consideration of year-wise assets which were put to use. However, there may be some assets which are serviceable even after the expiry of their useful life and should be put to use instead of seeking their replacement in a routine manner. In our view, the petitioner should support its claim either on the basis of the certificate by the OEM or its technical committee to the effect that the subject assets cannot be kept in service on account of its obsolescence or it being beyond economic repair. Though we are allowing capitalization of these assets under Regulation 14(3)(viii) of the 2014 Tariff Regulations, we direct that the petitioner shall place on record the necessary certificate from the OEM or its technical committee at the time of truing-up of tariff . Similar approach shall be adopted in other cases where additional capitalization has been allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations. Accordingly, based on the submissions of the parties and the documents available on record, the claims of the petitioner for the period 2014-19

are considered and allowed on prudence check, after reduction of the gross value of old assets, wherever necessary, as detailed in the subsequent paragraphs.

2014-15

(₹in lakh)

Sl. No.	Assets/works	Projected expenditure	Submissions of petitioner	Reasons for admissibility	Amount allowed
1	Construction of Treatment plant for drinking water and distribution system in Semna and Shalimar	152.71	The petitioner has submitted that an amount of ₹250.00 lakh was approved by Commission for additional capitalization during 2009-14. It has also submitted that the delay in execution is due to the time taken for testing of water samples and firming up the technical specification. The petitioner has further submitted that against this, the total amount of ₹152.71 lakh have been capitalized in 2014-15. The respondent, UPPCL has submitted that ₹54.31 lakh is to be taken in true –up. The respondent, BRPL has submitted that the said work can be covered under Regulation 14(3)(vi) and the petitioner is required to justify the claim.	The submissions have been examined. It is observed that the asset/ work was allowed by the Commission for 2009-14 vide order dated 30.5.2011 in Petition No. 60/2010. Since the expenditure is for the benefit of the employees working in remote areas of the project which in turn will facilitate the successful and efficient operation of the generating station, the expenditure **is allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	152.71

2	Construction of permanent boundary wall of Semna & Shalimar colony.	27.04	The petitioner has submitted that an amount of ₹150.00 lakh was approved by Commission for additional capitalization during 2009-14. It has also submitted that till 2013-14 the expenditure incurred on this account is ₹155.07 lakh and the same has been capitalized. It has however submitted that complete area could not be covered and there are still some places where security wall is required for which ₹ 27.04 lakh has been proposed.	It is observed that for the purpose of security of establishments of power station, the IB and CISF had recommended security fencing at various critical locations. It is also noticed that the expenditure towards this asset/ work had been allowed by the Commission vide order dated 30.5.2011 in Petition no. 60/2010 for the period 2009-14. Since the expenditure is considered necessary on account of security and safety of the generating station as per recommendations of the IB and CISF, the same is **allowed** under Regulation 14(3)(iii) of the 2014 Tariff Regulations.	27.04
3	Treatment of sinking zone at Dam and regarding of approach road leading to Dam	93.86	The petitioner has submitted that, an amount of ₹1000.00 lakh was approved by Commission for 2009-14 for treatment of sinking zone. Detailed studies do not reveal any clear cut methodologies for treatment & it is advised to take corrective measure from time to time	As the projected expenditure is recurring in nature, the same is **not allowed**. The expenditure shall be met from the O&M expenses allowed to the generating station. However, in case the petitioner is not able to meet the	0.00

			depending upon subsidence. Till March 2014 an amount of ₹475.00 lakh had been capitalized. The area remains prone to sinking and further treatment during next five years would be required.	expenses from the admissible O&M expenses, it is at liberty to approach the Commission with proper justification at the time of truing-up of tariff.	
4	Skid steer loader (45-50HP) with snow blower attachment	19.53	The petitioner has submitted that an amount of ₹32.00 lakh was kept in additional capitalization during 2009-14. The procurement process was initiated earlier, but could not mature since tender had to be cancelled for administrative reason. Accordingly, the petitioner has submitted that the purchase has now been made.	Since the asset/ work was allowed by the Commission during 2009-14 vide order dated 30.5.2011 in Petition No. 60/ 2010 and the asset/ work is considered necessary for successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations	19.53

5	Fire tender - 4KL	11.68	The petitioner has submitted that, an amount of ₹32.50 lakh was kept in additional capitalization during 2009-14. Chassis of 4 KL capacity fire tender has been purchased and ₹22.00 lakh capitalized in additional capitalization during 2009-14. The balance amount of ₹11.68 lakh was required for carrying out fabrication of body of this fire tender for which has now been completed. It has submitted that since the work is to be completed in two stages i.e. one for purchase of chassis & subsequently fabrication of tanker, the work was delayed.	Since the asset/ work was allowed by the Commission during 2009-14 vide order dated 30.5.2011 in Petition No. 60/ 2010 and the asset/ work is considered necessary for successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	11.68
6	Ambulance (fully equipped)	5.63	The petitioner has submitted that an amount of ₹20.50 lakh was kept in additional capitalization during 2009-14. However, the supplier failed to supply the ambulance. New ambulance has been purchased and capitalized for ₹7.23 lakh in 2013-14. Amount of ₹5.63 lakh has been incurred for installation of critical health care in the ambulance and claimed in 2014-15. It has submitted that the delay is due to non-supply of the ambulance by the supplier due to which	Since the asset/work was allowed by the Commission during 2009-14 vide order dated 30.5.2011 in Petition No. 60/2010 and the expenditure is for the benefit of the employees working in remote areas of the project which in turn will facilitate the successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation	5.63

			orders were cancelled and had to be re-tendered.	14(3)(viii) of the 2014 Tariff Regulations.	
7	Purchase of drainage and dewatering pumps.	37.45	The petitioner has submitted that the originally installed KSB make pumps were imported from Germany and spares of these pumps are not available in India. These pumps have been repaired several times and not reliable during monsoon period. Hence additional pumps are required to strengthen the dewatering capacity to avoid any flooding. The pumps shall be purchased against de-capitalization of old pumps for ₹23.51 lakh.	Since the asset/work is considered necessary for successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**13.94** (37.45-23.51)
8	Purchase of HP compressors	22.56	The petitioner has submitted that the HP compressors are most essential equipment of power house for operation of MIV and Guide vanes. Existing HP compressors are imported and installed since commissioning of power station and frequent breakdowns have been experienced. Due to old model as well as being imported item, the spares of these compressors are not available in time, hence HP compressors are required to be replaced with indigenous make. The de-capitalized value of existing asset for ₹	Since the asset/work is considered necessary for successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**5.43** (22.56-17.13)

			17.13 lakh is considered.		
9	Purchase of Dry type Distribution Transformer, HV/LV panel and cables.	53.34	The petitioner has submitted that the existing drainage and dewatering system is designed as per old guidelines and of optimum design without considering the flooding /disaster management aspects. Accordingly, it has submitted that the additional dewatering system has been provided and capitalized in 2013-14.It has further submitted that for reliable power supply to this system, additional Transformer and HT/ LT panel and cables are required which would be installed at service bay level to reduce the chances of its submergence in case of flooding. The petitioner has stated that this is essential from disaster management point of view.	Since the asset/work is considered necessary for successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**53.34**
10	Supply and Installation of Monorail hoist for Pumps.	11.60	The petitioner has submitted that, the drainage and dewatering sump does not have an overhead opening due to which installation or removal is not possible with the help of EOT crane. Removal and installation of these pumps by mechanical means is a time consuming process which can expose the	Since the asset/work is considered necessary successful and efficient operation of the plant, the same **has been allowed** under Regulation 14(3)(viii) of Tariff Regulations, 2014.	**11.60**

			power house to risk in high flood season. For easy removal and assembly of drainage & dewatering pumps, monorail and hoist have to be installed.		
11	Installation of CCTV system	15.89	The petitioner has submitted that installation of CCTV system is proposed in and around colonies wherein sensitive installations like filtration plant, storage tanks 132 KV substation and all security outposts and entrance gates is required for proper record of entries in view of the power station being in militancy prone areas.	Since the asset/work is considered necessary for safety of plant which will facilitate successful and efficient operation of the plant, the same **has been allowed** under Regulation 14(3)(viii) of Tariff Regulations, 2014.	**15.89**
12	Construction of accommodation & security post/pucca morcha for CISF at Chenab Nagar, Shalimar & Hasti	13.33	The petitioner has submitted that, these assets are required in view of current security aspect in region. By considering reports of security agencies pacca morcha/ post is required. These points were also raised by security agency of power station i.e. CISF, so that different establishments can be secured. In this head a mess building is also proposed as present temporary structure of mess is in bad condition. The cost of temporarily sheds shall be de-capitalized.	Since the expenditure is on account of need for higher security and safety of the generating station as per recommendations of CISF, the same is **allowed** under Regulation 14(3)(iii) of the 2014 Tariff Regulations.	**13.33**
Total Claimed (after de-capitalization)					**423.98**
Total allowed (after de-capitalization)					**330.12**

2015-16

(₹in lakh)

Sl. No.	Assets/works	Projected expenditure	Submissions of petitioner	Reasons for admissibility	Amount allowed
1	Construction of permanent boundary wall of Semna & Shalimar colony	90.00	The petitioner has submitted that an amount of ₹150.00 lakh was approved by Commission for additional capitalization during 2009-14. It has also submitted that till 2013-14 the expenditure incurred on this account is ₹155.07 lakh and the same has been capitalized. It has however submitted that complete area could not be covered and there are still some places where security wall is required for which ₹ 27.04 lakh has been proposed.	Based on the submissions of the petitioner for capitalization of this work in 2014-15 above, the expenditure claimed during this year is **allowed**.	90.00

2	Hill slope stabilization at both bank of Dam.	298.00	The petitioner has submitted that, an amount of ₹300.00 lakh was approved by Commission for 2009-14 for which tender was floated during 2012. But due to inadequate response from contractors work could not materialize. However after retendering the work is awarded. The completion cost of the work would be of the order of ₹400.0 lakhs. The delay is only due to very poor response from the bidder in view of the specialized job & remote location of the project. The expenditure done in 2014-15 is ₹28.33 lakh which is yet to be capitalized.	Since the expenditure incurred is recurring in nature the claim of petitioner is **not allowed**. However, the expenditure can be met from the O&M expenses allowed to the generating station. However, in case the petitioner is not able to meet the expenses from the admissible O&M expenses, it is at liberty to approach the Commission with proper justification at the time of truing-up of tariff.	0.00
3	Treatment of sinking zone at Dam and regarding of approach road leading to Dam	80.00	The petitioner has submitted that, an amount of ₹1000.00 lakh was approved by Commission for 2009-14 for treatment of sinking zone. Detailed studies do not reveal any clear cut methodologies for treatment & it is advised to take corrective measure from time to time depending upon	Since the expenditure incurred is recurring in nature the claim of petitioner is **not allowed**. However,the expenditure can be met from the O&M expenses allowed to the generating station. However, in case the petitioner is not able to meet the expenses from the admissible O&M expenses, it is at liberty to approach the Commission with proper justification at the time of truing-up of	0.00

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			subsidence. Till March 2014 an amount of ₹475.00 lakh had been capitalized. The area remains prone to sinking and further treatment during next five years would be required.	tariff.	
4	Purchase of numeric generator transformer protection relays	10.08	The petitioner has submitted that, existing relays are of static type and moreover an obsolete model. Being vital it is proposed to replace the same with new latest numeric generator transformer protection relay having facility of disturbance recording, user friendly protection setting etc. These relays will be purchased and old static relays for ₹6.70 lakh will be de-capitalized.	Since the asset/work is considered necessary for successful and efficient operation of the generating station, the same is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**3.38** (10.08-6.70)
5	Purchase of Surge arrestor for 400 KV GIS	450.00	The petitioner has submitted that the existing T155-1 surge arrestor associated with 400 kV Dulhasti-Kishenpur line bay-2 R-phase got damaged on 12.7.2012 during tripping of above said line. M/s ALSTOM (the OEM of GIS) has stated that the manufacturing of this product (T155-1	Since the asset/work is considered necessary for successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**250.00** (450.00-200.00)

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			surge arrestor) is no more possible & they don't have any stock of these components. The zinc oxide blocks and the insulating tubes used in the T155-1 Surge Arrestor are different from the nowadays products and residual voltage of the new products is lower than the former product which leads to an unbalanced system which is not acceptable due to which surge arrestors on all the three phases need to be replaced. Hence as per recommendation of M/s ALSTOM technical department, the petitioner had to replace all T155-1 surge arrestors installed on all the 3 phases (one faulty and other two in Y & B phase respectively) with the new generation T155-2 surge arrestors and the Surge arrestors provided earlier shall be de-capitalized. Estimated original value of old surge arrestor is ₹200 lakh based on engineering estimate of acquisition cost.		

6	Purchase of bus bar protection relay	35.00	The petitioner has submitted that the existing relay is of static type and more over an obsolete model. The relay was supplied as a part of main GPM & directly imported. The OEM of the relay also lacks expertise as on date. The bus bar protection scheme is very vital for protection of GIS based bus bar schema in circuit. Hence it is proposed to install new latest numeric bus bar protection, having facility of disturbance recording and user friendly protection setting. The old protection relays for ₹20.00 lakh will be de-capitalized.	Since the asset/work is considered necessary for successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**15.00** (35.00-20.00)
7	Purchase of drainage and dewatering pumps.	48.00	The petitioner has submitted that the originally installed KSB make pumps were imported from Germany and spares of these pumps are not available in India. These pumps have been repaired several times and not reliable during monsoon period. Hence additional pumps are required	Based on the submissions of the petitioner for capitalization of this work in 2014-15 above, the expenditure claimed during this year is **allowed**.The de-capitalized value of the old asset is ₹23.51 lakh	**24.49** (48.00-23.51)

			to strengthen the dewatering capacity to avoid any flooding. The pumps shall be purchased against de-capitalization of old pumps for ₹23.51 lakh.		
8	Purchase of HP compressors	23.00	The petitioner has submitted that the HP compressors are most essential equipment of power house for operation of MIV and Guide vanes. Existing HP compressors are imported and installed since commissioning of power station and frequent breakdowns have been experienced. Due to old model as well as being imported item, the spares of these compressors are not available in time, hence HP compressors are required to be replaced with indigenous make. The de-capitalized value of existing asset for ₹ 17.13 lakh is considered.	Based on the submissions of the petitioner for capitalization of this work in 2014-15 above, the expenditure claimed during this year is **allowed**. The de-capitalized value of the old asset is ₹17.13 lakh	**5.87** (23.00-17.13)
9	Purchase of Mobile truck mounted hydraulic scissor lift / work platform	55.00	The petitioner has submitted that, lot of street lights are in circuit at power house, colony as well as dam access roads. For maintaining them, lot of man power is required for handling the telescopic ladder. Also the	Since the asset/work is considered necessary for successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	55.00

			activity is time consuming. In the coming years as the man power will be reduced, the maintenance of these street lights will be tedious. Hence it is proposed to purchase one mobile truck mounted hydraulic scissor lift/work platform which drastically reduce the manpower requirement as well as the lead time involved. Also it can be utilized in other activities to be undertaken at elevated levels safely.		
10	Construction of accommodation & security post/ pucca morcha for CISF at Chenab Nagar, Shalimar & Hasti	16.00	The petitioner has submitted that, these assets are required in view of current security aspect in region. By considering reports of security agencies pacca morcha/ post is required. These points were also raised by security agency of power station i.e. CISF, so that different establishments can be secured. In this head a mess building is also proposed as present temporary structure of mess is in bad condition. The cost of temporarily sheds shall be de-capitalized.	Based on the submissions of the petitioner for capitalization of this work in 2014-15 above, the expenditure claimed during this year is **allowed**.	16.00
Total Claimed (after de-capitalization)					**837.74**
Total allowed (after de-capitalization)					**459.74**

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2016-17

(₹in lakh)

Sl. No.	Assets/works	Projected expenditure	Submissions of petitioner	Reasons for admissibility	Amount allowed
1	Wheel dozer 300 HP class	350.00	The petitioner has submitted that an amount of ₹471.00 lakh was kept in additional capitalization during 2009-14. The purchase could not materialize and it is now proposed. This is a new purchase against replacement.	Since the asset/ work was already allowed by the Commission during 2009-14 in order dated 30.5.2011 in Petition No. 60/ 2010 and the asset/work is considered necessary for successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2009 Tariff Regulations.	**348.94** (350.00-1.06)
2	TATA bus 42 seater-2Nos	38.00	The petitioner has submitted that an amount of ₹32.00 lakh was kept in additional capitalization during 2009-14. The purchase could not materialize and it is now proposed. An amount of ₹38.00 lakh is proposed to be kept. This purchase is against disposal of existing 2 buses for ₹14.60 lakh which shall be de-capitalized.	Since the asset/ work was allowed by the Commission during 2009-14 vide order dated 30.5.2011 in Petition No. 60/ 2010 and the asset/work is considered necessary for successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**23.40** (38.00-14.60)

3	Construction of sewerage treatment plant at Semna & Shalimar colony	180.00	The petitioner has submitted that, an amount of ₹150.00 lakh was kept in the add cap of 2009-14 for this purpose. However during preparation of detailed estimate it was observed that since the present system is septic tanks/soak pit based and an extensive network of pipes is required for collection of sewage at various STP points and the amount is not sufficient. As per guidelines by State pollution board, the sewage generated from colonies and other establishments are necessarily to be treated to specified extent before discharging to surfaces water sources. So keeping in view of this as per available elevation of different buildings STP's shall be required at various deepest points. At Dulhasti five STP's could be set up at places-	Since the asset/work was allowed by the Commission during 2009-14 vide order dated 30.5.2011 in Petition No. 60/2010 and the expenditure is for the benefit of the employees working in the generating station, and the capitalization of this asset/work would facilitate the successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**180.00**

			for DSB and Semna colony, Shalimar and Hasti, Admin building and offices, school and Project hospital. For collecting and transferring sewage at respective location a sewage network consist of RCC pipes, manholes and other appurtenances are required.		
4	Construction of Treatment plant for drinking water and distribution system in Semna and Shalimar	145.00	The petitioner has submitted that an amount of ₹250.00 lakh was approved by Commission for additional capitalization during 2009-14. It has also submitted that the delay in execution is due to the time taken for testing of water samples and firming up the technical specification. The petitioner has further submitted that against this, the total amount of ₹152.71 lakh have been capitalized in 2014-15.	The submissions have been examined. It is observed that the asset/ work was allowed by the Commission for 2009-14 vide order dated 30.5.2011 in Petition No. 60/2010. Since the expenditure is for the benefit of the employees working in remote areas of the project which in turn will facilitate the successful and efficient operation of the generating station, the expenditure **is allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**145.00**
5	Hill slope stabilization at both bank of	100.00	The petitioner has submitted that an amount of	Since the projected expenditure is	**0.00**

	Dam.		₹150.00 lakh was approved by Commission for additional capitalization during 2009-14. It has also submitted that till 2013-14 the expenditure incurred on this account is ₹155.07 lakh and the same has been capitalized. It has however submitted that complete area could not be covered and there are still some places where security wall is required for which ₹ 27.04 lakh has been proposed.	recurring in nature the claim of petitioner is **not allowed**. The expenditure shall be met from the O&M expenses allowed to the generating station. However, in case the petitioner is not able to meet the expenses from the admissible O&M expenses, it is at liberty to approach the Commission with proper justification at the time of truing-up of tariff.	
6	Treatment of sinking zone at Dam and regarding of approach road leading to Dam	120.00	The petitioner has submitted that, an amount of ₹1000.00 lakh was approved by Commission for 2009-14 for treatment of sinking zone. Detailed studies do not reveal any clear cut methodologies for treatment & it is advised to take corrective measure from time to time depending upon subsidence. Till March 2014 an amount of ₹475.00 lakh had been capitalized. The area remains		**0.00**

