UTTARAKHAND ELECTRICITY REGULATORY COMMISSION

Vidyut Niyamak Bhawan, Near I.S.B.T., P.O.-Majra, Dehradun-248171

Coram

Shri Subhash Kumar Chairman

Statement of Reasons for the "UERC (Terms and Conditions for Determination of Multi Year Tariff) (First Amendment) Regulations, 2017"

Statement of Reasons

INTRODUCTION

(a) In exercise of powers conferred under Section 61, read with Section 181 of the Electricity Act, 2003, and all other powers enabling it in this behalf, and after previous publication, the Uttarakhand Electricity Regulatory Commission had issued the UERC (Terms and Conditions for Determination of Multi Year Tariff) Regulations, 2015 (hereinafter referred to as "Principal Regulations" or "MYT Regulations, 2015") vide notification dated September 10th, 2015. These Principal Regulations stipulate terms and conditions for determination of retail supply tariff, transmission tariff, generation tariff and SLDC charges.

(b) The Commission had proposed the draft first amendment Regulations based on the tariff petitions submitted by Gas based power plant generators namely M/s Gama Infraprop Power Ltd. and M/s Sravanthi Energy Pvt. Ltd. It was observed that these Stakeholders/ Petitioners have claimed higher O&M expenses in deviation to the above mentioned Regulation 48(1) of the Principal Regulations claiming that they have F-Class machine in their generating stations.

(c) Since the Principal Regulations do not specify O&M expenses for F-Class machines, accordingly, the Commission decided to incorporate norms of O&M expenses for F-Class machine in respect of Open Cycle Gas Turbine/Combined Cycle generating stations by issuance of amendment of the Principal Regulations so that the same may be considered for such generating station.

Last date of submission of the comments / suggestions / objections was kept as 02.01.2017. The list of stakeholders who submitted comments is enclosed as **Annexure-I**. The

Commission also held a hearing in the matter on 09.01.2017, list of the participants is enclosed as **Annexure-II**.

(d) The comments/ suggestions/ objections received from the stakeholders in respect of draft amendment and the views of the Commission on the same are discussed in subsequent paragraphs.

Comments / Suggestions / Objections of the stakeholders and analysis & decision of the Commission:

1 Amendment proposed by the Commission in Regulation 48(1) of the Principal Regulation (Normative O&M expenses):

a) Regulation 48(1) of the Principal Regulations was proposed to be substituted as under*:*

*"(1) **Normative O&M Expenses for Open Cycle Gas Turbine/Combined Cycle generating stations shall be as under:***

(In Rs. Lakh/MW)

Year	*Gas Turbine/ Combined Cycle generating stations*		*Small gas turbine power generating stations (less than 50 MW Unit size)*	*Advance F Class Machines*
	With warranty spares for 10 years	*Without warranty spares*		
2015-16	*9.25*	*13.87*	*16.83*	*27.78*
2016-17	*9.86*	*14.79*	*17.95*	*29.98*
2017-18	*10.52*	*15.77*	*19.14*	*31.70*
2018-19	*11.22*	*16.82*	*20.41*	*33.51*

"

Comments received:

M/s SEPL vide its letter dated 07.01.2017 submitted that given the technical superiority of Advance F Class Machines as compared to the other Turbine Categories, CERC has extensively evaluated the normative O&M expenses for the same in its Tariff Regulations, 2014 . M/s SEPL has requested the Commission to consider the same normative O&M expenses as specified by CERC. M/s SEPL during the hearing held on 09.01.2017 in the matter also stated that the normative O&M expenses specified by Gujarat Commission is relatively on a lower side as compared to CERC's norms since cost of transportation for the plants situated in Gujarat would be lower as compared to other States. Further, transportation of equipments upto the location of plant in Uttarakhand would be on higher side as compared to Gujarat.

