



National Electric Power Regulatory Authority Islamic Republic of Pakistan

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Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

No. NEPRA/R/LAG-03/1177-85

January 25, 2023

Chief Executive Officer

Northern Power Generation Company Limited
Thermal Power Station, Mehmood Kot Road
Muzaffargarh

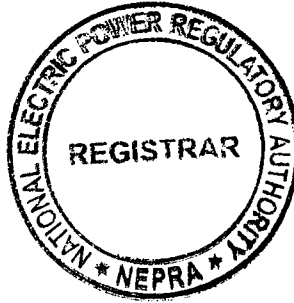
Subject: **Modification in Generation Licence No. GL/03/2002 (Modification-V)
Licence Application No. LAG-03
Northern Power Generation Company Limited, (NPGCL/GENCO-III)**

Reference: *NPGCL's LPM submitted vide letter No. CEO/NPGCL/NP/LPM/2552 dated 06.07.2022*

It is intimated that the Authority has approved Modification in Generation Licence No. GL/03/2002 dated July 01, 2002 in respect of Northern Power Generation Company Limited (NPGCL/GENCO-III) pursuant to Section-26 of NEPRA Act read with Regulation 10(4) of NEPRA Licensing (Application, Modification, Extension and Cancellation) Procedure Regulations, 2021.

2. Enclosed please find herewith determination of the Authority in the matter of Licensee Proposed Modification of NPGCL/GENCO-III alongwith Modification-V in the Generation Licence No. GL/03/2002, approved by the Authority.

Enclosure: As Above



(Engr. Mazhar Iqbal Ranjha)

Copy to:

1. Secretary, Power Division, Ministry of Energy, 'A' Block, Pak Secretariat, Islamabad
2. Secretary, Privatization Commission, Ministry of Privatization, Government of Pakistan, 4th Floor, Kohsar Block, Pak Secretariat, Islamabad
3. Managing Director, NTDC, 414-WAPDA House, Shakra-e-Quaid-e-Azam, Lahore
4. Chief Executive Officer, CPPA(G), 73 East, A.K. Fazl-ul-Haq Road, Blue Area, Islamabad
5. Chief Executive Officer, Gujranwala Electric Power Company (GEPCO), 565/A, Model Town, G.T Road, Gujranwala
6. Chief Executive Officer, Faisalabad Electric Supply Company (FESCO), Abdullahpur, Canal Bank Road, Faisalabad
7. Chief Executive Officer, Multan Electric Power Company (MEPCO), NTDC Colony, Khanewal Road, Multan
8. Director General, Environmental Protection Department, Government of the Punjab, National Hockey Stadium, Ferozpur Road, Lahore

National Electric Power Regulatory Authority
(NEPRA)

Determination of the Authority
in the Matter of the Licensee Proposed Modification in the
Generation Licence of Northern Power Generation Company
Limited

January 25, 2023
Case No. LAG-03

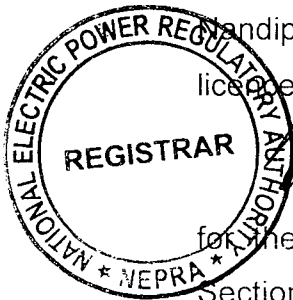
(A). Background

(i). The Northern Power Generation Company Limited (NPGCL/GENCO-III) holds a Generation Licence (No. GL/03/2002, dated July 01, 2002 and subsequent modifications dated April 18, 2014, October 31, 2014, May 02, 2018 and April 13, 2020) for its three (03) distinctly located Generation Facilities including Thermal Power Station Muzaffargarh (TPS Muzaffargarh), Gas Turbine Power Station, Faisalabad (GTPS, Faisalabad) and Combined Cycle Power Plant at Nandipur (CCPP Nandipur).

(ii). According to the existing Generation Licence, the cumulative installed capacity of NPGCL/GENCO-III is 2059.65 MW (i.e. 1350.00 MW TPS Muzaffargarh, 144.00 MW GTPS, Faisalabad and 565.65 MW CCPP Nandipur). In this regard, it is relevant to mention that CCPP Nandipur was included in the Generation Licence of NPGCL/GENCO-III through Licence Proposed Modification (LPM) dated October 31, 2014.

(iii). Pursuant to the decision/directions of Govt. of Pakistan (GOP)/Cabinet Committee on Privatization (CCoP) regarding privatization of CCPP Nandipur, the Ministry of Energy Power Division (MoEPD) vide its office order No. 1(33)GP-I/2021 dated December 31, 2021 directed NPGCL to carve out CCPP Nandipur from its existing generation licence and avail a separate generation licence for the same.