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			prone to sinking and further treatment during next five years would be required.		
7	Pickup van-2 nos	20.00	The petitioner has submitted that this is a new purchase against de-capitalization of one 10.0 MT truck whose acquisition cost of ₹6.22 lakh. It is proposed to keep ₹20.00 lakh for purchase of 2 nos pick up van as these vans have been approved by competent authority in the sanctioned strength of power station	Since the asset/ work is considered necessary for successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**13.78** (20.00-6.22)
8	Car	8.50	The petitioner has submitted that two nos. of car is proposed to be capitalized one each in 2016-17 and 2018-19 against the replacement of bullet proof car having gross block of ₹10 lakh. The de-capitalized value of ₹10 lakh has been apportioned during 2016-17 (₹5 lakh) and 2018-19 (₹5 lakh).	Since the asset/ work is considered necessary for successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	**3.50** (8.50-5.00)
9	Purchase of TRT gate in single piece with dedicated hoist	400.00	The petitioner has submitted that, the existing TRT stop logs	Since the asset/ work is considered necessary for successful and	400.00

			are in 4 segments and it would take minimum 4 hrs to place the gate. This arrangement cannot isolate the power house from downstream in case of an emergency flooding situation. Further, draft tube isolation is also through stop logs. To protect the power house from risk, it is proposed to convert these four stop logs in to a single gate with higher size gantry so that it can be lowered in minimum time period in emergency. In case conversion is not possible, the new gate shall be purchased and stop logs shall be de-capitalized.	efficient operation of the generating station, the expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	
10	Installation of CCTV system	20.00	The petitioner has submitted that installation of CCTV system is proposed in and around colonies wherein sensitive installations like filtration plant, storage tanks 132 KV substation and all security outposts and entrance gates is required for proper record of entries in view	Based on the submissions of the petitioner for capitalization of this work in 2014-15 above, the expenditure claimed during this year is **allowed**.	20.00

			of the power station being in militancy prone areas.		
Total Claimed (after de-capitalization)					**1354.62**
Total allowed (after de-capitalization)					**1134.62**

2017-18

(₹in lakh)

Sl. No.	Assets/works	Projected expenditure	Submissions of petitioner	Reasons for admissibility	Amount allowed
1	Treatment of sinking zone at Dam and regarding of approach road leading to Dam	100.00	The petitioner has submitted that an amount of ₹1000.00 lakh was approved by Commission for 2009-14 for treatment of sinking zone. Detailed studies do not reveal any clear cut methodologies for treatment & it is advised to take corrective measure from time to time depending upon subsidence. Till March 2014 an amount of ₹475.00 lakh had been capitalized. The area remains prone to sinking and further treatment during next five years would be required.	As the expenditure is of a recurring nature, the same is **not allowed**. The expenditure shall be met from the O&M expenses allowed to the generating station. However, in case the petitioner is not able to meet the expenses from the admissible O&M expenses, it is at liberty to approach the Commission with proper justification at the time of truing-up of tariff.	**0.00**
2	Purchase of TRT gate in single piece with dedicated hoist	80.00	The petitioner has submitted that, the existing TRT stop logs are in 4 segments and it would take	Since the asset/ work is considered necessary successful and efficient operation of the generating station, the	80.00

			minimum 4 hrs to place the gate. This arrangement cannot isolate the power house from downstream in case of an emergency flooding situation. Further, draft tube isolation is also through stop logs. To protect the power house from risk, it is proposed to convert these four stop logs in to a single gate with higher size gantry so that it can be lowered in minimum time period in emergency. In case conversion is not possible, the new gate shall be purchased and stop logs shall be de-capitalized.	expenditure is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	
3	Payment of land compensation	100.00	The petitioner has submitted that: i) Land acquisition case for acquisition of land measuring 213 Kanal 13 marlas falling in Village Kawar Tanji for reservoir is under process wherein tentative compensation to the tune of ₹258.00 lakh has been assessed. Accordingly provision for payment of actual	Considering the fact that the expenditure is on account of payment of compensation, as stated, the same **is allowed**.	100.00

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			compensation has been made. ii) Compensation of land measuring 20 kanal 01 marlas transferred from Horticulture Department is yet to be paid. Accordingly provision of tentative compensation of ₹60.00 lakh has been made. iii) An amount of ₹24.60 lakh is unpaid on account of cost of Government/ Shamlat land (Un-claimed/ disputed cases) Accordingly, provision for payment of compensation of unpaid amount has been made. In addition to above provision for payment of compensation in unforeseen cases has also been made.		
Total Claimed (after de-capitalization)					**280.00**
Total allowed (after de-capitalization)					**180.00**

2018-19

(₹ in lakh)

Sl. No.	Assets/works	Projected expenditure	Submissions of petitioner	Reasons for admissibility	Amount allowed
1	Construction of sewerage treatment plant at Semna & Shalimar colony	320.00	The petitioner has submitted that, an amount of ₹150.00 lakh was kept in the add cap of	Based on the submissions of the petitioner for capitalization of this work in 2016-17 above, the expenditure claimed during this year is	320.00

			2009-14 for this purpose. However during preparation of detailed estimate it was observed that since the present system is septic tanks/soak pit based and an extensive network of pipes is required for collection of sewage at various STP points and the amount is not sufficient. As per guidelines by State pollution board, the sewage generated from colonies and other establishments are necessarily to be treated to specified extent before discharging to surfaces water sources. So keeping in view of this as per available elevation of different buildings STP's shall be required at various deepest points. At Dulhasti five	**allowed**.	

			STP's could be set up at places-for DSB and Semna colony, Shalimar and Hasti, Admin building and offices, school and Project hospital. For collecting and transferring sewage at respective location a sewage network consist of RCC pipes, manholes and other appurtenances are required.		
2	Construction of Treatment plant for drinking water and distribution system in Semna and Shalimar	100.00	The petitioner has submitted that an amount of ₹250.00 lakh was approved by Commission for additional capitalization during 2009-14. It has also submitted that the delay in execution is due to the time taken for testing of water samples and firming up the technical specification. The petitioner has further submitted that against this, the total amount of ₹152.71 lakh	Based on the submissions of the petitioner for capitalization of this work in 2014-15 above, the expenditure claimed during this year is **allowed**.	100.00

			have been capitalized in 2014-15.		
3	Payment of land compensation	250.00	The petitioner has submitted that: i) Land acquisition case for acquisition of land measuring 213 Kanal 13 marlas falling in Village Kawar Tanji for reservoir is under process wherein tentative compensation to the tune of ₹258.00 lakh has been assessed. Accordingly provision for payment of actual compensation has been made. ii) Compensation of land measuring 20 kanal 01 marlas transferred from Horticulture Department is yet to be paid. Accordingly provision of tentative compensation of ₹60.00 lakh has been made. iii) An amount of ₹24.60 lakh is unpaid on	Based on the submissions of the petitioner for capitalization of this work in 2017-18 above, the expenditure claimed during this year is **allowed**.	250.00

			account of cost of Government/ Shamlat land (Un-claimed/ disputed cases) Accordingly, provision for payment of compensation of unpaid amount has been made. In addition to above provision for payment of compensation in unforeseen cases has also been made.		
4	Car- 1 no.	8.50	The petitioner has submitted that two nos. of car is proposed to be capitalized one each in 2016-17 and 2018-19 against the replacement of bullet proof car having gross block of ₹10 lakh. The de-capitalized value of ₹10 lakh has been apportioned during 2016-17 (₹5 lakh) and 2018-19 (₹5 lakh).	Based on the submissions of the petitioner for capitalization of this work in 2016-17 above, the expenditure claimed during this year is **allowed**.	**3.50** (8.50-5.00)
Total Claimed (after de-capitalization)					**673.50**
Total allowed (after de-capitalization)					**673.50**

Additional capital expenditure allowed for 2014-19

50. Based on the above, the net additional capital expenditure allowed for the period 2014-19 is summarized as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Additional Capital Expenditure allowed	370.76	727.08	1161.50	180.00	678.50
De-capitalization considered	40.64	267.34	26.88	0.00	5.00
Net Additional Capital Expenditure allowed for the purpose of tariff	**330.12**	**459.74**	**1134.62**	**180.00**	**673.50**

51. The discharge of liabilities of liabilities considered the petitioner is as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
3836.04	0.00	0.00	0.00	0.00

52. Considering the above discharges, the net projected additional capitalize expenditure allowed is as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Net additional capital expenditure allowed	330.12	459.74	1134.62	180.00	673.50
Discharges of liabilities	3836.04	0.00	0.00	0.00	0.00
Additional capital expenditure allowed	**4166.16**	**459.74**	**1134.62**	**180.00**	**673.50**

Capital Cost for 2014-19

53. As stated, the closing capital cost of ₹515959.43 lakh as on 31.3.2014 has been considered in this order. The same has been considered as the opening capital cost as on 1.4.2014. Accordingly, the capital cost considered for the purpose of tariff for the period 2014-19 is as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	515959.43	520125.59	520585.33	521719.95	521899.95
Additional Capital expenditure allowed	4166.16	459.74	1134.62	180.00	673.50
Capital Cost as on 31st March of the year	**520125.59**	**520585.33**	**521719.95**	**521899.95**	**522573.45**

Debt-Equity Ratio

54. Regulation 19 of the 2014 Tariff Regulations provides as under:

> *"19. Debt-Equity Ratio*
> *(1) For a project declared under commercial operation on or after 1.4.2014, the debt-equity ratio would be considered as 70:30 as on COD. If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:*
> *Provided that:*
> *i. where equity actually deployed is less than 30% of the capital cost, actual equity shall be considered for determination of tariff:*
> *ii. the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment:*
> *iii. any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt : equity ratio."*

55. In its order dated 9.3.2010 in Petition No. 204/2009 pertaining to revision of tariff based on additional capital expenditure for the period 2007-09, had observed as under:

> *"24. The petitioner has stated that the additional capital expenditure has been financed through internal resources. As per the approved revised cost estimate (RCE-II) of the Govt. of India letter dated 22.8.2008, corresponding to an approved capital cost of ₹522849.00 lakh, the equity was frozen at ₹198668.67 lakh. The Commission in its order dated 30.11.2009 in Petition No. 72/2009 had allowed the equity of ₹198668.67 lakh on the date of commercial operation for the purpose of tariff. Accordingly, any additional capital expenditure incurred after the date of commercial operation, till the admitted capital cost becomes ₹522849.00 lakh, is to be considered as debt. After consideration of the admitted additional capital expenditure of ₹3188.55 lakh and ₹567.58 lakh during the year 2007-08 and 2008- 09 respectively, the admitted capital cost for works out to ₹511037.92 lakh and ₹511605.50 lakh for the year 2007-08 and 2008-09 respectively, which is below the admitted capital cost of ₹522849.00 lakh. Accordingly, the admitted additional capital expenditure has been considered as debt for the purpose of tariff."*

56. In line with the above decision, the entire additional capital expenditure has been considered as debt, since the total estimated cost of completion is less than the approved Revised Cost Estimate of ₹522849.00 lakh.

Return on Equity

57. Regulation 24 of the 2014 Tariff Regulations provides as under:

> *"**24. Return on Equity**: (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 19.*
>
> *(2) Return on equity shall be computed at the base rate of 15.50% for thermal generating stations, transmission system including communication system and run of the river hydro generating station,*

and at the base rate of 16.50% for the storage type hydro generating stations including pumped storage hydro generating stations and run of river generating station with pondage:

Provided that
i) in case of projects commissioned on or after 1st April, 2014, an additional return of 0.50 % shall be allowed, if such projects are completed within the timeline specified in Appendix-I:

ii) the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever:

iii) additional RoE of 0.50% has been allowed if any element of the transmission project is completed within the specified timeline and it is certified by the Regional Power Committee/National Power Committee that commissioning of the particular element will benefit the system operation in the regional/national grid:

iv). the rate of return of a new project shall be reduced by 1% for such period as may be decided by the Commission, if the generating station or transmission system is found to be declared under commercial operation without commissioning of any of the Restricted Governor Mode Operation (RGMO)/ Free Governor Mode Operation (FGMO), data telemetry, communication system up to load dispatch centre or protection system:

v) as and when any of the above requirements are found lacking in a generating station based on the report submitted by the respective RLDC, RoE shall be reduced by 1% for the period for which the deficiency continues:

vi) additional RoE shall not be admissible for transmission line having length of less than 50 kilometers.

58. Regulation 25 of the 2014 Tariff Regulations provides as under:

*"**Tax on Return on Equity***
(1) The base rate of return on equity as allowed by the Commission under Regulation 24 shall be grossed up with the effective tax rate of the respective financial year. For this purpose, the effective tax rate shall be considered on the basis of actual tax paid in the respect of the financial year in line with the provisions of the relevant Finance Acts by the concerned generating company or the transmission licensee, as the case may be. The actual tax income on other income stream (i.e., income of non generation or non transmission business, as the case may be) shall not be considered for the calculation of "effective tax rate".

(2) Rate of return on equity shall be rounded off to three decimal places and shall be computed as per the formula given below:

Rate of pre-tax return on equity = Base rate / (1-t)

Where "t" is the effective tax rate in accordance with Clause (1) of this regulation and shall be calculated at the beginning of every financial year based on the estimated profit and tax to be paid estimated in line with the provisions of the relevant Finance Act applicable for that financial year to the company on pro-rata basis by excluding the income of non-generation or non-transmission business, as the case may be, and the corresponding tax thereon. In case of generating company or transmission licensee paying Minimum Alternate Tax (MAT), "t" shall be considered as MAT rate including surcharge and cess.

(3) The generating company or the transmission licensee, as the case may be, shall true up the grossed up rate of return on equity at the end of every financial year based on actual tax paid together with any additional tax demand including interest thereon, duly adjusted for any refund of tax including interest received from the income tax authorities pertaining to the tariff period 2014-

15 to 2018-19 on actual gross income of any financial year. However, penalty, if any, arising on account of delay in deposit or short deposit of tax amount shall not be claimed by the generating company or the transmission licensee as the case may be. Any under-recovery or over-recovery of grossed up rate on return on equity after truing up, shall be recovered or refunded to beneficiaries or the long term transmission customers/DICs as the case may be on year to year basis."

59. The base rate has been grossed up with the MAT rate for the year 2013-14. Accordingly, in terms of the above regulations, Return on Equity has been computed as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Notional Equity	198668.67	198668.67	198668.67	198668.67	198668.67
Addition due to additional capitalization	0.00	0.00	0.00	0.00	0.00
Closing Equity	198668.67	198668.67	198668.67	198668.67	198668.67
Average Equity	198668.67	198668.67	198668.67	198668.67	198668.67
Return on Equity (Base Rate)	16.500%	16.500%	16.500%	16.500%	16.500%
Tax rate for the year	20.961%	20.961%	20.961%	20.961%	20.961%
Rate of Return on Equity	20.876%	20.876%	20.876%	20.876%	20.876%
Return on Equity	**41474.07**	**41474.07**	**41474.07**	**41474.07**	**41474.07**

60. The petitioner is however directed to submit the effective tax rates along with the tax Audit report for the period 2015-19 at the time of revision of tariff based on truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.

Interest on Loan

61. Regulation 26 of the 2014 Tariff Regulations provides as under:

*"**26. Interest on loan capital**: (1)The loans arrived at in the manner indicated in regulation 19 shall be considered as gross normative loan for calculation of interest on loan.*

(2) The normative loan outstanding as on 1.4.2014 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2014 from the gross normative loan.

(3) The repayment for each of the year of the tariff period 2014-19 shall be deemed to be equal to the depreciation allowed for the corresponding year/period. In case of de-capitalization of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered up to the date of de-capitalization of such asset

(4) Notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the depreciation allowed for the year or part of the year.

(5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio after providing appropriate accounting adjustment for interest capitalized: Provided that if there is no actual loan for a particular year but normative loan is still outstanding,

the last available weighted average rate of interest shall be considered: Provided further that if the generating station or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered

(6) The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.

(7) The generating company or the transmission licensee, as the case may be, shall make every effort to re-finance the loan as long as it results in net savings on interest and in that event the costs associated with such re-financing shall be borne by the beneficiaries and the net savings shall be shared between the beneficiaries and the generating company or the transmission licensee, as the case may be, in the ratio of 2:1

(8) The changes to the terms and conditions of the loans shall be reflected from the date of such refinancing.

(9) In case of dispute, any of the parties may make an application in accordance with the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999,as amended from time to time, including statutory re-enactment thereof for settlement of the dispute:

Provided that the beneficiaries or the long term transmission customers /DICs shall not withhold any payment on account of the interest claimed by the generating company or the transmission licensee during the pendency of any dispute arising out of re-financing of loan."

62. The opening gross normative loan as on the COD of each unit has been arrived at in accordance with Regulation 26 of the 2014 Tariff Regulations. The weighted average rate of interest has been worked out on the basis of the actual loan portfolio of respective year applicable to the project. The repayment for the period 2014-19 has been considered equal to the depreciation allowed for that year. The interest on loan has been calculated on the normative average loan of the year by applying the weighted average rate of interest. The calculation of weighted average rate of interest is allowed as Annexure-I to this order. As such, interest on loan has been calculated as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Normative Loan	317290.76	321456.92	321916.66	323051.28	323231.28
Cumulative Repayment up to Previous Year	172626.01	199514.48	226523.00	253572.90	280656.92
Net Loan-Opening	144664.76	121942.44	95393.66	69478.38	42574.36
Repayment during the year	26888.47	27008.52	27049.90	27084.02	27106.17
Addition due to Additional Capitalization	4166.16	459.74	1134.62	180.00	673.50
Net Loan-Closing	121942.44	95393.66	69478.38	42574.36	16141.70
Average Loan	133303.60	108668.05	82436.02	56026.37	29358.03
Weighted Average Rate of Interest on Loan	8.027%	8.126%	8.242%	8.117%	7.458%
Interest on loan	**10700.04**	**8830.36**	**6794.34**	**4547.81**	**2189.49**

JSW Hydro Energy Limited

Depreciation

63. Regulation 27 of the 2014 Tariff Regulations provides as under:

"27. Depreciation:

(1) Depreciation shall be computed from the date of commercial operation of a generating station or unit thereof or a transmission system including communication system or element thereof. In case of the tariff of all the units of a generating station or all elements of a transmission system including communication system for which a single tariff needs to be determined, the depreciation shall be computed from the effective date of commercial operation of the generating station or the transmission system taking into consideration the depreciation of individual units or elements thereof.

Provided that effective date of commercial operation shall be worked out by considering the actual date of commercial operation and installed capacity of all the units of the generating station or capital cost of all elements of the transmission system, for which single tariff needs to be determined.

(2) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission. In case of multiple units of a generating station or multiple elements of transmission system, weighted average life for the generating station of the transmission system shall be applied. Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis.

(3) The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset: Provided that in case of hydro generating station, the salvage value shall be as provided in the agreement signed by the developers with the State Government for development of the Plant:

Provided further that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciated value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff: Provided also that any depreciation disallowed on account of lower availability of the generating station or generating unit or transmission system as the case may be, shall not be allowed to be recovered at a later stage during the useful life and the extended life.

(4) Land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.

(5) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-II to these regulations for the assets of the generating station and transmission system: Provided that the remaining depreciable value as on 31st March of the year closing after a period of 12 years from the effective date of commercial operation of the station shall be spread over the balance useful life of the assets.

(6) In case of the existing projects, the balance depreciable value as on1.4.2014 shall be worked out by deducting the cumulative depreciation as admitted by the Commission up to 31.3.2014 from the gross depreciable value of the assets.

(7) The generating company or the transmission license, as the case may be, shall submit the details of proposed capital expenditure during the fag end of the project (five years before the useful life) along with justification and proposed life extension. The Commission based on prudence check of such submissions shall approve the depreciation on capital expenditure during the fag end of the project.

(8) In case of de-capitalization of assets in respect of generating station or unit thereof or transmission system or element thereof, the cumulative depreciation shall be adjusted by taking into account the depreciation recovered in tariff by the de-capitalized asset during its useful services."

64. The weighted average rate of depreciation of 5.190% calculated in terms of the above regulation has been considered for the period 2014-19. Accordingly, depreciation has been computed as follows:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Block as on 31.3.2014	515959.43	520125.59	520585.33	521719.95	521899.95
Additional capital expenditure during 2014-19	4166.16	459.74	1134.62	180.00	673.50
Closing gross block	520125.59	520585.33	521719.95	521899.95	522573.45
Average gross block	518042.51	520355.46	521152.64	521809.95	522236.70
Rate of Depreciation	5.190%	5.190%	5.190%	5.190%	5.190%
Depreciable Value	466238.26	468319.92	469037.38	469628.96	470013.03
Remaining Depreciable Value	293613.25	268822.02	242647.22	216201.95	189502.01
Depreciation	**26888.47**	**27008.52**	**27049.90**	**27084.02**	**27106.17**

O&M Expenses

65. The generating station is in operation for three or more years as on 1.4.2014. Accordingly, in terms of sub-section (a) of clause (3) of Regulation 29 of the 2014 Tariff Regulations, the year-wise O&M expense norms considered for the generating station of the petitioner for the period 2014-19 is as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
13746.97	14660.32	15634.36	16673.10	17780.86

Interest on working capital

66. Sub-section (c) of Clause (1) of Regulation 28 of the 2014 Tariff Regulations provides as under:

"28. Interest on Working Capital:
(1) The working capital shall cover
(c) Hydro generating station including pumped storage hydro electric generating Station and transmission system including communication system:
(i) Receivables equivalent to two months of fixed cost;
(ii) Maintenance spares @ 15% of operation and maintenance expense specified in regulation 29; and
(iii) Operation and maintenance expenses for one month."