M/s Beta submitted that due to increase in firing temperature to attain better heat

rate and efficiency, the hot gas path components (viz combustions liners, transition pieces and various stages of gas turbines) undergo high thermal stresses. M/s Beta submitted that in order to combat internal damages in the internal F class gas turbines metallurgy of hot gas components is upgraded leading to increase in the cost of internal spares in comparison to industrial gas turbine also Dry Low NO_x (DLN) components add further to the cost. M/s Beta submitted that normative O&M expenses in case of F class turbine is justified and be incorporated in the Regulations.

M/s GIPL during the hearing expressed its support to the comments submitted by M/s SEPL.

Uttarakhand Power Corporation Ltd., Distribution Licensee in the State has not made any written submission in this regard, however, during the hearing Licensee submitted that it has no objection in respect of proposed draft amendment since with increase in efficiency with F class machines ARR of the generating plants should be reduced.

Commission's view and decision:

1. As discussed in draft amendment regulations, combined cycle based gas power plants have been commissioned recently in the State of Uttarakhand. Hence, in the absence of actual details of O&M expenses for such plants having F class machines the Commission has to take references of the norms specified by CERC and other ERC's where such plants have been commissioned. The Commission observed that the CERC had in its Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 incorporated normative O&M expenses for advance F class machine. CERC in its Statement of Reasons corresponding to above mentioned Regulations had stated that:

   "29.36 On the suggestion of approval of norms for advanced F Class machines based on the O&M expenses of Sugen power plant, the Commission in the draft Regulations had proposed norms on the basis of actual O&M expenses of Sugen Power Plant as it provides optimum efficiency. Since, RGPPL station is also based on the same technology and the O&M expenses of the two stations are comparable, the same has also been considered while arriving at the final norms for advanced F class machines. The Commission has accordingly reviewed the norms specified for such machines by considering the average O&M expenses for Sugen and RGPPL.

   29.37 The beneficiaries and one of the generating companies have suggested that the O&M norms proposed in the draft Regulations are much higher than the norms specified by the State Electricity Regulatory Commissions for the State generating stations and therefore, there is a

need for reduction in the O&M expenses approved by the Commission. In this regard, the Commission would like to clarify that the Commission has determined the norms on the basis of actual expenses after adjusting any abnormal expenses and further normalisation has been carried out so that no unjust expenses are being allowed as a part of the norm. Further, factors like wage structure at the State and Central level come into play. The approach adopted by the Commission is intended to balance the interest of the generators as it reflects cost plus approach and at the same time, the efficiency has been allowed to be passed through to the consumers."

Apparently, the Central Commission has considered normative O&M expenses for advance F class machines based on the actual expenditures incurred on generating stations having such class of machines.

2. Further, as submitted by the Gas based power plants in the State, norms for Plants which are having older class of Gas turbines, namely `E` Class, cannot be made applicable to advance class Gas turbines that are subjected to much higher thermal stresses and higher blade temperatures as compared to the `E` class machines. As the Gas turbine technology is getting more and more advanced, promising the best of economic and environmental performance and have achieved efficiency levels of the order of 50%-60% by targeting a firing temperature of around 1300°C or more. Whereas, firing temperature of `E` class machines are in the range of 1090-1100°C .The selection of Advanced Class FA + Gas turbines with CCGT mode to obtain competitive advantages in heat rate, emissions performance and specific costs, a quantitative risk assessment becomes more critical. To reduce financial exposure to technical risk, long-term services agreements (LTSA/LTMA) with the OEM are becoming more prevalent and desirable in order to have appropriate confidence level for the availability and efficiency levels of operation of the advance class machine. Hardware like First phase blades, nozzles and shroud blocks are manufactured by limited OEM's from Europe and USA. Even BHEL is not having the technology to produce the same, though they are selling the F class machines. They are also importing the same from the GE as it is driven by robust design and high temperature capacity alloy steels.

3. The gas based plant submitted that due to very high turbine inlet temperature the efficiency of such machines is about 52% as against the efficiency of `E` class machines which is about 48%. To achieve high operational temperature internals and hardware in F class are designed to cater such high temperature zones by applying advance coating and alloy metallurgy and also using cooling methods. This improvement in efficiency

with F class machines leads to considerable reduction in consumption of gas fuel (i.e. around 8-9%) which further results in saving in energy charges.