(iv). Accordingly, NPGCL/GENCO-III filed an application on July 07, 2022 for the grant of separate generation licence for CCPP Nandipur, in terms of Section-14B of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the "NEPRA Act") read with the relevant provisions of



the NEPRA Licensing (Application, Modification, Extension and Cancellation) Procedure Regulations, 2021 (the "Licensing Regulations") for which separate proceedings are in process.

(B). Communication of Modification

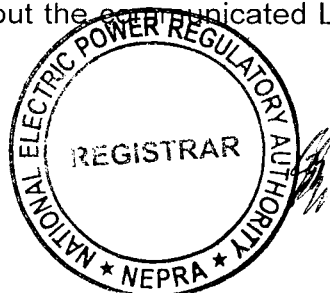
(i). In accordance with Regulation-10 of the Licensing Regulations, NPGCL communicated an LPM in its Generation Licence to the Authority on July 07, 2022. In the text of the proposed modification NPGCL proposed: (a). to exclude CCPP Nandipur from the Generation Licence; and (b). to extend the useful life of Units 5-9 of GTPS Faisalabad for another five years (i.e. till June 30, 2027).

(ii). Regarding the statement of reasons in support of modification NPGCL submitted that the exclusion of CCPP Nandipur is being requested to comply with the directions of MoEPD whereby, *inter alia*, NPGCL has been directed to carve out CCPP Nandipur from its existing generation licence and avail separate generation licence for the same. Further, Units 5-9 of GTPS Faisalabad have: (a). more than fifty thousand (50,000) remaining operational hours; (b). an elevated position in the economic Merit Order i.e. 8 out of 124; (c). availability of the Units for reliable operation; (d). a good operational record during the last four (4) years; (e). the capability to operate on condenser mode for system stability; and (f). Black Start facility.

(iii). About "statement of the impact on the tariff, quality of service and the performance by the licensee of its obligations under the licence", NPGCL confirmed that the proposed modification in its Generation Licence will not have any adverse impact on tariff, quality of the service and obligations of the Licensee. Rather, the proposed modification will help the Licensee to comply with the directions of the Authority, in larger national interest.

(C). Processing of LPM

(i). After completion of all the required information as stipulated under the Regulation 10(1) and 10(2) of the Licensing Regulations by NPGCL, the Registrar under the Regulation-10(3) of the Licensing Regulations, published a notice about the communicated LPM on August 17, 2022 in one (01) English and one (01) Urdu newspaper, informing the general public about the communicated LPM and inviting



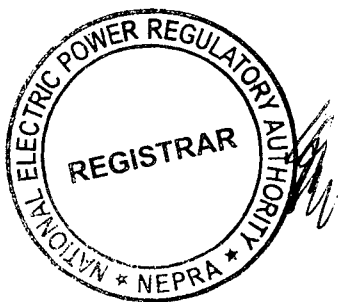
their comments within a period of fourteen (14) days from the date of said publication.

(ii). Apart from the above, separate letters were also sent to government ministries, their attached departments and representative organizations, etc. on August 17, 2022. Through the said letters, the stakeholders were informed about the communicated LPM and publication of notice in the press. Further, the said entities were invited to submit their views and comments in the matter to assist the Authority.

(D). Comments of Stakeholders

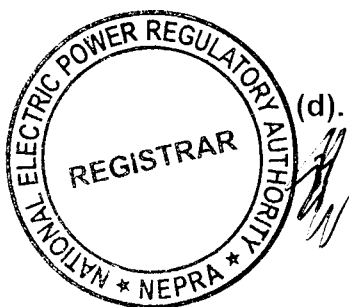
(i). In reply to the above, the Authority received comments from four (04) stakeholders, including Faisalabad Electric Supply Company Limited (FESCO), Petroleum Division, Ministry of Energy (PtDMoE), Central Power Purchasing Agency (Guarantee) Limited (CPPAGL) and Energy Wing, Ministry of Planning, Development and Special Initiatives (MoPD&SI). The salient points of the comments offered by stakeholders are summarized below:-