67. Accordingly, receivable component of working capital considering two months of fixed cost is worked out and allowed as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
15898.14	15760.46	15591.67	15397.14	15193.64

68. Maintenance spares @ 15% of operation and maintenance expenses are worked out and allowed as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
2062.05	2199.05	2345.15	2500.97	2667.13

69. O&M Expenses for one month are allowed as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
1145.58	1221.69	1302.86	1389.43	1481.74

Rate of interest on working capital

70. Clause (3) of Regulation 28 of the 2014 Tariff Regulations provides as under:

> *"Interest on working Capital: (3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2014 or as on 1st April of the year during the tariff period 2014-15 to 2018-19 in which the generating station or a unit thereof or the transmission system including communication system or element thereof, as the case may be, is declared under commercial operation, whichever is later."*

71. In terms of the above regulations, the Bank Rate of 13.50% (Base Rate + 350 Basis Points) as on 1.4.2014 has been considered by the petitioner. This has been considered in the calculations for the purpose of tariff.

Interest on Working Capital

72. Necessary computations in support of interest on working capital are appended below:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Maintenance Spares	2062.05	2199.05	2345.15	2500.97	2667.13
O & M expenses	1145.58	1221.69	1302.86	1389.43	1481.74
Receivables	15898.14	15760.46	15591.67	15397.14	15193.64
Total	19105.77	19181.20	19239.69	19287.53	19342.51
Interest on working capital @ 13.50%	**2579.28**	**2589.46**	**2597.36**	**2603.82**	**2611.24**

Annual Fixed Charges

73. Accordingly, the annual fixed charges approved for the generating station for the period 2014-19 are as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Return on Equity	41474.07	41474.07	41474.07	41474.07	41474.07
Interest on Loan	10700.04	8830.36	6794.34	4547.81	2189.49
Depreciation	26888.47	27008.52	27049.90	27084.02	27106.17
Interest on Working Capital	2579.28	2589.46	2597.36	2603.82	2611.24
O & M Expenses	13746.97	14660.32	15634.36	16673.10	17780.86
Total	**95388.84**	**94562.74**	**93550.03**	**92382.82**	**91161.83**

Normative Annual Plant Availability Factor

74. Clause (4) of Regulation 37 of the 2014 Tariff Regulations provides for the Normative Annual Plant Availability Factor (NAPAF) for hydro generating stations already in operation. Accordingly, the NAPAF of 90% has been considered for this generating station, the same being a R.O.R Hydro Station with pondage.

Design Energy

75. The Commission in its order dated 30.5.2011 in Petition No.60/2010 had approved the annual Design Energy (DE) of 1907 Million units for the period 2009-14 in respect of this generating station. This DE has been considered for this generating station for the period 2014-19 as per month-wise details as under:

Month	Design Energy (MUs)
April	110.7
May	230.3
June	266.7
July	275.6
August	275.6
September	261.3
October	134.5
November	84.0
December	73.4
January	64.3
February	55.6
March	74.6
Total	**1907**

Application Fee and Publication Expenses

76. The petitioner has sought the reimbursement of filing fee and also the expenses incurred towards publication of notices for application of tariff for the period 2014-19. The petitioner has deposited tariff filing fees of ₹1716000/- for the period 2014-15 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. The petitioner vide affidavit dated 05.12.2014 has submitted that it has incurred ₹374497/- as charges towards publication of the said tariff petition in the newspapers. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations and in line with the decision in Commission's order dated 6.1.2016 in Petition No.232/GT/2014, the petitioner shall be entitled to recover the filing fees for the year 2014-15 and the expenses incurred on publication of notices for the period 2014-19 directly from the respondents. The filing fees for the remaining years of the tariff period 2015-19 shall be recovered pro rata after deposit of the same and production of documentary proof.

77. The annual fixed charges approved for the period 2014-19 as above are subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.

78. Petition No. 231/GT/2014 is disposed of in terms of the above.

Sd/-	*Sd/-*	*Sd/-*	*Sd/-*
(Dr. M.K.Iyer)	**(A.S Bakshi)**	**(A.K.Singhal)**	**(Gireesh B Pradhan)**
Member	**Member**	**Member**	**Chairperson**

Annexure-1

Calculation of Weighted Average Rate of Interest on loan

(₹in lakh)

Sl. no.		2014-15	2015-16	2016-17	2017-18	2018-19
1	2	3	4	5	6	7
	LIC Rs. 2500 crore					
	Gross loan - Opening	125800	125800	125800	125800	125800
	Cumulative repayments of Loans upto previous year	52416.66	62899.99	73383.33	83866.66	94349.99
	Net loan - Opening	73383.34	62900.01	52416.67	41933.34	31450.01
	Add: Drawal (s) during the Year	0	0	0	0	0
	Less: Repayment (s) of Loans during the year	10483.33	10483.33	10483.33	10483.33	10483.33
	Net loan - Closing	62900.00	52416.67	41933.33	31450.00	20966.67
	Average Net Loan	68141.67	57658.34	47175.00	36691.67	26208.34
	Rate of Interest on Loan	7.84%	7.81%	7.72%	7.61%	7.42%
	Interest on loan	5339.92	4502.47	3641.75	2792.67	1943.59
	CANARA BANK					
	Gross loan - Opening	20000	20000	20000	20000	20000
	Cumulative repayments of Loans upto previous year	14000	16000	18000	20000	20000
	Net loan - Opening	6000	4000	2000	0	0
	Add: Drawal (s) during the Year	0	0	0	0	0
	Less: Repayment (s) of Loans during the year	2000	2000	2000	0	0
	Net loan - Closing	4000	2000	0	0	0
	Average Net Loan	5000	3000	1000	0	0
	Rate of Interest on Loan	7.16%	7.37%	8.34%	0.00%	0.00%
	Interest on loan	357.85	221.02	83.45	0	0
	SYNDICATE BANK					
	Gross loan - Opening	18300	18300	18300	18300	18300
	Cumulative repayments of Loans upto previous year	12810	14640	16470	18300	18300
	Net loan - Opening	5490	3660	1830	0	0
	Add: Drawal (s) during the Year	0	0	0	0	0
	Less: Repayment (s) of Loans during the year	1830	1830	1830	0	0
	Net loan - Closing	3660	1830	0	0	0
	Average Net Loan	4575	2745	915	0	0
	Rate of Interest on Loan	8.36%	9.14%	12.95%	0.00%	0.00%
	Interest on loan	382.29	250.77	118.52	0	0
	ORIENTAL BANK OF COMMERCE					
	Gross loan - Opening	20000	20000	20000	20000	20000
	Cumulative repayments of Loans upto previous year	14000	16000	18000	20000	20000
	Net loan - Opening	6000	4000	2000	0	0
	Add: Drawal (s) during the year	0	0	0	0	0
	Less: Repayment (s) of loan during	2000	2000	2000	0	0

	the year					
	Net loan - Closing	4000	2000	0	0	0
	Average Net Loan	5000	3000	1000	0	0
	Rate of Interest on Loan	8.64%	9.62%	14.37%	0.00%	0.00%
	Interest on loan	432.03	288.67	143.75	0	0
	ORIENTAL BANK OF COMMERCE					
	Gross loan - Opening	10000	10000	10000	10000	10000
	Cumulative repayments of Loans upto previous year	3000	4000	5000	6000	7000
	Net loan - Opening	7000	6000	5000	4000	3000
	Add: Drawal(s) during the Year	0	0	0	0	0
	Less: Repayment (s) of Loans during the year	1000	1000	1000	1000	1000
	Net loan - Closing	6000	5000	4000	3000	2000
	Average Net Loan	6500	5500	4500	3500	2500
	Rate of Interest on Loan	7.47%	7.54%	7.59%	7.70%	7.90%
	Interest on loan	485.73	414.65	341.59	269.52	197.45
	State Bank of Patiala					
	Gross loan - Opening	4000	4000	4000	4000	4000
	Cumulative repayments of Loans upto previous year	2800	3200	3600	4000	4000
	Net loan - Opening	1200	800	400	0	0
	Add: Drawal(s) during the Year	0	0	0	0	0
	Less: Repayment (s) of Loans during the year	400	400	400	0	0
	Net loan - Closing	800	400	0	0	0
	Average Net Loan	1000	600	200	0	0
	Rate of Interest on Loan	9.49%	9.56%	9.84%	0.00%	0.00%
	Interest on loan	94.88	57.38	19.68	0	0
	O-SERIES BONDS					
	Gross loan - Opening	55000	55000	55000	55000	55000
	Cumulative repayments of loans upto previous year	33000	38500	44000	49500	55000
	Net loan - Opening	22000	16500	11000	5500	0
	Add: Drawal (s) during the Year	0	0	0	0	0
	Less: Repayment (s) of Loans during the year	5500	5500	5500	5500	0
	Net loan - Closing	16500	11000	5500	0	0
	Average Net Loan	19250	13750	8250	2750	0
	Rate of Interest on Loan	8.80%	9.27%	10.27%	15.40%	0.00%
	Interest on loan	1694.00	1273.98	847.00	423.50	0
	TOTAL LOANS					
	Gross loan - Opening	253100.00	253100.00	253100.00	253100.00	253100.00
	Cumulative repayments of loans upto previous year	132026.66	155239.99	178453.33	201666.66	218649.99
	Net loan - Opening	121073.34	97860.01	74646.67	51433.34	34450.01
	Add: Drawal (s) during the year	0.00	0.00	0.00	0.00	0.00
	Less: Repayment (s) of Loans during the year	23213.33	23213.33	23213.33	16983.33	11483.33

	Net loan - Closing	97860.01	74646.67	51433.34	34450.01	22966.67
	Average Net Loan	109466.67	86253.34	63040.01	42941.67	28708.34
	Interest on loan	8786.70	7008.94	5195.73	3485.69	2141.04
	Weighted average Rate of Interest on loans	8.03%	8.13%	8.24%	8.12%	7.46%

ANNEXURE-4.1

GL ISO 9001 GL Systems Certification

VANJAX

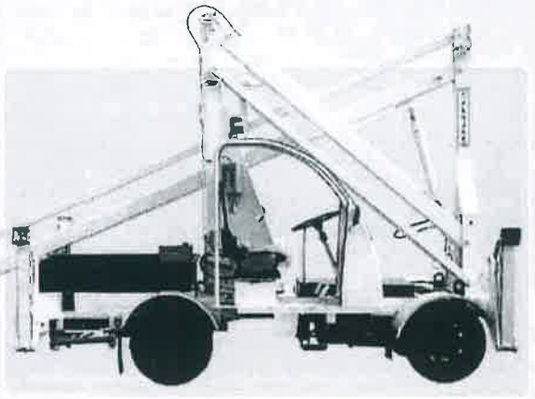
ISO 9001:2008 COMPANY

VANJAX

introducing
the new
BATTERY OPERATED -
SELF PROPELLED
AERIAL ACCESS PLATFORM

VX APF SPV-BO
(with Stabilizers)

The VXAPF SPV-BO-13X / VXAPF SPV-BO-15X is a versatile multi-utility equipment for street lights maintenance, overhead electrical / pneumatic / gas-pipelines, inside plants and large campus areas, window glass panes cleaning, attending traffic - signals and many other applications. It can be used to access any position of height upto 13m. above ground level for in campus usage.



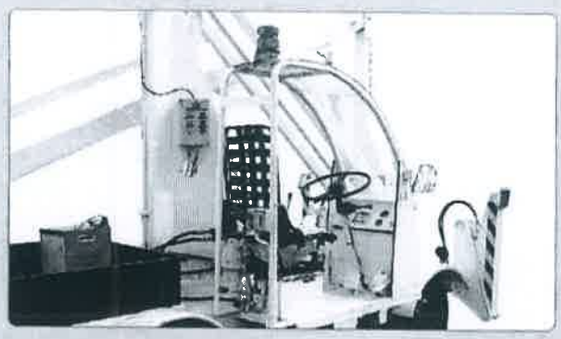
SAFETY

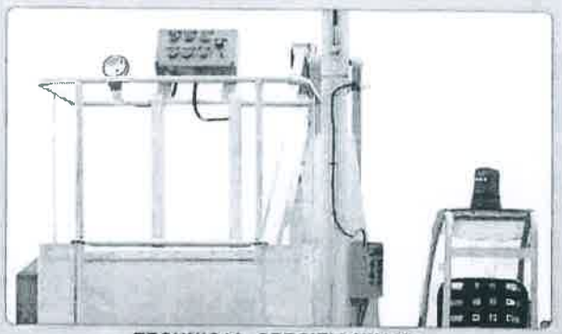
- ☆ **Emergency stop**
- ☆ **Manual release**
- ☆ **Hose burst check valve**
- ☆ **Interlock for stabilizers**

The VX APF-SPV-BO 13X / 15X is mounted on its own 4 wheel two axle chassis, driven by a Battery with necessary controls for traversing / lifting / lowering operations. The four hydraulically operated stabilizers make the unit totally safe against overturning at maximum reach, be it vertical / horizontal. The VX APF-SPV-BO 13X / 15X has dual controls on the basket and on the base.

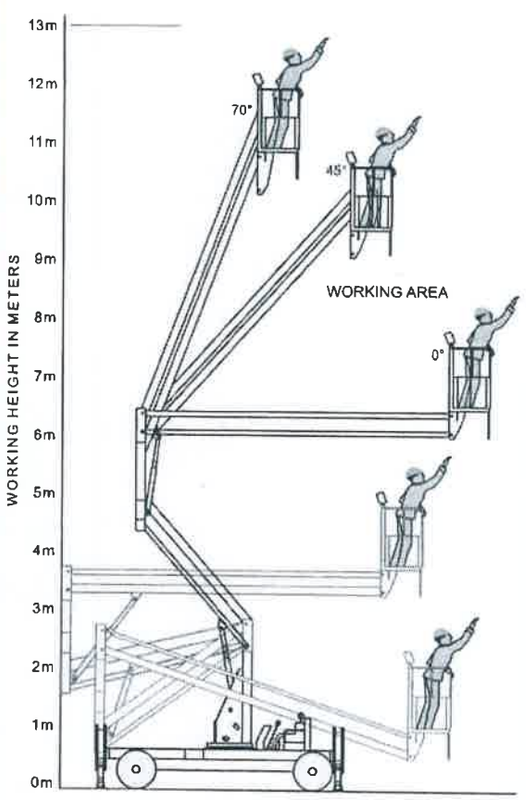
HYDRAULIC POWER IN ACTION
YOU NEED IT, VANJAX MAKES IT.

JSW Hydro Energy Limited





RANGE GRAPH



OPERATING CONDITION
ROTATION 360° IN EITHER DIRECTION

TECHNICAL SPECIFICATIONS

TYPE	VXAPF SPV BO 13X	VXAPF SPV BO 15X
CAPACITY	150 kgs	150 kgs
CLOSED HEIGHT FROM G.L	3200 mm	3250 mm
MAX. HORIZONTAL OUTREACH	4500 mm	4500 mm
LIFTED HEIGHT	11500 mm	13000 mm
WORKING HEIGHT	13000 mm	15000 mm
OVERALL LENGTH	5610 mm	6050 mm
OVERALL WIDTH (approx.)	2350 mm	2345 mm
BOOM 1 LENGTH	2850 mm	3250 mm
BOOM 2 LENGTH	5000 mm	5500 mm
OIL TANK SIZE L x W x H	500 x 350 x 300 mm	500 x 350 x 300 mm
OVERALL PLATFORM SIZE L X W X H - in mm. Ht INCLUDING HANDRAILS	820 x 610 x 1000	815 x 605 x 1025
SLEWING	360° continuous	360° continuous
HYDRAULIC MOTOR	3 kw / 95 A	3 kw / 95 A
TRACTION MOTOR	5 hp / 95 A	5 hp / 95 A
GROUND CLEARANCE	190 mm	190 mm
WHEEL SIZE	Ø 680x180 thickness	Ø 680x180 thickness
WHEEL BASE	2450 mm	2415 mm
BATTERY SPECIFICATION	48 V / 240 Ah	48 V / 240 Ah
No. OF LIFTING CYLINDERS	2 Nos.	2 Nos.
No. OF STABILIZERS	4 Nos.	4 Nos.
BRAKE	MANUAL	MANUAL
CLOSED WIDTH	2350 mm	2345 mm
OVERALL WIDTH WITH STABILIZERS	4100 mm	4160 mm

VANJAX SALES PVT. LTD.,
an ISO 9001:2008 COMPANY
Phone:044-4282 1000, 2625 5300
Fax: 0091-44-4598 5700

Regd. Off. Unit-1 (VXC-1)
343,Sidco Industrial Estate
Ambattur
Chennai 600098.T.N., India

Vanjax Factory Unit-2 (VXC-2)
S.No.230/11, Mevalur Kuppam
Sriperumbudur
Chennai 602105. T.N., India

Vanjax Regional Mktg. Off.
A-53, Ground Floor
Okhla Indl. Area, Phase II
New Delhi 110020. India

Vanjax Branch Off.
Narang Chambers
15, 3rd Floor, N.R.Road
Bengaluru 560002, India

e-Mail:info@vanjax.com / cgm@vanjax.com / salesndl@vanjax.com / salesblr@vanjax.com / website: www.vanjax.in

HYDRAULIC POWER IN ACTION

YOU NEED IT, VANJAX MAKES IT.

VXAPF SPV BO

— Please visit our website for more details —

ANNEXURE-5.1

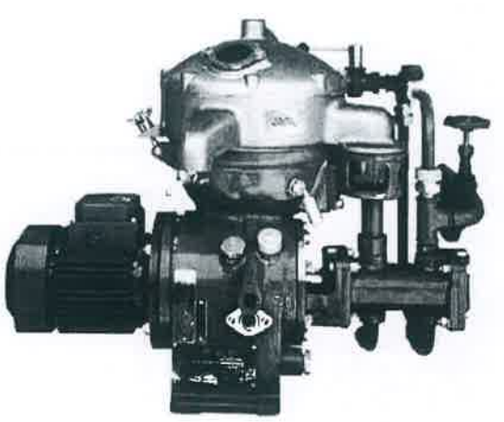
MAB

Solids-retaining centrifugal separator

Application
Purification or clarification of mineral oils used in marine installations and power stations (fuel and lubricating oils).

Working principle
Separation takes place in a solids-retaining bowl that can be arranged for either clarification or purification. In both cases, the contaminated oil is fed into the separator through the centre, and it is separated by centrifugal force into its various phases, the heaviest phase (sludge and water) being forced outwards to the periphery of the bowl. The accumulation of sludge is periodically removed from the bowl by hand.

Installation
The oil is pumped, heated, and separated as shown in the figure. A liquid seal in the separator bowl prevents the oil from escaping through the water outlet. If this seal is broken, an alarm device is activated. With unmanned engine rooms, the signals are transmitted to a remote control unit. When the seal is broken, the three-way valve shuts off the oil feed and the oil is recirculated until the fault is corrected.



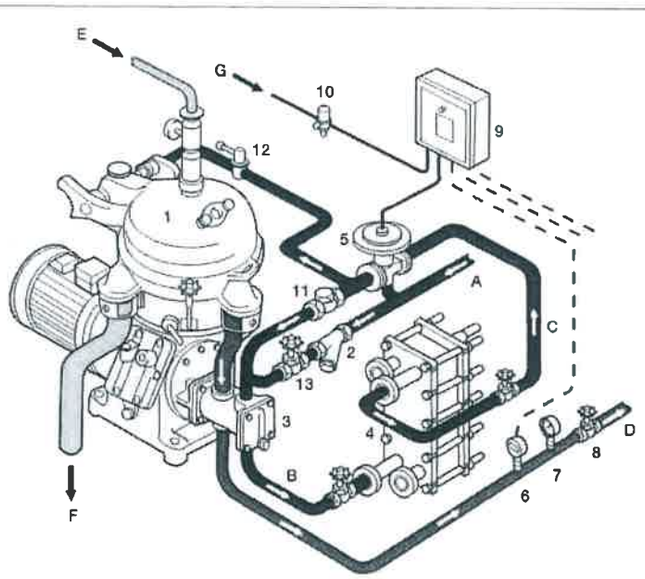
Separator model MAB 103B complete with feed/discharge pump and fittings for connection to a preheater.