4. Dry Low NO_x (DLN) combustion systems in Advanced Class F Gas turbines have demonstrated their ability to meet the ever lower emission levels. Such low NO_x emissions are generally not attainable on lower firing temperatures. Therefore, Class F machines are highly environment friendly and compliant to environmental regulations under Clean Development mechanism towards reduction of Green House Gas emissions.

5. Since the technology is proprietary, the cost of spare parts and services of specialists who possess the requisite technical know-how results in higher O&M expenses. Therefore, it is a common practice throughout the world for the users of advanced class (F Class) gas turbines to avail long term service and supply services from the Gas Turbine OEMs. Such services cover monitoring and inspection of the machines, management of spares and components that require replacement, repairs and refurbishment.

6. The requirement of replacement and/or refurbishment of these highly specialized active components which are not available in open market and are proprietary to respective Gas Turbine OEMs and have to be necessarily sourced from them and lead time is very high and one set of all required spares, consumables are to be kept in the inventory.

7. The gas based power generator submitted that by allowing norms of O&M expenses as specified by CERC for advance F class machines still there would be overall savings of around Rs. 25- 26 Crore on annual basis on account of savings in fuel cost for the same capacity of F class machines as compared to E class machines.

8. Relying on the submissions made by the gas based power plants in the State and also taking reference of normative specified by CERC and other ERCs, the Commission has decided to allow normative O&M expenses for such machines as specified by CERC in its Tariff Regulations, 2014.

Annexure-I

List of Stakeholders

Sr. No.	Name	Designation	Organisation	Address
1.	Sh. G. Ankaneyulu Naidu	Director (Projects)	M/s Sravanthi Energy Pvt. Ltd.	3rd Floor, 136, Rider House, Sector-44, Gurgaon, Haryana-122002
2.	Sh. Satwant Singh	General Manager	M/s Beta Infratech Pvt. Ltd.	B-4/45, Sardarjung Enclave, New Delhi-110029

Annexure-II

List of Participants

Sr. No.	Name	Designation	Organisation	Address
3.	Sh. Shwet Ketu	CEO	M/s Sravanthi Energy Pvt. Ltd.	3rd Floor, 136, Rider House, Sector-44, Gurgaon, Haryana-122002
4.	Sh. G. Ankaneyulu Naidu	Director (Projects)	M/s Sravanthi Energy Pvt. Ltd.	3rd Floor, 136, Rider House, Sector-44, Gurgaon, Haryana-122002
5.	Sh. Antriksh Singh Bisht	Dy. Manager	M/s Sravanthi Energy Pvt. Ltd.	3rd Floor, 136, Rider House, Sector-44, Gurgaon, Haryana-122002
6.	Sh. Arpit Agarwal	-	M/s Gama Infraprop (P) Ltd.	M - 3, First Floor, Hauz Khas, Aurbindo Marg, New Delhi-110016
7.	Sh. Atul Agarwal	Director (Operations)	Uttarakhand Power Corporation Ltd.	Victoria Cross Vijeta Gabar Singh Bhawan, Kanwali Road, Dehradun
8.	Sh. A.K. Singh	Chief Engineer	Uttarakhand Power Corporation Ltd.	Victoria Cross Vijeta Gabar Singh Bhawan, Kanwali Road, Dehradun
9.	Sh. Devendra Kumar	Executive Engineer	Uttarakhand Power Corporation Ltd.	Victoria Cross Vijeta Gabar Singh Bhawan, Kanwali Road, Dehradun
10.	Sh. Pravesh Kumar	Executive Engineer	Uttarakhand Power Corporation Ltd.	Victoria Cross Vijeta Gabar Singh Bhawan, Kanwali Road, Dehradun
11.	Sh. Gaurav Sharma	Executive Engineer	Uttarakhand Power Corporation Ltd.	Victoria Cross Vijeta Gabar Singh Bhawan, Kanwali Road, Dehradun