- (a). FESCO submitted that it has no reservations with regard to modification in the Generation Licence bearing No. GL/03/2002 of NPGCL by the Authority;
- (b). PtDMoE, inter alia, submitted that CCPP Nandipur has a useful life of 30 years from its COD (i.e. July 23, 2015) whereas efficiency of the plant is in the range of 41%-49%. Foregoing in view, it has no objection to the grant of generation licence to NPGCL for CCPP Nandipur. Further, PtDMoE has provided history of Gas Supply Agreement (GSA) for CCPP Nandipur, stating that interim agreement signed between SNGPL and NPGCL for supply of 100 MMCFD of gas is valid till execution of the GSA. As of August 2022, outstanding dues of CCPP Nandipur amount to Rs. 27.868 Billion. Regarding extension in useful life of GTPS Faisalabad, PtDMoE has highlighted that the Authority through its decision dated May 02, 2018 on LPM of NPGCL had extended the useful life of GTPS Faisalabad units 5-9 till June 30, 2022. As per NEPRA State of Industry 2021, the plant efficiency of GTPS during FY 2016-17 to FY 2020-21, remained 30.15%, 29.91%, 30.12% 0.00% and



26.76%, respectively, whereas net efficiency was 28.40%, 27.39%, 29.02%, 0.00% and 21.01%, respectively. The plant was operated on RLNG which is meant for most efficient plants i.e. Bhikki, Balloki, Haveli Bahadur Shah and Trimmu power plants. Further, outstanding dues of GTPS Faisalabad as on August 26, 2022 are Rs. 1.720 billion. Foregoing in view, PtDMoE does not support the extension in the useful life of GTPS Faisalabad against supply of RLNG. Regarding GSA with NPGCL for GTPS Faisalabad, it was stated that SNGPL had executed GSA with WAPDA on June 6, 1985 for supply of indigenous gas to Gas Turbine Station Nishatabad, Faisalabad. In view of unavailability of indigenous gas supply, SNGPL has executed an Interim RLNG Supply Agreement with NPGCL on May 10, 2018 for supply of 28 MMCFD RLNG to GTPS Faisalabad on "As and When available" basis. Upon expiry of interim agreement, SNGPL and NPGCL signed the First Addendum on May 20, 2021 for supply of 28 MMCFD RLNG to GTPS Faisalabad while extending only term of the agreement having validity of Addendum till execution of detailed RLNG Supply Agreement;

- (c). CPPAGL commented that the Authority may consider the extension in the useful life/generation licence of Units 5-9 of GTPS Faisalabad, provided that NPCC requires the said units for its system support and NPGCL ensures a firm GSA; and



- (d). MoPD&SI submitted that NEPRA should consider the modification for extension of five (05) years in the term of GTPS Faisalabad, if satisfactory grounds for continued operation of the power plant are available.

(ii). The Authority considered the above comments of the stakeholders and in view of the observations of PtDMoE, considered it appropriate to seek the perspective of NPGCL on the same. In response, NPGCL/GENCO-III through its letter dated October 18, 2022 submitted that although the efficiency of Units 5-9 of GTPS Faisalabad has remained less, the extension in the generation licence for a further five years is beneficial, therefore the observations of PtDMoE are denied, considering number of factors including (a). remaining more than Fifty Thousand

(50,000) operational hours; (b). elevated position in the Economic Merit Order i.e. 8 out of 124; (c). availability of the Units for reliable operation; (d). Good operational record during the last four (4) years; (e). capability to operate on condenser mode for system stability; and (f). Black Start facility. Further, regarding the outstanding dues, NPGCL submitted that the same could not be paid due to cash flow issues, however, the same will be cleared soon. Accordingly, the Authority decided to proceed further with the LPM of NPGCL as stipulated in the relevant provisions of the Licensing Regulations and NEPRA Licensing (Generation) Rules 2000 (the "Generation Rules").

(E). Evaluation/Findings of the Authority

(i). The Authority has examined the entire case in detail including the already granted generation licence and information submitted along with the application of LPM, comments of stakeholders, rejoinder by the Licensee/applicant relevant provisions of the NEPRA Act and relevant rules & regulations framed thereunder.

(ii). The Authority has observed that NPGCL holds a Generation Licence (No. GL/03/2002, dated July 01, 2002 and subsequent modifications dated April 18, 2014, October 31, 2014, May 02, 2018 and April 13, 2020) for its three (03) distinctly located Generation Facilities including TPS Muzaffargarh, GTPS Faisalabad and CCPP Nandipur. According to the existing Generation Licence, the cumulative installed capacity of NPGCL/GENCO-III is 2059.65 MW, which includes 1350.00 MW TPS Muzaffargarh, 144.00 MW GTPS, Faisalabad and 565.65 MW CCPP Nandipur.