A. Oil feed to pump
B. Oil to heater
C. Oil to separator
D. Oil from separator outlet
E. Liquid-seal supply
F. Water outlet
G. Air supply for three-way valve

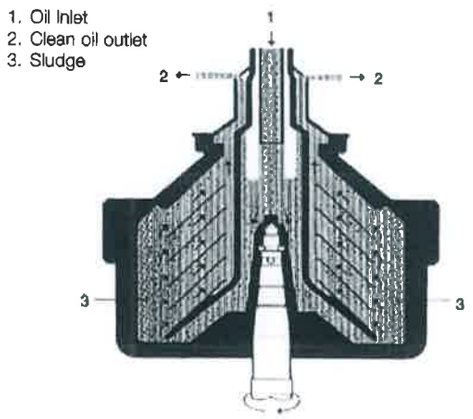
1. MAB separator
2. Oil strainer
3. Feed/discharge pump
4. Plate heat exchanger
5. Three way valve

6. Pressure switch
7. Pressure gauge
8. Regulating valve
9. Liquid-seal alarm cabinet
10. Air reducing valve

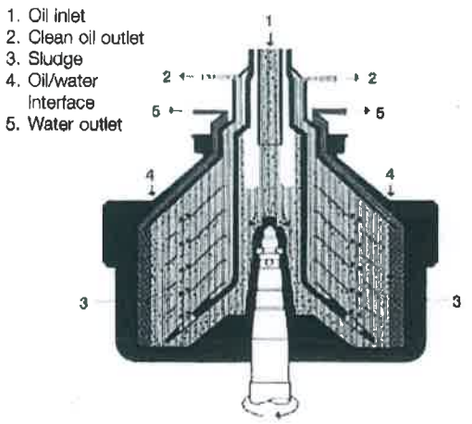
11. Check valve
12. Shut-off valve
13. Regulating valve



Schematic installation layout of MAB separator with plate-type oil heater.



MAB bowl arranged as a **clarifier** for separating oils containing sludge and a very small quantity of water.



MAB bowl arranged as a **purifier** for separating oils containing sludge and an appreciable quantity of water.

Standard design

Solids-retaining separator comprising a frame containing in its lower part a horizontal drive shaft with friction clutch and brake, worm gear and a vertical bowl spindle. The worm gear is placed in an oil bath.

The bowl is fixed on the top of the spindle inside the space formed by the upper part of the frame and the frame hood which also carries the feed and discharge systems. The frame hood is hinged to facilitate easy access for cleaning the bowl which is of the solid-wall disc type.

Basic equipment

- Dirty oil inlet device.
- Clean oil outlet device with sight glass.
- Water outlet spout.
- Liquid seal water inlet.
- Set of gravity discs.
- Clarifier parts comprising discharge collar, top disc without neck, and bottom disc without holes.
- Revolution indicator.
- Set of resilient mountings.
- Set of Standard Spare Parts.
- Built-on gear type pump (combined feed/discharge pump).

Extra equipment

- Electric motor.
- Starter.
- Set of tools.
- Set of recommended additional spares for long-time service.
- Flexible connections.
- Preheater.
- Alarm device for broken liquid seal.

Technical documentation

Complete information and documentation accompany each separator delivery. The Instruction Book provides separator operators with detailed instructions and advice for obtaining optimal separation.

The Maintenance and Repair Manual describes separator dismantling and reassembly. The Spare Parts Catalogue facilitates the ordering of spare parts.

Service

Alfa Laval is a worldwide corporation with its head office in Sweden, and affiliated companies and representatives in about 130 countries. Spares and service for all Alfa Laval process equipment are provided through the organization of the Alfa Laval Group and its representatives.

Throughput capacity

Blue bar indicates range from minimum economical throughput on detergent type lubricating oil to maximum recommended throughput on distillate (1.5–5.5 cSt/40°C).

EMD00064EN 1303

How to contact Alfa Laval
Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com

ANNEXURE-5.2

CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 231/GT/2014

Coram:
Shri Gireesh B. Pradhan, Chairperson
Shri A.K.Singhal, Member
Shri A. S. Bakshi, Member
Dr. M. K. Iyer, Member

Date of Order: 30th August, 2016

In the matter of

Revision of tariff for the period 2009-14 after truing up exercise and determination of tariff for 2014-19 in respect of Dulhasti Hydroelectric Power Station (390 MW).

AND

In the matter of

NHPC Ltd,
NHPC Office Complex, Sector 33,
Faridabad – 121003 .....**Petitioner**

Vs

1. Punjab State Power Corporation Ltd
The Mall, Near Kall Badi Mandir,
Patiala – 147 001

2. Haryana Power Utilities,
Shakti Bhawan, Sector, 6
Panchkula – 134 109

3. BSES Rajdhani Power Ltd
BSES Bhawan, Nehru Place,
New Delhi – 110 019

4. Uttar Pradesh Power Corporation Ltd
Shakti Bhawan, 14, Ashok Marg,
Lucknow – 226 001

5. BSES Yamuna Power Ltd
Shakti Kiran Building,
Karkardooma, New Delhi – 110 072

6. Engineering Department, 1 st Floor,
UT Secretariat, Sector 9D,
Chandigarh – 160 009

24	Treatment of sinking zone at Tamuruchi, Dul	17.97	The petitioner has submitted that this is a rectification entry and corresponding deletion is shown in 2012-13.	Since this rectification entry is for the asset/work which has not been allowed in this order in 2013-14, the rectification entry is **not allowed**
25	Hoist- Manual,6 Ton Capacity, 3.0 M Lift	2.29	The petitioner has not submitted any details regarding the claim.	The expenditure is in nature of tools & tackles and hence **not allowed**
26	Portable diesel filtration Cart equipped with motorized pump	1.68		
27	Hollow plunger hydraulic cylinder, Cap 10T	6.42		
28	Ultrasonic level transmitter with transmitter with transducer and hand held programmer -MR200	1.44		
29	Dewatering Pump (18.65 KW, 36.0 AMP 415V 3-Phase, 50 Hz)	8.67	The petitioner has submitted that, though power house dewatering system is operating but no provision has been kept earlier for dewatering of different pits for power house like transformer pit, turbine pit, MIV Servo motor pit. Further for inspection of radial gate buckets, dewatering is essential for which no pump was available. As such these pumps have been procured.	Since the asset is considered necessary for successful and efficient operation of the generating station, the expenditure incurred is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations.
30	Transformer Oil Filtration Plant, ,500 LPH Capacity, VPI Make	4.54	The petitioner has submitted that, it is required for filtration of transformer oil installed in 33/11 KV substation and Distribution transformer.	

Application Fee and Publication Expenses

76. The petitioner has sought the reimbursement of filing fee and also the expenses incurred towards publication of notices for application of tariff for the period 2014-19. The petitioner has deposited tariff filing fees of ₹1716000/- for the period 2014-15 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. The petitioner vide affidavit dated 05.12.2014 has submitted that it has incurred ₹374497/- as charges towards publication of the said tariff petition in the newspapers. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations and in line with the decision in Commission's order dated 6.1.2016 in Petition No.232/GT/2014, the petitioner shall be entitled to recover the filing fees for the year 2014-15 and the expenses incurred on publication of notices for the period 2014-19 directly from the respondents. The filing fees for the remaining years of the tariff period 2015-19 shall be recovered pro rata after deposit of the same and production of documentary proof.

77. The annual fixed charges approved for the period 2014-19 as above are subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.

78. Petition No. 231/GT/2014 is disposed of in terms of the above.

Sd/-	*Sd/-*	*Sd/-*	*Sd/-*
(Dr. M.K.Iyer)	**(A.S Bakshi)**	**(A.K.Singhal)**	**(Gireesh B Pradhan)**
Member	**Member**	**Member**	**Chairperson**

ANNEXURE-6.1

Dinesh Mahato <dinesh.mahato@jsw.in>

Fwd: Submit Budgetary offer for following Cooling water Pump Items...

1 message

mahesh negi <mahesh.negi@jsw.in> Wed, Jan 2, 2019 at 11:10 AM
To: Dinesh Mahato <dinesh.mahato@jsw.in>

FYIP

---------- Forwarded message ---------
From: **Rakesh Ranjan Rout** <rakesh.rout@jsw.in>
Date: Fri, May 18, 2018 at 11:20 AM
Subject: Re: Submit Budgetary offer for following Cooling water Pump Items...
To: deva espa <deva@espaindia.com>
Cc: mahesh negi <mahesh.negi@jsw.in>

Dear vendor,

This is continuation to the trailing mail.

Quantity required for shaft 8759 : 6 Nos

With Best Regards,

Rakesh Ranjan Rout| Junior Manager (O&M Baspa-II) | JSW Energy Ltd.

HBPCL, Sholtu Colony, PO -Tapri, District. Kinnaur – 172104 | Himachal Pradesh | India

M +91 7807221123 | +91 1786 261696 Extn 200

www.jsw.in

Twitter Link: https://twitter.com/TheJSWGroup

LinkedIn Link: https://www.linkedin.com/company/32884?trk=vsrp_companies_cluster_name&trkInfo=VSRPsearchId%3A4090034143919079796 9%2CVSRPtargetId%3A32884%2CVSRPcmpt%3Acompanies_cluster

YouTube Link: https://www.youtube.com/channel/UCMauB1IhqTxH982vZmdJoVw

On Thu, May 17, 2018 at 7:39 AM, deva espa <deva@espaindia.com> wrote:

To: M/s JSW Energy Ltd, Kinnaur **Kind Attn: Mr.Rakesh Anjan Routl, Manager (O & M Baspa-II)**

Dear Sir.,

The below mail points are for your attention.

We are waiting for the quantity required for Sl.No.4, Shaft 8759 to proceed further. Please revert.

Thanks and regards.,

JSW Hydro Energy Limited

K.Deva

-------- Forwarded message ---------
From: **deva espa** <deva@espaindia.com>
Date: Sat, May 12, 2018 at 1:44 PM
Subject: Re: Submit Budgetary offer for following Cooling water Pump Items...
To: Rakesh Ranjan Rout <rakesh.rout@jsw.in>
Cc: mahesh negi <mahesh.negi@jsw.in>

Dear Sir.,

Referring to the attached enquiry forwarded by your goodselves, the following are for your kind attention.

1) In your attached enquiry, Sl.No. 1 & 2 are valves, which are not in our scope.
2) Sl.No. 3 & 4 are said Rovatti pump parts. Please mention the quantity required for Sl.No. 4. We can quote only for these two items. (Sl.No. 3 &4)
3) Sl.No. 5 to 9, we guess that they are not relating to Rovatti pump.

Please confirm the quantity required for Sl.N0.4, Shaft 8759 to quote the prices.

Thanks and regards.,

K.Deva,
Business Unit Head,
ESPA Water Systems Pvt. Ltd,
No.3/1, Plot No.3, Puttappa Industrial Estate,
Mahadevapura Post, Whitefield Road,
Bangalore - 560 048.
Phone: 080 3310602; Mobile: +91 8095060001
e-mail: deva@espaindia.com
ESPA

On Sat, May 12, 2018 at 1:42 PM, deva espa <deva@espaindia.com> wrote:

> On Fri, May 11, 2018 at 11:15 PM, Rakesh Ranjan Rout <rakesh.rout@jsw.in> wrote:
> Dear vendor,
>
> As required cooling water pump Make ,type and serial number is ROVATTI ,14V18/3A, and 257337-255152 respectively.
>
> *With Best Regards,*
>
> **Rakesh Ranjan Rout**| Junior Manager (O&M Baspa-II) | JSW Energy Ltd.
>
> HBPCL, Sholtu Colony, PO -Tapri, District. Kinnaur – 172104 | Himachal Pradesh | India
>
> M +91 7807221123 | +91 1786 261696 Extn 200
>
> www.jsw.in
>
> Twitter Link: https://twitter.com/TheJSWGroup
>
> LinkedIn Link: https://www.linkedin.com/company/32884?trk=vsrp_companies_cluster_name&trkInfo=VSRPsearchId%3A4090034143919079796 9%2CVSRPtargetId%3A32884%2CVSRPcmpt%3Acompanies_cluster
>
> YouTube Link: https://www.youtube.com/channel/UCMauB1fhqTxH982vZmdJpVw
>
> On Wed, May 9, 2018 at 6:57 PM, deva espa <deva@espaindia.com> wrote:

JSW Hydro Energy Limited

To: M/s JSW Energy Ltd, Kinnaur Kind Attn: Mr.Rakesh Anjan Routl, Manager (O & M Baspa-II)

Dear Sir.,

We thank you for your valuable enquiry.

As we discussed over phone, please update us the product **MODEL NAME** and **SERIAL NUMBER** to enable us to arrange the quote.

Thanks and regards.,

K.Deva,
Business Unit Head,
ESPA Water Systems Pvt. Ltd,
No.3/1, Plot No.3, Puttappa Industrial Estate,
Mahadevapura Post, Whitefield Road,
Bangalore - 560 048.
Phone: 080 3310602; Mobile: +91 8095060001
e-mail: deva@espaindia.com
ESPA

On Mon, May 7, 2018 at 9:59 PM, Rakesh Ranjan Rout <rakesh.rout@jsw.in> wrote:

Dear Sir,

As per telephonic discussion Please provide budgetary offers for followings items as attached.

This is required for further commercial process.Early reply is highly appreciable.

With Best Regards,

Rakesh Ranjan Routl Junior Manager (O&M Baspa-II) | JSW Energy Ltd.

HBPCL, Sholtu Colony, PO -Tapri, District. Kinnaur – 172104 | Himachal Pradesh | India

M +91 7807221123 | +91 1786 261696 Extn 200

–

With Best Regards,

Mahesh Chander Negi | Dy. Chief Engineer (O&M Baspa-II) | **JSW Hydro Energy Ltd.**

Sholtu Colony, PO -Tapri, District. Kinnaur – 172104 | Himachal Pradesh | India

M +91 9805724444 | Office +91 1786 261696 Extn 200

www.jsw.in

JSW Energy

JSW Hydro Energy Limited

ANNEXURE-6.2

A/c

ESPA WATER SYSTEMS PVT LTD

3/1 PLOT NO 3 PUTTAPPA INDUSTRIA ESTATE
MAHADEVAPURA, BANGALORE 560 048/ TEL: 08033106028
Email : info@espaindia.com / www.espaindia.com
TIN NO.:29230615593 /CIN:U74900KA2011PTC056596

INVOICE

NO: EWS/011/2017-18

DATE: 10.04.2017

CUSTOMER NAME
HIMACHAL BASPA POWER CO.LTD
BASPA-II H.E.P
SHOLTU COLONY,P O -TAPRI
KINNAUR / HIMACHAL PRADESH / 172104

TIN/CST: 02050300329
CONTACT: Mr.DHANI RAM : /TEL:

TERMS OF PAYMENT: ADVANCE
FREIGHT : TO PAY

NO OF BOX: 1 PLT
WEIGHT: 40 KGS

Code	Description of Goods	Quantity	Unit Price (Rs)	Amount (Rs)
2100471161	RBBR BRG,VER PMP,8648,14V18/3A,ROVATTI	2	24,420.00	48,840.00
2100471157	BSHG,VER PMP,8531,14V18/3A,ROVATTI	3	14,278.00	42,834.00
2100471160	RBBR BRG,VER PMP,5941,14V18/3A,ROVATTI	3	19,723.00	59,169.00
2100471162	RBBR BRG,VER PMP,8654,14V18/3A,ROVATTI	3	10,520.00	31,560.00
2100471164	CPLG SHFT,VER PMP,8758,14V18/3A,ROVATTI	2	34,000.00	68,000.00
2100471165	CVR,VER PMP,7164,14V18/3A,ROVATTI	3	16,698.00	50,094.00
2100471166	CPLG,M35-M40,CL WTR,5948 POS:15,14V18/3A	2	18,634.00	37,268.00
2100471168	CPLG,VER PMP,5946,14V18/3A,ROVATTI	2	7,865.00	15,730.00
2100471229	REGULATING NUT,VER PMP,4224,14V18/3A,AC	12	5,022.00	60,264.00
2100471234	SHFT 8"10"12", VER PMP,8759,14V18/3A,AC	3	53,900.00	1,61,700.00
2100471230	PIN 8"10"12",VER PMP,14V18/3A,ROVATTI	10	765.00	7,650.00

DELIVERY ADDRESS
MAIN STORE,
HIMCHAL BASPA POWER CO.LTD
BASPA-II H.E.P
SHOLTU COLONY,PO.-TAPRI DIST, KINNAUR - 172104
HIMACHAL PRADESH (INDIA)

SUB TOTAL	5,83,109.00
PACKING & FORWARDING @ 0.5%	2,915.55
FREIGHT @1.5%	8,966.17
CST 2% AGAINST C FORM	11,720.50
GRAND TOTAL (Rs)	6,06,711.22
ROUNDED OFF	6,06,711.00

Amount: (RUPEES) **SIX LAKH SIX THOUSAND SEVEN HUNDRED ELEVEN ONLY**

NOTE: Goods once sold cannot be taken back. Our responsibility ceases after the goods have been left our godown. No claim for breakage and shortage during transit will be entertained

For ESPA WATER SYSTEMS PVT. LTD

Authorised Signatory

JSW Hydro Energy Limited

Nitco Roadways (A Unit of Nitco Logistics Pvt. Ltd.)
Nitco House, Talab Tillo Road, Jammu - 180002, J&K, India
Phone: 91 (0) 2554413, 2554228, 2553849
Email: hooffice@nitcoroadways.com
Website: www.nitcologistic.com
Always on the move..!
(ISO 9001:2008 Certified)

CONSIGNOR COPY*
AT CARRIER'S RISK / OWNER'S RISK

PAN NO. AAACN6345A
CIN : U60231JK1964PTC000288

SERVICE TAX NO.
AAACN6345AST017

50

Schedule of Demurrage Charges
Demurrage Chargeable after 7 days free
Today @Rs. per day per all one weight
Charges Double charge after 30 days.

Sr. No. 1130581

INSURANCE

The Consignor has stated that:
He has Insured the Consignment.
Company:
Policy No: Date:
Amount: Risk:

NOTICE
The Consignment covered by this Set of Forms Shall be delivered to the order of the consignee Bank whose name is mentioned in the Lorry Receipt. It will under no circumstances be delivered to any one without the written authority from the Consignee Bank or its order, endorsed on the Consignee Copy or on a separate Letter of Authority.

Code No: JMN - 363

CAUTION
This consignment will not be detained. Diverted, re-routed or re-booked without Consignee Bank's written permission. Will be delivered at the destination.

Address of Issuing Office or Name & Address of Agent

Phone:

Address of Delivery Office

BLU/411001
CHD

CONSIGNMENT NOTE

No:
Date: Time:

From:

To:

State:

Consignor Tin No.

Consignee Tin No.

Private Marka

Cust. ID:
Consignor's Name:
Address:

Phone:

Consignee's/Bank Name:
Address:

Phone:

Pkgs.	Mode	Description (Said to Contain)	Actual Weight	Charged Weight	Rate Per Kg.

Charges	Amount (In Rs.)
Freight	
Labour	
LC-PC	
St. Service Charges	
Door Delivery	
St. Charges	
Surcharge	
Dharmartha	
VSC	
SSC	
PF	
Toll Tax	
Barrier Charges	
Others	
Total	
Service Tax	
Grand Total	

Goods Value

To Pay Amount (TP)

To Be Billed (TBB)

Paid Amount (PD)

Remarks:

Signature of Customer

Signature of Booking Clerk

Cheques/DD to be issued in favour of Nitco Logistics Pvt. Ltd. RTGS can be sent to A/C No. 0100256005079 in Canara Bank,Shalamar Road, Jammu. IFSC Code : CNRB0000100.

24 Hour Helpline : 1800 180 1818 (Toll Free Number), 09906095288, 09906095689 • No responsibility for breakages • Party responsible for all Govt. Taxes / Levies • Hand Written entries / alterations are invalid on this document. • All disputes subject to the jurisdiction to Jammu Courts only.

JSW Hydro Energy Limited

695

ANNEXURE-6.3

Jyoti Ltd.
Water • Power • Progress
Nanubhai Amin Marg,
Industrial Area,
P O Chemical Industries,
Vadodara-390 003 (India)
Phone : 3054444
Fax : ++91-265-2281871
2280671
E Mail : jyotiltd@jyoti.com
Website : http://www.jyoti.com
CIN: L36990GJ1943PLC000363

30.05.2018

To,
JSW Energy Ltd
HBPCL, Sholtu Colony,
PO -Tapri, District. Kinnaur – 172104
Himachal Pradesh

Sub: Offer for Cooling water Pump.

Dear Sir,

We acknowledge with thanks the receipts of your valued enquiry vide email dated 20.05.2018. We are pleased to submit our Techno-commercial offer for your kind consideration:

We have checked the existing construction of pump & motor. Our pumps can be coupled with existing ABB Vertical Solid Shaft motor. Please confirm whether existing motors are bi-directional or uni-directional. You may dispatch the motor to our factory for necessary checking & test the pump along with your existing ABB motor at our test bed (our factory).

SR NO	ITEM	QTY	UNIT	UNIT PRICE EX-WORKS	TOTAL PRICE EX-WORKS	FREIGHT & INSURANCE	GST	TOTAL LANDED COST
1.0	350TE3A4 Vertical Turbine Pump	2	Nos	5,70,000	11,40,000	INCL	1,36,800	12,76,800
2.0	SUPERVISION OF E&C (Per Engineer)	5	Days	7,500	37,500	-	6,750	44,250
	GRAND TOTAL							13,21,050
Terms								
1	Our scope shall be limited to design, manufacturing & supply of Complete pump(Without Motor)							
2	Freight and Insurance is inclusive in the above quote price.							
3	Existing Motor overhauling is not in Jyoti scope.							
4	We have considered 5 Days per engineer for supervision of Erection and Commissioning. In case additional days are required, the above quoted price shall be charged extra.							
5	Lodging and boarding to be provided by you.							
6	Payment terms :: 30% advance along with the order & balance with 100% taxes after factory testing & before dispatch							

We now look forward to receiving your valued order at the earliest.

Yours faithfully
For Jyoti Limited

(Jyoti Mukhopadhyay)
General Manager

JSW Hydro Energy Limited

ANNEXURE-7.1

JSW Hydro Energy Limited/Baspa/BASPA POWER HOUSE/01-11-2018/437306

NOTE FOR APPROVAL

Ref No:JSW Hydro Energy Limited/Baspa/BASPA POWER HOUSE/01-11-2018/437306

Date:01-11-2018

Department : BASPA POWER HOUSE

NFA Status :APPROVED **Approval Type:**Budgetary

Amount:INR 650,000(INR- Six Lakh Fifty Thousand Only)

Subject: Administrative approval for Improving Safety against fall from height at Baspa Powerhouse by barricading Machine Hall Hatch Covers.

Preamble Details:

Recently, a lot of thrust has been given on improving safety at our locations. One of the 'QUICK WINS' initiative under Du Pont Safety Practices implementation is providing Standard barricading for all floor openings.

At Baspa, the hatch covers are provided on pits, which are kept for runner, MIV or similar heavy components removal during maintenance. When these are removed, there is potential risk of fall from height, as the shifting works require constant supervision from machine hall around these big openings to ensure the safety of equipment being handled.

Since, there is no fix barricading, potential risk of fall from height exists.

Technical/Functional Details/Commercial Details:

BOQ and budgetary offer attached as Annexture A

Business Justification:-

To eliminate the risk, it is recommended that these hatch covers are barricaded permanently with fixed railings.

This requirement is the compliance of identified QUICK WINS Point **"Provide Standard barricades and barriers"** under Du Pont practices and EC meeting MOM to ensure safety in all height related works.

To estimate the quantum of work, cost and material requirement, M/S Mehta Fabrication Works of Badhal was asked to take measurements and submit the offer for providing & fabricating these railings. Accordingly, after their visit an offer of INR 6.75 Lacswas submitted by them, which is further negotiable. The same is attached as Annexure A.

Proposal Details:

As such, approval may please be accorded for placing a Service order towards Supply, Fabrication and Installation of fixed railings to the lowest bidder after floating enquiriesto other vendors also.

JSW Hydro Energy Limited

JSW Hydro Energy Limited/Baspa/BASPA POWER HOUSE/01-11-2018/

We have budget provision in Baspa fund center4600-143(powerhouse other) under head Service-Repairand maintenance.

Other Details:

NA

NFA Enclosures:

Annexure A_BOQ & Quotation.xlsx

Initiated by:

VIKAS GUPTA - ,

01-11-2018

NFA Status :**APPROVED**

Signature

..

CLARIFICATION-1

Clarification Asked by:perveen puri **on** 03-11-2018

Asked clarification:- As mentioned in the Annexure- A , please attach the photos for better understanding

Answerd By :ravindra rana **on** 03-11-2018

Clarification:- Dear Sir, The railings photograph used at SJVNL Jhakri PH around Hatch Covers for runner and MIV removal / handling is attached for reference. We have selected almost similar design but with optimum size of pipes for remaining economical.

Approved by:

ravindra rana - Dy Gen Mgr, O&M Baspa-II

01-11-2018

Remarks:- From Safety point of view, the barricading of hatch covers is essentially and urgently required keeping in view the Annual Maintenance ahead. Kindly approve so that the Service Order can be placed at the earliest.

Approver Status :**APPROVED**

JSW Hydro Energy Limited/Baspa/BASPA POWER HOUSE/01-11-2018/

Signature

Approved by:

sanjeev.kango - ,

02-11-2018

Remarks:- ok

Approver Status :**APPROVED**

No Signature

Signature

Approved by:

perveen puri - HTC-VP, HBPCL

09-11-2018

Remarks:- ok

Approver Status :**APPROVED**

No Signature

Signature

JSW Hydro Energy Limited

PEE KAY AAR INTERNATIONAL

Q. NO. 1253/2018-2019 DT: 19.12.2018 REVISED ON 24.12.2018

SAFETY SIGNAGES

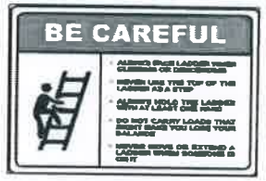
Sr.No.	SAFETY SINAGES	PHOTOGRAPHIC DESCRIPTION	SPECIFICATION / SIZE	QTY.	RATE		COST (INR)	
					ITEM RATE (INR)	TRANSPORTATION & INSTALLATION RATE	AMT. FOR ITEMS (INR)	AMT. FOR TRANSPORTATION & INSTALLATION
1	NO SMOKING		Size-9"x12" Inch. Night glow Vinyl with 3mm ACP sheet	10	434	214	4340	2140
2	FIRE HOSE		9 x 12" Night glow vinyl with 3mm acp sheet	16	434	214	6944	3424
3	FIRE EXTINGUISHER		9" x 12" Night Glow vinyl with 3mm acp sheet	20	434	214	8680	4280
4	FIRE ALARM		9" x 12" Night Glow vinyl with 3mm acp sheet	16	434	214	6944	3424
5	KEEP DOOR CLOSED		9" x 12" Night Glow vinyl with 3mm acp sheet	10	434	214	4340	2140

JSW Hydro Energy Limited

Annexure 7.2

Sr.No.	SAFETY SINAGES	PHOTOGRAPHIC DESCRIPTION	SPECIFICATION / SIZE	QTY.	RATE		COST (INR)	
					ITEM RATE (INR)	TRANSPORTATION & INSTALLATION RATE	AMT. FOR ITEMS (INR)	AMT. FOR TRANSPORTATION & INSTALLATION
6	Fire Blanket		9" x 12" vinyl with 3mm acp sheet	3	434	214	1302	642
7	DANGER: 440 Volts		9" x 12" vinyl with 3mm acp sheet	20	434	214	8680	4280
8	DANGER 220 VOLTS		9" x 12" vinyl with 3mm acp sheet	6	434	214	2604	1284
9	WARNING: Noise Hazard		9" x 12" vinyl with 3mm acp sheet	3	434	214	1302	642
10	DANGER: Fork Lift Traffic		9" x 12" glow vinyl with 3mm acp sheet	4	434	214	1736	856

JSW Hydro Energy Limited

Sr.No.	SAFETY SINAGES	PHOTOGRAPHIC DESCRIPTION	SPECIFICATION / SIZE	QTY.	RATE		COST (INR)	
					ITEM RATE (INR)	TRANSPORTATION & INSTALLATION RATE	AMT. FOR ITEMS (INR)	AMT. FOR TRANSPORTATION & INSTALLATION
11	Air Breathing Apparatus		9" x 12" Night Glow vinyl with 3mm acp sheet	4	434	214	1736	856
12	First Aid Box		6" x 8" Night Glow vinyl with 3mm acp sheet	4	193	95	772	380
13	Water Tank		12" x 16" vinyl with 3mm acp sheet	3	772	380	2316	1140
14	LADDER SAFETY		9" x 12" Night Glow vinyl with 3mm acp sheet	4	434	214	1736	856
15	Washroom Men		8" x 8" Night Glow vinyl with 3mm acp sheet	5	257	127	1285	635

JSW Hydro Energy Limited

Sr.No.	SAFETY SINAGES	PHOTOGRAPHIC DESCRIPTION	SPECIFICATION / SIZE	QTY.	RATE		COST (INR)	
					ITEM RATE (INR)	TRANSPORTATION & INSTALLATION RATE	AMT. FOR ITEMS (INR)	AMT. FOR TRANSPORTATION & INSTALLATION
16			8" x 8" Night Glow vinyl with 3mm acp sheet	1	257	127	257	127
17	Please Turn off the Lights		4"x6" vinyl with 3mm acp sheet	10	96	48	960	480
18	Caution wet Floor		20"X12"	8	530	170	4240	1360
19	Caution Maintenance work in Progress		20"X12"	10	530	170	5300	1700
20	EXIT LEFT		4" x 12" Night glow vinyl with 3mm acp sheet	4	193	95	772	380
21	EXIT RIGHT		4" x 12" Night glow vinyl with 3mm acp sheet	10	193	95	1930	950

JSW Hydro Energy Limited

Sr.No.	SAFETY SINAGES	PHOTOGRAPHIC DESCRIPTION	SPECIFICATION / SIZE	QTY.	RATE		COST (INR)	
					ITEM RATE (INR)	TRANSPORTATION & INSTALLATION RATE	AMT. FOR ITEMS (INR)	AMT. FOR TRANSPORTATION & INSTALLATION
22	DUSTBIN		9" x 12" Night Glow vinyl with 3mm acp sheet	5	434	214	2170	1070
23	Fire Evacuation Floor Plan Control Room		3'x2' feet , Auto Glow or Night Glow	1	1608	792	1608	792
24	Fire Evacuation Floor Plan (GIS Hall)		3'x2' feet , Auto Glow or Night Glow	1	1608	792	1608	792
25	Nicolite tape (For pasting along both side of passages)		Nicolite tape, 2" Inch Tape Reflective and Glow in the Dark Radium Tape with directional arrows (600 MTR.)	400	80	24	32000	9600
26	SAFETY PPE EDUCATION		9" x 12" Night Glow vinyl with 3mm acp sheet	4	434	214	1736	856
27	SPEED LIMIT		12x18" Night Glow vinyl with 3mm acp sheet	6	867	429	5202	2574

JSW Hydro Energy Limited

Sr.No.	SAFETY SINAGES	PHOTOGRAPHIC DESCRIPTION	SPECIFICATION / SIZE	QTY.	RATE		COST (INR)	
					ITEM RATE (INR)	TRANSPORTATION & INSTALLATION RATE	AMT. FOR ITEMS (INR)	AMT. FOR TRANSPORTATION & INSTALLATION
28	Fire Action		16" x24" Night Glow vinyl with 3mm acp sheet	4	1544	760	6176	3040
29	Safety Helmets & Footwear must be worn		Size-9"x12" Inch. Night glow Vinyl with 3mm ACP sheet	4	434	214	1736	856
30	Parking		16" x 16" Night Glow vinyl with 3mm acp sheet	2	1029	507	2058	1014
31	Parking		16" x 16" Night Glow vinyl with 3mm acp sheet	1	1029	507	1029	507
32	Know your Safety Signs		Know your Safety Signs 24"x32"	2	2573	1267	5146	2534
33	Exit		Size-4"x12"	6	193	95	1158	570

JSW Hydro Energy Limited

Sr.No.	SAFETY SINAGES	PHOTOGRAPHIC DESCRIPTION	SPECIFICATION / SIZE	QTY.	RATE		COST (INR)	
					ITEM RATE (INR)	TRANSPORTATION & INSTALLATION RATE	AMT. FOR ITEMS (INR)	AMT. FOR TRANSPORTATION & INSTALLATION
34	STOP		24" x 24" reflective sign with 3mm acp sheet with six feet high stand	1	2316	1140	2316	1140
35	Reflective Tape Red Colour		mtr	300	30	24	9000	7200
36	Battery backed LED Exit signages		12"x6" inch,Acrylic LED board,Input Supply 230 VAC,Battery Backup upto 4 Hours.	3	2380	300	7140	900
37	Communication Board	Acrylic sheet (Double sheet) 4mm for base with stud & 3mm for pocket clear sheet acast make	3ft x 4ft with 10pcs of A4 SIZE POCKET	2	12800	3200	25600	6400
					Total:-		173,859.00	71,821.00
					IGST 18%		31,294.62	12,927.78
					Sub Total:-		205,153.62	84,748.78
					Gross Total			289,902.40

JSW Hydro Energy Limited

Quotation/BOQ

Company Name : **M/s Mehta Fabrication Works Badhal** **Distt- Kinnaur(HP)** **Mob;9816965766**	**To,** **Client:** **Address: Contact No.:** **Email ID:**
	JSW Hydro Energy Ltd., Baspa-II HEP, Sholtu Colony, PO - Tapri, District. Kinnaur – 172104, Himachal Pradesh

S.No.		Item Name & specification	Qty	Weight (Kg)	GST @ 18%	Unit Price	Amount
	Estimate for design No. 04 (Photo Attached)						
1	Supply	**Master Pillar(3")**	30NO.	Per Piece	450	2500.00	88500.0
2		**Round Vertical Pillers (1.5")**	177NO.	Per Piece	99	550.00	114873.0
3		**Round Pipes (3/4")**	56NO.	224 KG	63	350.00	92512.0
4		**Round Pipes(2")**	20NO.	200 KG	63	350.00	82600.0
5		**Round Knche (3/4")**	531NO.	Per Piece	7.20	40.00	24957.0
		Flat Toe Guard At bottom (100MM X 5MM)	19NO.	290 KG	63	350.00	119770.0
	Transportation & Insurance charges	**714x10=7140 738x5=3690**					10830.0
	Labour charges	**714x180=128520 (Per Kg-180Rs)** **207x50=10350 (Per Pillar- 50Rs)** **531x5=2655 (Per Knche - 5Rs)**					141525.0
	Remark:	**Estimate for design No. 04**					
						Grand Total	**675567.0**

Terms & conditions

JSW Hydro Energy Limited

Annexure 7.3

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*Price:
*Scope **of work: Supply,Fabrication & Installation of fix type SS Railing.**
*Taxes: GST @ 18%
*Statutory **requirements:**
*Delivery: **3 Weeks After Firm PO**
*Warranty:
*Validity: This offer is valid for 30 days.
*Payment **Terms: 50% in advance**

Authorized **Signatory**

JSW Hydro Energy Limited

Annexure 8.1

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CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 233/GT/2014

Coram:
Shri Gireesh B. Pradhan, Chairperson
Shri A.K.Singhal, Member
Shri A. S. Bakshi, Member
Dr. M. K. Iyer, Member

Date of Hearing: 05.01.2016
Date of Order: 17.06.2016

In the matter of

Revision of tariff for the period 2009-14 after truing-up exercise and Determination of tariff for the period 2014-19 in respect of Chamera-II Hydroelectric Project for the period 2014-19.

AND

In the matter of

NHPC Ltd,
NHPC Office Complex, Sector 33,
Faridabad – 121003 ...**Petitioner**

Vs

1. Punjab State Power Corporation Limited
The Mall, Secretariat Complex,
Patiala – 147001

2. Haryana Power Purchase Centre,
Shakti Bhawan, Sector, 6
Panchkula – 134109

3. BSES Rajdhani Power Ltd
BSES Bhawan, Nehru Place,
New Delhi – 110019

4. Uttar Pradesh Power Corporation Ltd
Shakti Bhavan, 14, Ashok Marg,
Lucknow – 226001

5. BSES Yamuna Power Ltd
Shaktikiran Building, Karkadooma,
Delhi – 110 019

6. Rajasthan Rajya Vidyut Prasaran Nigam Ltd.,
Vidut Bhavan, Janpath, Jyothi Nagar
Jaipur – 302005

7. Tata Power Delhi Distribution Ltd
Sub-station Building, Hudson Lane
Kingsway Camp, Delhi –110009

8. Jaipur Vidyut Vitaran Nigam Ltd.,
Vidut Bhavan, Janpath,Jyothi Nagar
Jaipur – 302005

9. Jodhpur Vidyut Vitaran Nigam Ltd.
New Power House, Industrial Area,
Jodhpur – 342003

10. Uttaranchal Power Corporation Ltd,
Urja Bhawan, Kanwali Road,
Dehradun-248001

11. Ajmer Vidyut Vitaran Nigam Ltd.
Old Power House, Hatthi Bhatta,
Jaipur Road, Ajmer – 305001

12. Himachal Pradesh State Electricity Board,
Vidyut Bhawan, Kumar House,
Shimla-171004

13. Engineering Department,
UT Secretariat, Sector 9D
Chandigarh-160009

14. Power Development Department,
Civil Secretariat,
Jammu-180001 (J&K) ....**Respondents**

Parties Present

Shri A.K Pandey, NHPC
Shri Piyush Kumar, NHPC
Shri Naresh Bansal, NHPC
Shri Jitendra Kumar Jha, NHPC
Shri R.B. Sharma, Advocate, BRPL
Shri S.K Agarwal, Advocate, Rajasthan Discoms
Shri G.L Verma, Advocate, Rajasthan Discoms
Ms. Neelam, Advocate, Rajasthan Discoms

ORDER

This petition has been filed by the petitioner, NHPC, for revision of tariff in respect of Chamera-II Hydroelectric Project (3 x 100 MW) ('the generating station'), for the period 2009-14 after truing-up in terms of Regulation 6(1) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 ("the 2009 Tariff Regulations") and for determination of tariff for the period 2014-19 in terms of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 ("the 2014 Tariff Regulations").