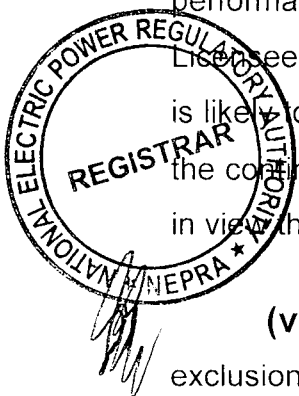
(iii). Regarding CCPP Nandipur, it is relevant to mention that the same was included in the Generation Licence of NPGCL/GENCO-III through LPM dated October 31, 2014 and was commissioned in 2015. Now, as a part of overall privatization program the Govt. of Pakistan (GOP) has also selected CCPP Nandipur for privatization. In this regard, the Ministry of Energy (Power Division) vide its office order No. 1(33)GP-I/2021 dated December 31, 2021, inter alia, directed NPGCL to carve out CCPP Nandipur from its existing generation licence and avail separate generation licence for CCPP Nandipur. Accordingly, NPGCL has filed application under the relevant rules and regulations for obtaining separate generation licence for which parallel proceedings are in progress in.



(iv). Regarding Units 5-9 of GTPS Faisalabad, the Authority has observed that the said units (Gas Turbines) were commissioned in the year 1975 and remained part of the Generation Licence of NPGCL throughout. At the time of grant of the Generation Licence to NPGCL in 2002, the remaining useful life of these units was set to ten (10) years from the date of issuance of the licence, which expired on June 30, 2012. In this regard, NPGCL did not apply to the Authority for extension of useful life of the said units. In this regard, the Authority in its different regulatory meetings deliberated upon the performance of these units and due to technical and financial non-viability of these units, initiate the Authority Proposed Modification (APM) on December 28, 2015 in the Generation Licence of NPGCL for, *inter alia*, excluding these units. NPGCL agitated the APM and submitted an LPM, for extension of useful life of these units. Accordingly, the Authority through its determination dated May 02, 2018 and May 14, 2018 decided to retain Units 5-9 of GTPS Faisalabad in the Generation Licence of NPGCL till June 30, 2022. In view of the directions of the MoEPD regarding carving out CCPP Nandipur from its Generation Licence and expiry of useful life of GTPS Faisalabad, NPGCL communicated this LPM for (a). exclusion of CCPP Nandipur from its Generation Licence and (b). extend the useful life of Units 5-9 of GTPS Faisalabad for another five years (i.e. till June 30, 2027).

(v). Regarding modification in the Generation Licence, the Authority has observed that Section 26 of the NEPRA Act, read with Regulation-9(2) of the Licensing Regulations, empowers the Authority to modify a licence in accordance with an Authority Proposed Modification (APM) or LPM, subject to and in accordance with such further changes as the Authority may deem fit if, in the opinion of the Authority, such modification (a). will not adversely affect the performance by the Licensee of its obligations; (b). reasonably necessary for the Licensee to effectively and efficiently perform its obligations under the licence; (c). is likely to be beneficial to the consumers; or (d). is reasonably necessary to ensure the continuous, safe and reliable supply of electric power to the consumers keeping in view the financial and technical viability of the Licensee.

(vi). Regarding the proposed modification in the Generation Licence for exclusion of CCPP Nandipur, the Authority considers that the same is necessary and in compliance with directions of the GoP. Further, NPGCL has already filed an



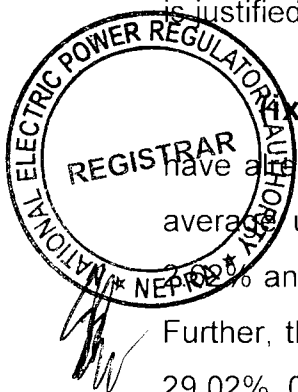
application for the grant of separate generation licence for the said plant. Therefore, the Authority is of the view that the modification pertaining to exclusion of CCPP Nandipur, will not adversely impact the performance of NPGCL rather it is compliant with the directions of the GOP.

(vii). Regarding the proposed extension in the useful life of the generating units (i.e. Units 5-9 of GTPS Faisalabad), the Authority has observed that in terms of Section-26 of the NEPRA Act read with Rule-5(2) of the Generation Rules, the Authority can renew the term of the licence as it may deem appropriate. In this regard, Rule-5(2) of the Generation Rules stipulates that the Generation Licence may be renewed for such further term in the manner provided for in the generation licence keeping in view: (a). the remaining maximum expected useful life of the units comprised in the generation facility; (b). the performance of the licensee during the then expiring term; and (c). the interests of the consumers and the electric power industry as a whole.

(viii). Further, Regulation-13 of the Licensing Regulations also stipulates that the Authority is competent to renew the term of a licence in accordance with an application duly filed under sub-regulation (1), subject to and in accordance with such further changes as the Authority may deem fit, if in the opinion of the Authority such extension: (a) is in the interests of the consumers and the electric power industry as a whole; (b) is reasonably necessary to ensure the continuous, safe and reliable supply of electric power to consumers, keeping in view the financial and technical viability of the licensee; (c) is suitable on environmental grounds; and (d) is justified keeping in view the performance of the licensee during the expiring term.