2. The generating station comprises of three Units which were commissioned on 2.11.2003, 1.1.2004 and 31.3.2004. The tariff for the period from 1.4.2009 to 31.3.2014 was approved by the Commission vide order dated 27.1.2012 in Petition No.66/2010. Subsequently, in Review Petition No. 9/2012, the tariff of the above generating station for the period from 1.4.2009 to 31.3.2014

A

JSW Hydro Energy Limited

was revised vide order dated 1.10.2012. Thereafter, by order dated 27.1.2015 in Petition No. 231/GT/2013, the tariff of the generating station was revised, based on the actual additional capital expenditure incurred during the period 2009-12 and revised projections for additional capital expenditure for the period 2012-14. Accordingly, the annual fixed charges allowed for the period 2009-14 by the said order dated 27.1.2015 is as under:

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Return on Equity	14420.74	14248.57	14082.10	10902.62	11422.08
Interest on Loan	6993.83	4382.63	4437.72	4320.74	3240.56
Depreciation	10322.31	10321.12	10321.51	10483.41	10483.56
Interest on Working Capital	991.10	951.91	969.53	925.28	935.87
O & M Expenses	6589.78	6966.71	7365.21	7786.50	8231.89
Total	**39317.76**	**36870.94**	**37176.07**	**34418.55**	**34313.96**

Revision of Annual Fixed Charges for 2009-14

3. Clause (1) of Regulation 6 of the 2009 Tariff Regulations provides as under:

> *"6. Truing up of Capital Expenditure and Tariff (1) The Commission shall carry out truing up exercise along with the tariff petition filed for the next tariff period, with respect to the capital expenditure including additional capital expenditure incurred up to 31.3.2014, as admitted by the Commission after prudence check at the time of truing up.*
>
> *Provided that the generating company or the transmission licensee, as the case may be, may in its discretion make an application before the Commission one more time prior to 2013-14 for revision of tariff."*

4. The petitioner in this petition has claimed revision of tariff for the period 2012-14 based on the actual additional capital expenditure incurred during the years 2012-13 and 2013-14 after truing-up in terms of Regulation 6(1) of 2009 Tariff Regulations and for determination of annual fixed charges for the period 2014-19 in terms of the provisions of the 2014 Tariff Regulations. Accordingly, the annual fixed charges claimed by the petitioner for the period 2012-14 are as under:

(₹in lakh)

	2012-13	2013-14
Return on Equity	12096.05	12828.56
Interest on Loan	3804.14	3154.45
Depreciation	10330.81	10336.88
Interest on Working Capital	936.20	960.33
O & M Expenses	7786.50	8231.89
Annual Fixed Charges	**34953.70**	**35512.11**

5. The respondents UPPCL and BRPL have filed replies in the matter and the petitioner has filed its rejoinder to the said replies. Accordingly, based on the submissions of the parties and the documents available on record, we proceed to revise the tariff for the period 2011-14 based on

truing-up exercise and also for determination of tariff for the period 2014-19 in respect of the generating station as stated in the subsequent paragraphs:

Capital cost

6. Regulation 7 (1) (a) of the 2009 Tariff Regulations provides as under:

> *"7. Capital Cost. (1) Capital cost for a project shall include: (a) the expenditure incurred or projected to be incurred, including interest during construction and financing charges, any gain or loss on account of foreign exchange risk variation during construction on the loan - (i) being equal to 70% of the funds deployed, in the event of the actual equity in excess of 30% of the funds deployed, by treating the excess equity as normative loan, or (ii) being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed, up to the date of commercial operation of the project, as admitted by the Commission, after prudence check;"*

7. The Commission in its order dated 27.1.2015 in Petition No.231/GT/2013 had considered the closing capital cost of ₹200208.46 lakh as on 31.3.2012. Accordingly, the capital cost of ₹200208.46 lakh has been considered as the opening capital cost as on 1.4.2012 for revision of tariff for 2012-14.

Actual Additional Capital Expenditure (2012-14)

8. Clause (2) of Regulation 9 of the 2009 Tariff Regulations, as amended on 21.6.2011, provides as under:

> *"9. (2) The capital expenditure incurred or projected to be incurred on the following counts after the cut-off date may, in its discretion, be admitted by the Commission, subject to prudence check:*
>
> *(i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court;*
>
> *(ii) Change in law;*
>
> *(iii) Deferred works relating to ash pond or ash handling system in the original scope of work;*
>
> *(iv) In case of hydro generating stations, any expenditure which has become necessary on account of damage caused by natural calamities (but not due to flooding of power house attributable to the negligence of the generating company) including due to geological reasons after adjusting for proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation; and*
>
> *(v) In case of transmission system any additional expenditure on items such as relays, control and instrumentation, computer system, power line carrier communication, DC batteries, replacement of switchyard equipment due to increase of fault level, emergency restoration system, insulators cleaning infrastructure, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system:*
>
> *Provided that in respect sub-clauses (iv) and (v) above, any expenditure on acquiring the minor items or the assets like tools and tackles, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, fans, washing machines, heat convectors, mattresses, carpets etc.*

brought after the cut-off date shall not be considered for additional capitalization for determination of tariff w.e.f. 1.4.2009.

(vi) In case of gas/liquid fuel based open/ combined cycle thermal generating stations, any expenditure which has become necessary on renovation of gas turbines after 15 year of operation from its COD and the expenditure necessary due to obsolescence or non-availability of spares for successful and efficient operation of the stations. Provided that any expenditure included in the R&M on consumables and cost of components and spares which is generally covered in the O&M expenses during the major overhaul of gas turbine shall be suitably deducted after due prudence from the R&M expenditure to be allowed.

(vii) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receipt system arising due to non-materialization of full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station.

(viii) Any un-discharged liability towards final payment/withheld payment due to contractual exigencies for works executed within the cut-off date, after prudence check of the details of such deferred liability, total estimated cost of package, reason for such withholding of payment and release of such payments etc.

(ix) Expenditure on account of creation of infrastructure for supply of reliable power to rural households within a radius of five kilometres of the power station if, the generating company does not intend to meet such expenditure as part of its Corporate Social Responsibility."

9. The actual additional capital expenditure claimed by the petitioner as against the projected additional capital expenditure allowed for the period 2012-14 in order dated 27.1.2015 in Petition No.231/GT/2013 is as under:

(₹in lakh)

	2012-13	2013-14
Projected additional capital expenditure allowed	0.00	5.98
Actual additional capital expenditure claimed	203.56	(-) 99.13

10. The re-conciliation of the actual additional capital expenditure claimed with respect to additional capital expenditure as per books of accounts duly certified by auditor for the period 2012-13 and 2013-14 is as under:

(₹in lakh)

Sl. No.		2012-13	2013-14
1	**Additional Capitalization (being claimed)**		
(a)	**Additions**		
i	Capitalization against works projected and allowed for additional capital expenditure	0.00	0.00
ii	Capitalization against works due to difference in allowed and actual capitalization	10.14	0.00
iii	Not projected/not allowed but capitalized due to actual site requirements (being claimed for additional capital expenditure)	222.97	137.96
	Total (a)	233.11	137.96
(b)	**Deletion / Deduction**		
i	Deletion of assets on account of replacement of assets	(-)12.33	(-) 275.05
ii	Deletion of assets on account of assets sold / declared obsolete / assets written off	0.00	(-) 6.86

	Total (b)	(-) 12.33	(-) 281.91
	Net Addition claimed (c)=(a)-(b)	220.78	(-)143.95
2	**Additional Capitalization (not claimed)**		
(d)	**Addition**		
i	Not projected but capitalized due to actual site requirements (not being claimed for add-cap/ Under Exclusion category)	627.05	640.69
ii	Addition on account of Inter-unit transfer (minor assets)	9.77	2.69
	Total (d)	636.81	643.39
(e)	**Deletion**		
i	Consumption of capital spares (deletion to not be claimed/Under exclusion category)	(-)76.81	(-) 216.63
ii	Deletion under exclusion category (deletion for minor assets/ tools/ tackles etc. which are not considered by Commission for additional capitalization)	(-)28.47	(-)0.36
iii	Inter Unit Transfer (IUT) (minor assets)	(-)1.77	(-)3.40
	Total (e)	(-)107.06	(-) 220.38
	Net Addition under Exclusion (f)=(d)-(e)	529.76	423.00
	Net Additional Capitalization (including IUT) as per books of accounts (g)=(c)+(f)	750.53	279.05
3	**Net additional capitalization claimed for tariff**		
	Net additional capitalization as above **(c)**	220.78	(-)143.95
	Assumed deletions **(h)**	(-) 4.23	(-) 2.41
	Un-discharged liability in additional capitalization **(i)**	17.55	16.59
	Liabilities as on 31.3.2009 discharged **(j)**	0.00	45.97
	Liability discharged during 2009-14 for capitalization **(k)**	4.56	17.86
	Net additional capitalization claimed (l)=c+h+i+j+k	**203.56**	**(-) 99.13**

11. Based on the above reconciliation, the year-wise admissibility of the additional capital expenditure under various heads is examined as stated in the subsequent paragraphs:

Additions against works already approved

12. No additional capital expenditure was approved by Commission during the year 2012-13. Similarly, no additional capital expenditure against the works approved by Commission has been incurred by the petitioner during the year 2013-14.

Works allowed in previous years but capitalized in 2012-13

13. The details of works/assets, the projected additional capital expenditure allowed for these works along with reasons for admissibility of the actual additional capital expenditure in terms of 2009 Tariff Regulations are as under

(₹in lakh)

Sl. No	Assets/works	Amount allowed on projected basis	Actual expenditure incurred/ claimed	Remarks for admissibility of expenditure
	Replacement of old paradigm plus PBX with new corporate PBX of 324 connections for internal communication system.	11.55	10.14	The Commission vide order dated 27.1.2012 in Petition No. 66/2010 had allowed the capitalization of this item during the year 2010-11. The petitioner has submitted that the new asset has been capitalized in 2012-13 and the replaced asset has been deleted from the books of accounts in 2013-14. Since the new asset has been capitalized in 2012-13 and the de-capitalization of the old asset has also been shifted from 2013-14 i.e. year of de-capitalization in books, the same has been **allowed**. The de-capitalization of the old asset has been considered under "Assumed Deletions".
	Total claimed		**10.14**	
	Total allowed			**10.14**

2013-14

14. No additional capital expenditure under has been claimed by the petitioner during the year 2013-14.

Capital expenditure not projected/allowed by the Commission, but incurred and claimed

15. The petitioner has claimed additional capital expenditure incurred against new works/ assets along with reasons for its admissibility. The respondent, BRPL has submitted that the entire amount of ₹222.97 lakh claimed for 2012-13 was neither projected nor approved by the Commission and hence cannot be permitted to be capitalized. It has also submitted that these items are in the category of O&M and also minor in nature. The respondent, UPPCL has submitted that some of the items like roads, street lighting, Pumps hospital equipment and residential building may not be allowed as they are in the category of O&M and also minor in nature. The details of works/assets, the additional capital expenditure incurred against new works/ assets along with reasons for admissibility of the actual additional capital expenditure in terms of 2009 Tariff Regulations is as under.

2012-13

(₹in lakh)

Sl. No	Assets/works	Actual expenditure incurred / claimed	Justification submitted by petitioner	Admissibility of expenditure
1	Hill slope protection & restoration of access road at surge shaft area vide Package C-287	105.82	The petitioner has submitted that the rock mass of hill slope area at left and right bank of the Dam axis is highly fractured and thus often loose rocks keep falling from the slope. For safety of the staff and installed machineries at Dam site, protection work is essentially required. During the visit of Dam Safety team in December, 2011, it was suggested that above area should be stabilized by filling loose joints/cavities with concrete and apply shot crete over a layer of wire mesh wherever necessary in the affected stretch.	Since the work is in the nature of O&M, the same is **not allowed.**
2	3-Phase float cum boost 1200AH, Battery Charger for 220V DC	5.70	The petitioner has submitted that the original arrangement provided 1 No. independent charger for each of the 2 battery banks without any standby options. Any fault in a charger could lead to complete discharging of the battery bank thereby endangering the control and protection system of entire Power House. The new charger with facility of auto change over, will act as backup in case of failure of any of the two chargers.	Since the asset is in the nature, of Spares, the same has **not been allowed.**
3	Numerical Generator Protection Relay, ABB REG 670 (2 units)	18.14	The petitioner has submitted that these relays are required for Generator Protection and were used to replace the originally installed relays (set of RET 521 + GPU 2000 R). While the RET 521 had got damaged and was not repairable, the GPU 2000 R was not having time sync facility. They were not compatible with LON Protocol. The new relays have combined feature of both the replaced relays and have upgraded the system thereby making it compatible with both LON as well as IEC 61850 open Protocol. The originally installed asset was included in the total E&M package and its acquisition cost is not available. Installation cost is capitalized during 2013-14.	Since the assets are considered necessary for successful and efficient operation of the plant the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations. The de-capitalization value of the old assets is considered under "Assumed Deletions".
4	Numerical Transformer Protection Relay, ABB RET 670 (2 units)	14.69		

JSW Hydro Energy Limited

5	ION 7300 SERIES 3-Phase Meter, 5 AMP (3 units)	2.48	The petitioner has submitted that these meters were purchased for metering, communication and logging in the newly constructed 400 KV additional GIS Bay.	Since the asset is considered necessary for successful and efficient operation of the plant, the same has been **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations.
6	Human Machine Interface (HMI) 10 Inch Colour, Model: Panel View, Make: Allen Bradley, Power Supp	1.36	The petitioner has submitted that DAM data is required to be seen in Power House for precise operation of the Power Station. This becomes more important in view of the Tandem operation of Chamera-II and Chamera -III Power Stations. The original scheme provided data transmission and display in form of electrical signals and pygmy lamps which was found to be very ineffective, inaccurate, un-reliable and bulky besides being prone to frequent faults. Further there was no provision of logging, reporting, mimics/views etc. The new system was installed to overcome all such constraints.	Since the asset is minor in nature, the same is **not allowed.**
7	11KV type metal clad panel comprising 4 nos. 630A VCB, protection system, instrumentation etc.	16.54	The petitioner has submitted that this was purchased for smooth functioning of DG sets of Colony to provide uninterrupted power supply to Office and residential complex.	Since the asset is considered necessary for successful and efficient operation of the plant, the same has been **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations
8	Installation of additional street light poles with cable and accessories.	6.78	The petitioner has submitted that at upstream and downstream periphery area of Dam i.e. approach road to Dam additional street light has been installed for better illumination. The area/road is highly landslide prone and sinks during rainy season. In absence of proper illumination, the approach road to Dam becomes highly dangerous during night.	Since the asset/work is considered necessary for the safety & security of the plant and will facilitate successful and efficient operation of the plant, the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations.
9	Submersible Non-Clog Sewage Pump Set, 3HP, 3-Phase , 415 Volts 50Hz, 13 Mtr. Head, Discharge 350 LPM (4 units)	2.53	The petitioner has submitted that these pumps are used for dewatering of Turbine Pits. The original dewatering scheme used 2 Nos. DC pumps and 2 gravity drains. With ageing of the plant, the leakages in the Turbine Pits have increased thereby rendering the original arrangement insufficient.	Since the asset is considered necessary for successful and efficient operation of the plant, the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff

			Further, the use of DC pumps lead to frequent earth faults which were not healthy for the system.	Regulations. The de-capitalization value of the old assets is considered under "Assumed deletions".
10	End Suction Pump of 90 KW , 2-Pole Motor, Head 100 M	4.50	The petitioner has submitted that the fire-fighting system of the Power House uses 2 Nos. Pump for filling up the tank outside the Power house area. The original scheme provided for 2 Nos. Pumps with no standby arrangement. Further, the original pumps were giving frequent troubles. Considering the criticality of the application and high head requirement, the new pump was purchased and installed.	Since the asset is considered necessary for successful and efficient operation of the plant, the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations. The de-capitalization value of the old assets is considered under "Assumed deletions"
11	Construction of back up tank for STP at Chamera-II, Karian vide package No. C-259.	5.98	The petitioner has submitted that in case of any breakdown in the existing STP, there is no alternate arrangement to collect sewage because as per environment norms dispose off the sewage directly into the river is not allowed. Keeping this in view, the back-up tank is required to be installed.	Since the work will contribute towards the successful and efficient operation of the plant, the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations.
12	ESR Analyser , HUMAN, HUMASED 22	0.49	The petitioner has submitted that the automated analyzer is a medical laboratory instrument designed to measure different chemicals and other characteristics in a number of biological samples quickly, with minimal human assistance. Previously, the same was being done manually.	Since the expenditure incurred is for the benefit of the employees working in remote areas of the project and in turn would facilitate the successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations.
13	Mobile ECG, Model SONOPLUS 3000 DS	1.63	The petitioner has submitted that mobile ECG machine which was not available earlier at the hospital, is used during medical emergency e.g. heart attack at the project site.	
14	46" LCD Narrow Bezel Display	2.97	The petitioner has submitted that originally, a display screen based on CRT Lamp was provided in Power House Control Room for enabling display/continuous monitoring/control/logging of generation parameter This screen had got defective with continuous use and its R&M was not cost-effective due to obsolescence of the technology. Thus the New LCD Screens have been purchased for keeping the system in running condition.	Since the asset is minor in nature, the same is **not allowed**

15	Outdoor Emergency Light (6 units)	0.62		Since the asset is minor in nature, the same is **not allowed**
16	Indoor Emergency Light (12 units)	0.73		
17	PTZ Dome camera axis Q6032-E50 WITH 35X Optical Zoom, Arctic temperature control, wall bracket	2.45	The petitioner has submitted that for the purpose of safety and security as per guideline to IB recommendation, CISF, Ministry of Power and Home affair, installation of such camera is essential for monitoring of different locations of power house.	Since the asset/work is considered necessary for the safety & security of the plant and will facilitate successful and efficient operation of the plant, the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations.
18	Automatic Spike Barrier	5.24	The petitioner has submitted that as per the guideline of CISF, installation of spike barrier is required for the safety and security of the power house. Since the work is considered necessary for the safety of the plant, which will facilitate successful and efficient operation of the plant, the same has been **allowed** under Regulation 9(2)(iv) of Tariff Regulations,2009.	
19	Hydraulic Jack, Cap-50 T, Max Pr. -700Bar, Stroke-Min.-100mm, Hand Pump-Double Acting, Make: Phull, 50T	3.50	The petitioner has submitted that two nos. old and used jack of 50 T capacity were provided by M/s. Jai Prakash Associate for repair & maintenance of Hydro mechanical equipments and gates at the time of commissioning of Project. Since, these 2 nos. jacks were not sufficient to lift the gates and equipment during repair, two additional jacks were purchased.	Since the asset is in the nature of tools & tackles, the same is **not allowed**
20	Digital Insulation Multi meter, Fluke-1587.	0.65	The petitioner has submitted that there was no multifunctional electrical measuring instrument at HM Dam for checking the Hydro mechanical equipments. That is why Digital Insulation Multi meter was purchased for checking the functioning of HM equipment like Power pack, gantry cranes etc. The petitioner further submitted that previously as and when the instrument was needed, the same was brought from Power House or Electrical Colony Maintenance division.	
21	Construction of security hut cum retiring room at Bakani vide work order 190-93 dated 05.01.2012.	4.12	The petitioner has submitted that initially there was a temporary shed for security personnel deployed at SFT Bakani. The Temporary shed is not considered safe for the security personnel during the night	Since the asset/work is considered necessary for the safety & security of the plant and will facilitate successful

22	Construction of security hut at surge shaft area vides Package No. C-274 & WO-59/733-38 dated 08.03.2013.	3.33	as they are equipped with the arms. Now, in order to provide better amenities to the security personnel, a permanent security hut was constructed.	and efficient operation of the plant, the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations
23	Fire Extinguisher - ABC Powder-10 KG (16 units)	0.65	The petitioner has submitted that these fire extinguishers are replacement against Water type Fire Extinguishers which were implanted during the construction by M/s. Jai Prakash. These were essentially required for any emergency due to Fire at the Power Station.	Since the asset is minor in nature, the same is **not allowed**
24	Fire Extinguisher - ABC Powder-10 KG (16 units)	0.77		
25	Battery Impedance test equipment with accessories.	4.18	The petitioner has submitted that earlier there was no arrangement of measuring battery impedance. Hence this equipment was purchased for testing and maintenance of Battery Bank of Power house.	Since the asset is in the nature of tools & tackles, the same is **not allowed**
26	High Mast Lighting, Length 16 meter (2 units)	5.20	The petitioner has submitted that for safety and security of the employees at project colony, effective illumination is essential.	Since the expenditure incurred is for the benefit of the employees working in remote areas of the project and in turn would facilitate the successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations.
27	40 HP Pump only SCT/80/30 Module 1 head 100 meter size 80/100 mm, Model No. SCT/80/30.	1.90	The petitioner has submitted that one additional line of 40 mm dia has been laid from pump house to main storage tank to lift the drinking water from the bore well since the pump is required to lift the drinking water.	
	Total claimed	**222.97**		
	Total allowed			**96.00**

2013-14

(₹ in lakh)

Sl. No.	Assets/works	Actual expenditure incurred/ claimed	Justification submitted by the petitioner	Remarks for admissibility
1	Buildings Containing GPM	2.06	The petitioner has submitted that the additional sales tax amount in respect of the contracts for execution of Chamera H. E. Project Stage-II by JPIL was settled during the year 2013-14.	Since the expenditure is towards balance payment for approved work, the same has been **allowed**
2	Dam & Barrages(1a)	2.82		
3	Power Tunnels and Pipelines (1a)	13.02		
4	Penstocks	0.43		

5	Tailrace tunnels and pipelines (1a)	2.34		
6	Hydro mechanical Works- Dams and Barrages	1.19		
7	Hydro mechanical works-Tunnels and Canals	0.60		
8	Hydro mechanical Works -Tail Race including draft tube gates	0.07		
9	Control room for CISF near main gate of CPS-II Colony	4.07	The petitioner has submitted that there is only one small security check post near the main gate. The control room is required with facilities of modern gadgetry which will function as emergency control room during any eventuality/natural calamities.	Since the asset/work is considered necessary for the safety & security of the plant and will facilitate successful and efficient operation of the plant, the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations
10	Providing fencing around CISF qtr guard at CPS-II Karian	11.15	The petitioner has submitted that the existing arrangements are unsafe & vulnerable from security point of view. Therefore, the safety of CISF quarter guard needs to be strengthened by erecting double fencing as per the norms and design provided by CISF.	
11	Numerical Generator Protection Relay, ABB REG 670 (2 units)	1.10	The petitioner has submitted that the expenditure is towards balance payment for already approved work/assets.	Since the expenditure on the asset (allowed in 2012-13) is towards balance payment for approved work, the same has been **allowed.**
12	Numerical Transformer Protection Relay, ABB RET 670 (2 units)	0.66		
13	2000 AMP, LT panel with ACB and metering	2.58	The petitioner has submitted that, to enhance safety of underground Power Houses, Disaster Management Plan has been suggested which envisages installation of independent power supply panels for dedicated pumps to be installed for the scheme. The subject panel has been purchased for installation under this plan.	Since the asset is considered necessary for successful and efficient operation of the plant, the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations. The de-capitalization value of the old assets is considered under "Assumed deletions"

14	Submersible Motor Pump (05 HP & 10 Stages) (2 units)	1.35	The petitioner has submitted that these pumps are used for dewatering of Turbine Pits. The original dewatering scheme used 2 Nos. DC pumps and 2 gravity drains. With ageing of the plant, leakages in the Turbine Pits have increased thereby rendering the original arrangement insufficient. Further, these DC pumps lead to frequent earth faults which were not healthy for the system.	Since the asset/work is considered necessary for the safety & security of the plant and will facilitate successful and efficient operation of the plant, the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations
15	Portable DGA Measuring Instrument -GE-KELMAN, Transport-X	33.42	Portable Dissolved Gas Analysis instrument is used for diagnostic testing of the transformer oil. Total 10 nos Generator Transformers are installed in Power house for step up of generated voltage. Their regular maintenance and diagnostic testing is required to ensure healthiness of the system. This becomes more important with the ageing of the equipment. Till now the transformer samples were being collected and sent to various laboratories. This method is time consuming and may not ensure correct diagnostics due to time elapsed between sample testing and actual testing. In house facility for diagnostic testing was required.	Since the asset is in the nature of tools & tackles, the same is **not allowed**
16	Acoustic treatment of Simpower DG Set at Dam site	8.47	The petitioner has submitted that a 400KVA DG set was provided by M/s. Jay Prakash Associate during commissioning of the project and installed at ground floor of Dam Control Room building adjacent to control room. During failure of power supply, standby power supply is provided by this DG set which creates unbearable sound for which acoustic (soundproof) treatment of this DG was necessary as per Central Pollution Control Board norms.	Since the expenditure is in compliance with the directions of the of the Himachal Pradesh Pollution Control Board, the same is **allowed** in under Regulation 9(2)(ii) of the 2009 Tariff Regulations.
17	Construction of RCC slab at back up tank for sewerage treatment plant	5.63	The petitioner has submitted that for the safety point of view the backup tank is required to be covered with RCC slab.	Since the asset is in the nature of O & M, the same is **not allowed**
18	Swaraj Mazda Prestige WT 49 TC Dual Cap Wheel Base 3335 MM Pickup 5PLUS1 Seats HP-73-3416	7.81	The petitioner has claimed these vehicles under replacement.	Since the asset is considered necessary for successful and efficient operation of the plant, the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff

19	TATA Star Bus (40+1 SEATER) HP-73/3371	14.42		Regulations. The de-capitalization value of the old assets is considered under "Assumed deletions"
20	Hardware Firewall & IPS device in HA mode with accessories, Cyberoam, CR35ING	1.01	The petitioner has submitted that with system advancement and implementation of ERP, dependency on the Internet has increased manifolds in the last few years. To facilitate fast connectivity, C.O. IT Wing, vide letter No. NH/IT&C/11/2(A)/ 2012/1685 dated 20.11.2012 has suggested & accorded technical approval for providing 2Mbps Internet Leased Line with adequate protection against cyber security threats using a suitable Firewall device/Proxy between NHPC LAN and Internet Leased Line.	Since the asset is minor in nature, the same is **not allowed**
21	Network Storage device 4 TB, BUFFALO TS5400D	0.71	The petitioner has submitted that additional storage device is required for augmenting the CCTV recording facility for more than 90 days, as per IB recommendation and CISF.	Since the asset is minor in nature, the same is **not allowed**
22	Network Storage device 8TB, BUFFALO TS5400D	0.96		
23	Transasia chem touch semi automated clinical chemistry analyzer , erba diagnostics Mannheim GMBH	5.50	The petitioner has submitted that these medical instruments are required for effective investigation of Blood samples of the patients of project and local area, which are at present not available in hospital.	Since the expenditure incurred is for the benefit of the employees working in remote areas of the project and in turn would facilitate the successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations.
24	Transasia erba lisa scan microplate reader	3.09		
25	Transasia erba lisa wash microplate washer	2.89		
26	5 KVA Online UPS	0.53	One no 5 kVA UPS is installed in server room of CPS-II in the year 2007 for providing power backup for all the equipment installed in the server room. Keeping in view the criticality of EDP equipment /LAN / Internet connectivity, it is proposed to install another UPS of 5 KVA capacity that will act as back-up/Stand by ensuring 100% uptime for the system	Since the asset is minor in nature, the same is **not allowed**

27	Construction of driver room in VIP guest house, CPS-II	2.09	The petitioner has submitted that there was no proper space for drivers in the VIP Guest House. As a result, during the visit of high officials, serious inconveniences were being faced by the drivers. Keeping the above in view, a driver room has been constructed in VIP Guest House.	Since the expenditure incurred is for the benefit of the employees working in remote areas of the project and in turn would facilitate the successful and efficient operation of the generating station, the expenditure is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations
28	GPS Antenna of Seismograph (CMG-3ESP)	0.13	The petitioner has submitted that the previous antenna of seismograph was damaged due to landslides from the adjacent hill slope and thus required to be replaced.	Since the asset is minor in nature, the same is **not allowed**
29	Submersible Non -Clog Pump, 35 HP, 3-Phase, 415 Volts,50HZ, 20 mtr head, Discharge 4500 LPM, with cont (2units)	7.84	The petitioner has submitted that the pumps were purchased for the purpose of dewatering from the de-stilling basin of Dam for muck/boulder removal work and other misc activities.	Since the asset/work is considered necessary for the safety & security of the plant and will facilitate successful and efficient operation of the plant, the same is **allowed** under Regulation 9(2)(iv) of the 2009 Tariff Regulations
	Total claimed	**137.94**		
	Total allowed			**95.55**

Deletions

16. The following year-wise expenditure has been de-capitalized by the petitioner on account of Sale of Assets/Assets written off without replacement. The details of deletions claimed are as follows:

(₹In lakh)

	2012-13	**2013-14**
Deletion of assets on account of assets written off/without replacement	(-) 12.33	(-) 275.05
Deletion of assets on account of assets sold off	0.00	(-) 6.86
Total	**(-)12.33**	**(-) 281.91**

17. As the corresponding assets do not render any useful service in the operation of the generating station, the de-capitalization of the above said expenditure as reflected in the books of accounts has been allowed for the purpose of tariff.

Exclusions in additions (incurred, capitalized in books but not to be claimed for tariff purpose)

18. The following year-wise expenditure has been incurred by the petitioner on replacement of minor assets, purchase of capital spares, purchase of miscellaneous assets, additions on inter-unit transfers, minor assets, etc.,

(₹in lakh)

	2012-13	2013-14
Not projected but capitalized due to actual site requirements (not being claimed for add-cap/ Under Exclusion category)	627.05	640.69
Inter Unit Transfer	9.77	2.69
Total	**636.81**	**643.39**

19. The expenditure incurred towards procurement/replacement of minor assets and procurement of capital spares after the cut-off date is not permissible in terms of the 2009 Tariff Regulations. Accordingly, the petitioner has considered these additions under exclusion category. As such, the exclusions of the positive entries under the head are in order and are allowed.

Exclusions in deletions (de-capitalized in books but not to be considered for tariff purpose)

20. The petitioner has de-capitalized expenditure in books of accounts pertaining to capital spares, minor assets such as computers, office equipment, furniture, fixed assets of minor value less than ₹5000, as these are not in use on account of these assets becoming unserviceable/obsolete and also made deletion on account of inter-unit transfer of minor assets, as under:

(₹in lakh)

	2012-13	2013-14
Deletion under exclusion category (deletion for minor assets/ tools/ tackles etc. not considered by Commission for additional capitalization)	(-) 28.47	(-) 0.36
Consumption of capital spares (deletion not claimed/under exclusion category)	(-) 76.81	(-) 216.63
Inter Unit Transfer	(-) 1.77	(-) 3.40
Total	**(-) 107.06**	**(-) 220.38**

21. The petitioner has prayed that the negative entries may be ignored/ excluded for the purpose of tariff as the corresponding positive entries for purchase of such assets are not being allowed for the purpose of tariff in terms of the provisions of the 2009 Tariff Regulations. In

support of this, the petitioner has referred to the observations of the Commission in order dated 7.9.2010 in Petition No.190/2009 as under:

> *"20. After careful consideration, we are of the view that the cost of minor assets originally included in the capital cost of the projects and replaced by new assets should not be reduced from the gross block, if the cost of the new assets is not considered on account of implication of the regulations. In other words, the value of the old assets would continue to form part of the gross block and at the same time the cost of new assets would not be taken into account. The generating station should not be debarred from servicing the capital originally deployed on account of procurement of minor assets, if the services of those assets are being rendered by similar assets which do not form part of the gross block."*

22. The respondent, BRPL vide its reply dated 30.12.2015 has submitted that the minor assets/spares which are de-capitalized is required to be adjusted in the capital cost as per proviso under Regulation 7(1)(c) of the 2009 Tariff Regulations. It has also submitted that the petitioner has not deleted this de-capitalization from the capital cost (as in Annexure-II to Form-9) and hence not complied with the express provisions of the 2009 Tariff Regulations, but has only adjusted the additional capitalization not to be claimed (nature of minor assets) with the de-capitalization mentioned, thereby not giving full play to the said proviso. The respondent has pointed out that the order of the Commission dated 20.4.2011 in Petition No.183/2009 disallowing NTPC to retain the capital value of the assets like wagons which were earlier de-capitalized in the books of accounts have been affirmed by the Tribunal vide its judgment dated 2.1.2013 in Appeal No. 84/2011 and is applicable in the instant case. Accordingly, the respondent has stated that the order dated 7.9.2010 followed by the petitioner is not applicable on this issue and the same may be rejected by the Commission.

23. We have examined the matter. It is noticed that the provisions of both the 2004 and the 2009 Tariff Regulations provide that the expenditure on minor items/assets, tools and tackles etc procured after the cut-off date shall not be considered for additional capitalization for determination of tariff. It is observed that the judgment of the Tribunal in NTPC case pertained to wagons which are capital assets and are permitted to be capitalized as per the regulations. In the judgment, the Tribunal had observed that since the wagons had been de-capitalized, the gross value of the de-capitalized wagons was to be deducted from the capital cost. Para 10 of the judgment is quoted as under:

"10. These Regulations would indicate that the capital cost of generating station is a cost which was incurred in commissioning the plant and any other additional expenditure made for efficient running of the plant. The tariff of the Generating Stations is determined on cost plus basis meaning thereby that any capital expenditure incurred which will enhance the efficiency of the plant will be capitalized and the tariff will be determined accordingly. Similarly, if any asset is taken out of service, then its gross value will be deducted from the capital cost of the plant. The Appellant has claimed to retain the de-capitalized amount in respect of wagons and capitalized spares during the period 2008-09. If the equipment is not rendering any service, the same cannot be retained in the capital cost for the purpose of tariff as no benefit out of the same is being given to the beneficiaries."

24. The present case is distinguishable from the facts of the case which was decided in the said appeal. The minor assets are not considered as capital assets and are not permitted to be capitalised after the cut-off date. In our view, since the cost of new assets would not be taken into account by implication of the regulations, the value of old assets should be permitted to continue to form part of the gross block. In other words, if the cost of the new assets is not considered on account of implication of the regulations, the cost of minor assets originally included in the capital cost of the projects and replaced by new assets should not be reduced from the gross block. The generating station should not be debarred from servicing the capital originally deployed on account of procurement of minor assets, if the services of these assets are being rendered by similar assets which do not form part of the gross block. In this background and in line with the decision of the Commission in order dated 7.9.2010, the negative entries corresponding to the deletion of minor assets are allowed to be excluded/ ignored for the purpose of tariff.

25. The petitioner has excluded amounts of (-)₹76.81 lakh and (-)₹216.63 lakh for the year 2012-13 and 2013-14 respectively for de-capitalization of capital spares. As regards the prayer of the petitioner for exclusion of negative entries corresponding to de-capitalization of capital spares, it is observed that the expenditure on capital spares are not allowed to be capitalized after the cut-off date in terms of the 2009 Tariff Regulations. While the recovery of expenditure on capital spares is allowed through O&M expenses on consumption, the recovery of additional expenditure on minor assets beyond the cut-off date is neither allowed to be capitalized nor permissible under O&M expenses. Hence, the observations of the Commission in order dated 7.9.2010 cannot be made applicable in respect of de-capitalization of spares. Accordingly, the claim of the petitioner for exclusion of negative entries arising out of de-capitalization of capital spares is justifiable provided that the de-capitalized spares are the ones which were not considered in the capital

base for the purpose of tariff in the year of capitalization. On verification of the details in the Petition filed by the petitioner for the period 2009-12 and this petition, it is observed that the capital spares de-capitalized in books during the period 2012-13 and 2013-14 are the ones which were not allowed in the capital cost for the purpose of tariff. In other words, positive entries arising out of their purchase were also excluded/ ignored for the purpose of tariff. In view of the above discussions, the amounts have been allowed to be excluded/ ignored for the purpose of tariff. The exclusion of negative entries arising due to inter unit transfer of minor assets are allowed as the capitalization of these minor assets are not allowed after the cut-off date. Accordingly, the following amounts have been excluded/ ignored for the purpose of tariff as under

(₹in lakh)

	2012-13	2013-14
Deletion under exclusion category (deletion for minor assets/ tools/ tackles etc. not considered by Commission for additional capitalization)	(-) 76.81	(-) 216.63
Consumption of capital spares (deletion not claimed/under exclusion category)	(-) 28.47	(-) 0.36
Inter Unit Transfer	(-) 1.77	(-) 3.40
Total	**(-) 107.06**	**(-) 220.38**

Assumed Deletions

26. As per consistent methodology adopted by the Commission, the expenditure on replacement of assets, if found justified is allowed for the purpose of tariff provided that the capitalization of the said asset is followed by the de-capitalization of the original value of the old asset. However, in certain cases where de-capitalization is affected in books during the following years, to the year of capitalization of new asset, the de-capitalization of the old asset for the purpose of tariff is shifted to the very same year in which the capitalization of the new asset is allowed. Such de-capitalization which is not a book entry in the year of capitalization is termed as "Assumed deletion". The amounts considered by the petitioner under this head are as under:

(₹in lakh)

2012-13	2013-14
(-) 4.23	(-) 2.41

2012-13 and 2013-14

27. It is observed that against the expenditure for replacement of assets/works during 2012-13 and 2013-14, the de-capitalization value at the rate of 10% of the value of new asset these assets has been considered by the petitioner, except for Replacement of old PBX during 2012-13.

Considering the fact that the plant is only nine years old, the de-capitalized value furnished by the petitioner for these assets appear to be on the lower side. Therefore, as per consistent methodology adopted by the Commission for arriving at the fair value of the de-capitalized asset, the escalation rate of 5 % per annum from COD has been considered in order to arrive at the gross value of old asset in comparison to the cost of new asset. Further, the deletion of an amount of (-)₹ 0.30 lakh for LCD narrow bezel display and (-) ₹ 0.07 lakh for fire extinguisher during 2012-13 and deletion of an amount of (-)₹ 0.01 lakh for GPS antenna of seismograph during 2013-14 has not been considered since the capitalization of these assets has not been allowed. Accordingly, the assumed deletions claimed and allowed for the purpose of tariff are detailed as under:

(₹ in lakh)

Assets/works	**Amount of capitalization claimed**	**De-capitalization claimed**	**De-capitalization considered**
2012-13			
Replacement of old paradigm plus PBX	10.14	(-) 0.26	(-) 6.54
Numerical Generator protection relay, ABB REG 670 (2 units)	18.14	(-) 1.81	(-) 11.70
Numerical transformer protection relay, ABB RET 670 (2 units)	14.69	(-) 1.47	(-) 9.47
Submersible Non-Clog sewage pump set, 3 HP, 3 phase, 415 volts 50hz, 13 mtr head, discharge 350 lpm (4 units)	2.53	(-) 0.25	(-) 1.63
46" LCD NARROW BEZEL DISPLAY (capitalization of asset not allowed)	2.97	(-) 0.30	0.00
FIRE EXTINGUISHER-ABC POWDER-10 KG (16 units) (capitalization of asset not allowed)	0.65	(-) 0.07	0.00
	0.77	(-) 0.08	0.00
Total	**49.90**	(-) **4.23**	(-) **29.33**
2013-14			
NUMERICAL GENERATOR PROTECTION RELAY, ABB REG 670 (2 Units)	1.10	(-) 0.11	(-) 0.68
NUMERICAL TRANSFORMER PROTECTION RELAY, ABB RET 670 (2 Units)	0.66	(-) 0.07	(-) 0.41
SWARAJ MAZDA PRISTAGE WT 49 TC DUAL CAP WHEEL BASE 3335 MM PICKUP 5PLUS1 SEATS HP-73-3416	7.81	(-) 0.78	(-) 4.80
TATA STARBUS (40+1 SEATER) HP-73/3371	14.42	(-) 1.44	(-) 8.85
GPS ANTENNA OF SEISMOGRAPH (CMG-3ESP) (capitalization of asset not allowed)	0.13	(-) 0.01	0.00
Total	**24.13**	**(-) 2.41**	**(-) 14.73**

Un-discharged and discharge of Liabilities

28. The petitioner has submitted the details of the un-discharged liabilities and the discharge of liabilities during 2012-14 as under:

(₹in lakh)

	2012-13	2013-14
Un-discharged liability in additional capitalization during 2009-14	17.55	16.59
Liability as on 31.3.2009 discharged during the year	0.00	45.97
Liability discharged during the year in additional capitalization during 2009-14	4.56	17.86

29. The un-discharged liabilities and discharge of liabilities as above have been considered for working out the admissible additional capital expenditure for the period 2012-14. Accordingly, the actual additional capital expenditure allowed for the period 2012-14 for the purpose of tariff is as under:

(₹in lakh)

	2012-13	2013-14
Capitalization against works due to difference in allowed and actual capitalization	10.14	0.00
Not projected/not allowed but capitalized due to actual site requirements (being claimed for add-cap)	96.00	95.55
Total additions allowed **(a)**	**106.14**	**95.55**
Deletions allowed **(b)**	(-)12.33	(-) 281.91
Assumed deletions considered **(c)**	(-) 29.33	(-)14.73
Total additional capital expenditure allowed before un-discharged/ discharged liabilities **(d)=(a)+(b)+(c)**	**64.48**	(-) **201.09**
Undischarged liability for the add cap 2009-14 **(e)**	17.55	16.59
Liability discharged during the year in respect of additional capitalization in 2009-12 **(f)**	4.56	17.86
Liability existed as on 31.3.2009 and discharged during the year **(g)**	0.00	45.97
Additional Capital Expenditure allowed (h)=(d)-(e)+(f)+(g)	**51.49**	(-) **153.85**

Capital cost for 2012-14

30. As stated, the capital cost of ₹ 200208.46 lakh has been considered as the opening capital cost as on 1.4.2012 for revision of tariff for 2012-14. Accordingly, the capital cost considered for the purpose of the tariff is as under is as under:

(₹in lakh)

	2012-13	2013-14
Opening capital cost as on 31.3.2012	200208.46	200259.95
Additional capital expenditure allowed	51.49	(-)153.85
Closing capital cost	**200259.95**	**200106.10**

Debt-Equity Ratio

31. The petitioner has submitted that the additional capital expenditure has been financed through internal resources. In terms of the Regulation 12 of the 2009 Tariff Regulations, debt equity ratio of 70:30 has been considered on the admitted additional capital expenditure for the purpose of tariff.

Return on Equity

32. In terms of Regulation 15 (3) of the 2009 Tariff Regulations, the Return on Equity is computed as under:

(₹ in lakh)

	2012-13	2013-14
Gross Notional Equity	61381.74	61397.19
Addition due to Additional Capitalization	15.45	(-) 46.16
Closing Equity	61397.19	61351.03
Average Equity	61389.46	61374.11
Return on Equity (Base Rate)	15.750%*	16.500%
Tax rate for the year	20.008%	20.961%
Rate of Return on Equity	19.689%	20.876%
Return on Equity	**12086.97**	**12812.46**

**Base rate for April- December 2012 @ 15.5% and for January-March 2013 @16.5%*

Interest on Loan

33. The opening gross normative loan as on COD of each unit has been arrived at in accordance with Regulation 16 of the 2009 Tariff Regulations. The weighted average rate of interest has been worked out on the basis of the actual loan portfolio of the respective year as applicable to the project. The repayment for the period 2009-14 has been considered equal to the depreciation allowed for the respective year. Interest on loan has been calculated on the normative average loan of the year by applying the weighted average rate of interest as under:

(₹ in lakh)

	2012-13	2013-14
Gross Normative Loan	138615.30	138651.35
Cumulative Repayment	86156.70	96641.46
Net Loan-Opening	52458.60	42009.89
Repayment during the year	10322.89	10323.62
Addition due to Additional Capitalization	36.04	(-) 107.70
Net Loan-Closing	42171.75	31740.44
Average Loan	47315.18	36956.10
Weighted Average Rate of Interest on Loan	8.023%	8.498%
Interest on loan	**3795.91**	**3140.49**

Depreciation

34. The weighted average rate of depreciation of 5.155% and 5.157% for the year 2012-13 and 2013-14 respectively have been considered for the calculation of depreciation. Accordingly, depreciation has been computed as under:

(₹ in lakh)

	2012-13	2013-14
Opening Gross Block	200208.46	200259.95
Admitted Additional capital expenditure	51.49	(-) 153.85
Closing gross block	200259.95	200106.10
Average gross block	200234.21	200183.03
Rate of Depreciation	5.236%	5.236%
Depreciable Value	179735.84	179689.78
Remaining Depreciable Value	95967.29	85617.90
Depreciation	**10322.89**	**10323.62**

O & M Expenses

35. O & M expenses as allowed in order dated 27.1.2015 in Petition No. 231/GT/2013 has been considered as under:

(₹ in lakh)

2012-13	2013-14
7786.50	8231.89

Interest on Working Capital

36. The petitioner is entitled to claim interest on working capital as per Regulation 18 of the 2009 Tariff Regulations. The components of the working capital and the petitioner's entitlement to interest thereon are discussed hereunder.

(i) Receivables

As per Regulation 18(1) (c) (i) of the 2009 Tariff Regulations, receivables as a component of working capital are equivalent to two months" of fixed cost. In the tariff being allowed, receivables have been worked out on the basis of "2 months" fixed cost.

(ii) Maintenance spares

Regulation 18 (1) (c) (ii) of the 2009 Tariff Regulations provides for maintenance spares @ 15% per annum of the O & M expenses as part of the working capital. The value of maintenance spares has accordingly been worked out.

(iii) O & M expenses

Regulation 18(1) (c) (iii) of the 2009 Tariff Regulations provides for operation and maintenance expenses for one month to be included in the working capital. The petitioner has claimed O&M expenses for 1 month of the respective year. This has been considered in the working capital.

(iv) Rate of interest on working capital

In accordance with clause (3) of Regulation 18 of the tariff regulations, as amended, rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on 1.4.2009 or on 1st April of the year

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in which the generating station or a unit thereof is declared under commercial operation, whichever is later. Accordingly, SBI PLR of 12.25% as on 1.4.2009 has been considered in for working out Interest on Working Capital.

37. Accordingly, Interest on Working Capital has been calculated as under:

(₹in lakh)

	2012-13	2013-14
Maintenance Spares	1167.98	1234.78
O & M expenses	648.88	685.99
Receivables	5821.33	5911.32
Total	**7638.18**	**7832.09**
Interest on working capital @ 12.25%	**935.68**	**959.43**

Annual Fixed Charges

38. The annual fixed charges allowed for generating station for the period 2012-14 are summarized as under:

(₹in lakh)

	2012-13	2013-14
Return on Equity	12086.97	12812.46
Interest on Loan	3795.91	3140.49
Depreciation	10322.89	10323.62
Interest on Working Capital	935.68	959.43
O & M Expenses	7786.50	8231.89
Annual Fixed Charges	**34927.95**	**35467.89**

39. The difference between the annual fixed charges recovered by the petitioner and the annual fixed charges determined by this order as above shall be adjusted in terms of Clause (6) of Regulation 6 of the 2009 Tariff Regulations.

Determination of Annual Fixed Charges for the period 2014-19

40. As stated, the petitioner in this petition has also prayed for the determination of annual fixed charges of the generating station for the period 2014-19 in accordance with the provisions of the 2014 Tariff Regulations. Accordingly, the annual fixed charges claimed by the petitioner for the period 2014-19 are as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Return on Equity	12828.17	12855.65	12880.43	12880.43	12880.43
Interest on Loan	2258.34	1823.83	1157.75	893.97	630.19
Depreciation	10336.55	10359.18	2420.89	2420.89	2420.89
Interest on Working Capital	986.06	1003.84	834.76	858.98	885.21
O & M Expenses	7256.54	7738.66	8252.82	8801.14	9385.89
Annual Fixed Charges	**33665.66**	**33781.17**	**25546.65**	**25855.41**	**26202.61**

41. In response to the directions of the Commission, the petitioner has submitted additional information and has served copies of the same on the respondents. The respondents UPPCL and BRPL have filed replies to the petition and the petitioner has filed its rejoinder to the said replies filed by the respondents. Based on the submissions of the parties and the documents available on record, we proceed to determine the tariff of the generating station for the period 2014-19 as stated in the subsequent paragraphs.

Capital Cost

42. Clause (1) of Regulation 9 of the 2014 Tariff Regulations provides that the capital cost as determined by the Commission after prudence check in accordance with this regulation shall form the basis of determination of tariff for existing and new projects. Clause (3) of Regulation 9 provides as under:

> *"9(3) The Capital cost of an existing project shall include the following:*
>
> *(a) the capital cost admitted by the Commission prior to 1.4.2014 duly trued up by excluding liability, if any, as on 1.4.2014;*
> *(b) xxxx*
> *(c) xxxx*

43. The closing capital cost considered by the Commission as on 31.3.2014 in this order is ₹ 200106.10 lakh. This amount has been considered as the opening capital cost as on 1.4.2014 for computation of tariff for the period 2014-19.

Actual/ Projected Additional Capital Expenditure during 2014-19

44. Clause (3) of Regulation 7 of the 2014 Tariff Regulations provides that the application for determination of tariff shall be based on admitted capital cost including any additional capital expenditure already admitted upto 31.3.2014 (either based on actual or projected additional capital expenditure) and estimated additional capital expenditure for the respective years of the tariff period 2014-15 to 2018-19.

45. Regulation 14 (3) of the 2014 Tariff Regulations, provides as under:

> *"14(3) The capital expenditure, in respect of existing generating station or the transmission system including communication system, incurred or projected to be incurred on the following counts after the cut-off date, may be admitted by the Commission, subject to prudence check:*
>
> *(i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court of law;*

(ii) Change in law or compliance of any existing law;

(iii) Any expenses to be incurred on account of need for higher security and tem of the plant as advised or directed by appropriate Government Agencies of statutory authorities responsible for national security/internal security;

(iv) Deferred works relating to ash pond or ash handling system in the original scope of work;

(v) Any liability for works executed prior to the cut-off date, after prudence check of the details of such un-discharged liability, total estimated cost of package, reasons for such withholding of payment and release of such payments etc.;

(vi) Any liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments;

(vii) Any additional capital expenditure which has become necessary for efficient operation of generating station other than coal / lignite based stations or transmission system as the case may be. The claim shall be substantiated with the technical justification duly supported by the documentary evidence like test results carried out by an independent agency in case of deterioration of assets, report of an independent agency in case of damage caused by natural calamities, obsolescence of technology, up-gradation of capacity for the technical reason such as increase in fault level;

(viii) In case of hydro generating stations, any expenditure which has become necessary on account of damage caused by natural calamities (but not due to flooding of power house attributable to the negligence of the generating company) and due to geological reasons after adjusting the proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation;

(ix) In case of transmission system, any additional expenditure on items such as relays, control and instrumentation, computer system, power line carrier communication, DC batteries, replacement due to obsolesce of technology, replacement of switchyard equipment due to increase of fault level, tower strengthening, communication equipment, emergency restoration system, insulators cleaning infrastructure, replacement of porcelain insulator with polymer insulators, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system; and

(x) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receiving system arising due to non-materialization of coal supply corresponding to full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station:

Provided that any expenditure on acquiring the minor items or the assets including tools and tackles, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, computers, fans, washing machines, heat convectors, mattresses, carpets etc. brought after the cut-off date shall not be considered for additional capitalization for determination of tariff w.e.f. 1.4.2014:

Provided further that any capital expenditure other than that of the nature specified above in (i) to (iv) in case of coal/lignite based station shall be met out of compensation allowance:

Provided also that if any expenditure has been claimed under Renovation and Modernisation (R&M), repairs and maintenance under (O&M) expenses and Compensation Allowance, same expenditure cannot be claimed under this regulation."

46. The year-wise breakup of the projected additional capital expenditure claimed by the petitioner vide affidavit dated 10.7.2015 is as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Proposed additional capital expenditure on gross basis	70.52	240.26	565.85	0.00	0.00
Proposed De-capitalization	6.60	11.79	0.00	0.00	0.00
Net proposed additional capital expenditure	**63.92**	**228.47**	**565.85**	**0.00**	**0.00**

47. The respondent, BRPL has submitted that the claim of the petitioner for projected additional capital expenditure under Regulation 14(3)(viii) is required to be made under Regulation 14(3)(vii) of the 20104 Tariff Regulations, which require that the claim for expenditure for replacement of assets which are necessary for successful and efficient operation of the plant shall be substantiated with technical justification duly supported by documentary evidence like test results carried out by independent agency in case of deterioration of the assets. We have examined the matter. The petitioner has claimed capitalization of the expenditure under Regulation 14(3)(viii) which also provides for capitalization of expenditure incurred due to additional work which has become necessary for successful and efficient operation of plant. The submission of the respondent, BRPL that Regulation 14(3)(viii) should be read with Regulation 14(3)(vii) in respect of expenditure incurred on replacement assets and that the same should be supported by documentary evidence like test results carried out by independent agency in case of deterioration of the assets, is also not acceptable. In our view, the requirement of documentary evidence like test results etc., carried out by independent agency will be necessary in case of assets which have deteriorated prior to the expiry of useful life and accordingly sought to be replaced. In the instant case, these assets are being replaced on account of obsolescence /deterioration etc., after expiry of its useful life in consideration of year-wise assets which were put to use. However, there may be some assets which are serviceable even after the expiry of their useful life and should be put to use instead of seeking their replacement in a routine manner. In our view, the petitioner should support its claim either on the basis of the certificate by the OEM or its technical committee to the effect that the subject assets cannot be kept in service on account of its obsolescence or it being beyond economic repair. Though we are allowing capitalization of these assets under Regulation 14(3)(viii) of the 2014 Tariff Regulations, we direct that the petitioner shall place on record the necessary certificate from the OEM or its technical committee at the

time of truing-up of tariff . Similar approach shall be adopted in other cases where additional capitalization has been allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations.

48. Accordingly, based on the submissions of the parties and the documents available on record, the claims of the petitioner for the period 2014-19 are considered and allowed on prudence check, after reduction of the gross value of old assets, wherever necessary, as detailed in the subsequent paragraphs.

2014-15

(₹In lakh)

Sl. No.	Assets/ Works	Amount Claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Construction of stores at Dam site for Civil/HM/Elect complex	9.67	The petitioner has submitted that, to avoid deterioration and to ensure the availability and fast retrieval of materials at dam for Civil/HM/Elect complex, a store building is essentially required at DAM site. The existing central store is app. 20 km away from DAM site and road connecting both the locations is prone to heavy landslides and blockage in rainy as well as winter seasons. Therefore, all the essential & critical materials will be stored in this building to meet out any of the emergent requirement of DAM site. This will improve the performance of the Dam/Power Station.	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the asset is considered necessary for efficient operation of the generating station.	9.67
2	Construction of Dining hall and Kitchen for CISF	16.35	The petitioner has submitted that, dining hall and Kitchen is to be constructed for CISF unit. As per the MOU signed between NHPC Ltd and CISF, dining hall and kitchen shall be provided by NHPC Ltd to CISF unit at CPS-II, Karian. This is related to the security of the Power Station.	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the expenditure is necessary for the benefit of the employees working in remote areas of the project and in turn will facilitate	16.35

				the successful and efficient operation of the generating station.	
3	Construction of 1 nos. Security huts (Retiring rooms) at TRT	4.21	The petitioner has submitted that, security personals have been deployed for security of TRT Outlet round the clock. There is no permanent structure for security personnel to stay or take rest.	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the expenditure is necessary for the benefit of the employees working in remote areas of the project and in turn will facilitate the successful and efficient operation of the generating station.	4.21
4	Construction of Store building at Power House.	36.49	The petitioner has submitted that, in order to improve the efficiency and performance of the power station, proper storage of major components e.g. under water parts, tools and tackles, one no. store building is required at power house portal. The existing store building is app. 05 Km away from power house area and approach road is prone to landslides and blockage due to snow in rainy and winter seasons. Again the major spare parts are being stored at service bay which is resulting in less availability of space to carry-out the routine as well as major maintenance of VT drainage and dewatering pumps etc. All the major and critical components, tools & tackles will be stored in the store building at power house end to meet any emergent requirement of power	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the asset is considered necessary for efficient operation of the generating station.	36.49

			house.		
5	Fibre Boat for Dam site	3.80	The petitioner has submitted that, the existing boat already damaged and has completed its life. The bottom side of boat got damaged severely and cannot be used safely. Therefore a new boat is essentially required for survey work of dam reservoir.	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the asset is considered necessary for efficient operation of the generating station. The gross value of old asset is considered as ₹6.60 lakh.	**(-) 2.80** (3.80-6.60)
Total Claimed		**70.52**			
Total Allowed (after de-capitalization)					**63.92**

2015-16

(₹ in lakh)

Sl. No.	Assets/ Works	Amount Claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Purchase of Automatic Gauge discharge recorder	2.60	The petitioner has submitted that, in order to optimize the generation, proper monitoring of river inflow is required for better scheduling procedure. As per the suggestion of Dam Safety Team a Gauge discharge curve is required for preparation of tail rating curve. Due to frequent variation of flow in case of machine shutdown/start, Gauge - discharge curve is not possible. Therefore it has been decided that Automatic Gauge discharge curve may be procured for its installation at the base of Karian-Bharian Bridge.	**Not allowed** as the expenditure claimed on the asset is in the nature of tools and tackles	**0.00**

2	Purchase of oil mist Exhauster	15.00	The petitioner has submitted that, in that, in order to enhance the life of stator windings and rotor poles Oil mist exhauster are required to be installed in all the three generating units. This will collect oil fumes from the bearings so that the cleanliness of the stator winding, rotor poles can be ensured. The oil fumes deposits over the stator windings and rotor poles and a portion of fumes condensate in contact with the cold surfaces. As a result dust particles get deposits on the stator winding and rotor poles which in turn affects the cooling of stator windings and rotor poles. The fumes when converted into the liquid form, fall into the turbine pits and pollute the water. If oil mist exhauster is installed in LGB housing of all the three units than the wastage of costly turbine oil and pollution of water may also be avoided in addition to healthiness/cleanliness of stator winding.	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the asset is considered necessary for efficient operation of the generating station.	**15.00**
3	Pendant operated EOT crane for New store building at Power House	10.00	The petitioner has submitted that, in order to improve the work efficiency in turn smooth operation of the power station pendent operated EOT crane is required for new store building. Considering the high lead times in delivery of critical items /under water components of the Units, such items are kept in ready stock at Power House. Till now, these items were being stored in service	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the asset is considered necessary for efficient operation of the generating station.	**10.00**

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			bay and in main stores (located away from Power House). With ageing of the plant the quantity of the required spares is increasing. Storage of bulky spares in service bay is not possible due to pace constraints. Handling/transportation of such spares in main store is very difficult. A new building is being constructed at power house portal for storage of such items. One no. pendant operated EOT crane is to be installed in this building for safe handling of such items.		
4	Purchase of DG set 500 KVA - 2 No. along with AMF panel	89.84	The petitioner has submitted that, 1 MVA DG Set is 27 years old and it has completed its stipulated life in years as well as in running hours. This DG set breaks down quite frequently and it has become very difficult to run it economically. As per the finalization of equipment in respect of Chamera-II, 02 Nos. DG set 500 KVA has been planned for installation in place of 01 MVA DG set. As per load pattern the requirement of load during summer season is below 400 KW whereas this demand becomes doubled in winters. During summer season only 500 KVA DG set will meet the requirement whereas both the DG sets will be utilized in winter season. 2 nos. of DG set having individual capacity of 500 KVA are essential to meet power requirement of all the offices, CISF	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the asset is considered necessary for efficient operation of the generating station. The gross value of old asset is considered as ₹1.67 lakh.	**88.17** (89.84-1.67)

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			installations, TRT, central store, workshop, water supply system, K.V etc.		
5	Purchase of one 400 KVA DG Set for Dam	38.12	The petitioner has submitted that, the existing one no DG Set of 370 KVA has covered its useful life in years and is old. This DG was shifted from Rangit Power Station during commissioning of Chamera Power Station-II. Replacement of this DG set is essential to meet power requirement of DAM & SFT including safety/security of DAM installation during failure of supply from HPSEB feeder. There are frequent tripping of HPSEB feeder during rainy and winter seasons, The restoration of HPSEB supply may take several days when there are major damages in 11 KV system. Therefore, purchase of 370/380/400 KVA DG set is necessary to meet out the power demand of DAM installations.	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the asset is considered necessary for efficient operation of the generating station. The gross value of old asset is considered as ₹5.20 lakh.	**32.92** (38.12-5.20)
6	Bolero - 01 Nos	7.20	The petitioner has submitted that, as per the finalization of equipment in respect of Chamera-II, 01 Nos. Bolero is required against the replacement of 02 nos. Gypsy. This vehicle shall be purchased after approval from CMD.	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the asset is considered necessary for efficient operation of the generating station. The gross value of old asset is considered as ₹0.69 lakh	**6.51** (7.20-0.69)

7	Motorcycle (Enfield/Equivalent)	1.50	The petitioner has submitted that, the existing 02 nos. motorcycles have almost covered their useful life and due for disposal. These vehicles need replacement with new ones as per O&M strength of equipment.	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the asset is considered necessary for efficient operation of the generating station. The gross value of old asset is considered as₹0.76 lakh.	**0.74** (1.50-0.76)
8	Two nos. Gasoline Engine operated power pack each type each for radial Gate-I&II power pack and Radial Gate III & IV power pack.	17.00	The petitioner has submitted that, the existing gasoline operated power pack is old and are not sufficient to lift the load of redial gates during emergency operation. Also existing gasoline operated power pack are in break down condition and are beyond repair, therefore new set is required against replacement of old.	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the asset is considered necessary for efficient operation of the generating station. The gross value of old asset is considered as ₹0.90 lakh.	**16.10** (17.00-0.90)
9	100 KVA DG set with acoustic enclosure and AMF panel.	10.00	The petitioner has submitted that, 100 KVA DG Set is required to be operate SFT Gate and lightening of SFT cavern during power failure. Earlier temporary provision for power supply during failure was done through DAM DG set. As this temporary arrangement is not reliable during rainy season, landslides and local interruption, a Local power backup source is mandatory to install.	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the asset is considered necessary for efficient operation of the generating station.	**10.00**
10	Replacement of Drainage VT pumps with submersible pump.	49.00	Originally 3 nos. VT pumps were installed in the drainage system. The frequency of breakdown and consequent routine/breakdown maintenance is high in	**Allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations, since the asset is considered necessary for	**46.44** (49.00-2.56)

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