(ix). In this regard, the Authority has noted that Units 5-9 GTPS Faisalabad have already outlived even their extended useful lives. For the last five years, the average utilization of these units was about 6.58% (i.e. 6.02%, 15.74%, 0.00%, 2.62% and 8.51 % for FY 2017-18 to FY 2021-22, respectively), which is very low. Further, the net efficiency of the plant was recorded considerably low i.e. 27.96%, 29.02%, 0.0%, 23.89% and 26.86% from FY 2017-18 to FY 2021-22.

(x). In this regard, the Authority has also observed that primary fuel for GTPS Faisalabad is natural gas/RLNG whereas HSD and RFO are utilized as alternative fuels by the said plants. In case of non-availability of natural gas, the operation of Units 5-9 GTPS Faisalabad (on RLNG, RFO or HSD) is un-economical



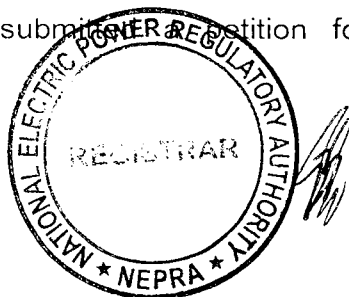
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due to higher per unit cost. Even if gas is available, its utilization in such less efficient plant is not advisable.

(xi). Regarding extension in useful lives of Units. 5-9 of GTPS Faisalabad based on actual operating hours, the Authority hereby clarifies that the normal operating life of a steam turbine and gas turbine is taken as 30-35 years whereas gas turbines of GTPS Faisalabad were commissioned in the year 1975 and have operated for more than 45 years from the COD. Units of GTPS Faisalabad have outlived their useful lives and operating at very low efficiency. In this regard, the Authority also considers it relevant to mention that on the recommendations of the system operator/NPCC and GENCO Holding Company Limited, the parent ministry (i.e. MoEPD) prepared a summary regarding (utilization/closure) different plants/units of GENCOs on financial and technical basis. The Cabinet Committee on Energy (CCoE) in its meeting held on September 10, 2020, considered the summary submitted by PDMoE and *inter alia*, decided to retain Units 5-9 of GTPS Faisalabad only till commissioning of Trimmu Plant, for dealing with system constraints. Reportedly, Trimmu Plant is under commissioning and the first GT (400 MW) of Trimmu Plant has been successfully tested/commissioned on July 06, 2022 and connected to the National Grid.

(xii). In this regard, the Authority has also observed that NTDC, while preparing the IGCEP-2021-30, *inter alia*, considered the: (a). decision of the CCoE regarding retirement of units/plants of GENCO; (b). availability of more efficient units in the area for system support; and (c). least cost generation criteria. In its least cost generation plan (IGCEP-2021-30), NTDC proposed to retire GTPS Faisalabad in the year 2022. The Authority considered the same and through its determination No. NEPRA/DG(Lic)/LAT-01/7702-29 dated September 24, 2022 approved the IGCEP-2021-30. Foregoing in view, the Authority considers that the request of NPGCL for further extension of useful life of GTPS Faisalabad cannot be considered.

(xiii). Regarding the impact of the communicated LPM on the tariff, the Authority hereby clarifies that under Section-7(3)(a) of the NEPRA Act, determining tariff, rate and charges, etc. is the sole prerogative of the Authority. In this regard, NPGCL has already submitted a petition for determination/revision of tariff



regarding CCPN Nandipur which the Authority has admitted for further processing and the same will be decided in due course of time.

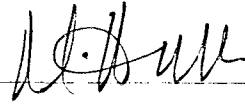
(F). Decision of the Authority

(i). In view of the above, the Authority in terms of Section-26 of the NEPRA Act, read with Regulation-10(11) of the Licensing Regulations, approves the communicated LPM in the Generation Licence (No. GL/03/2002) of NPGCL/GENCO-III, to the extent of exclusion of CCPN Nandipur only. Accordingly, the Generation Licence (No. GL/03/2002) of NPGCL/GENCO-III is hereby modified.

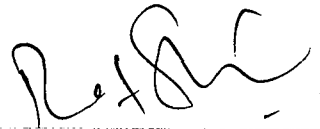
(ii). The modifications in the Generation Licence are attached as annexure to this determination. The modification in the Generation Licence is subject to the provisions contained in the NEPRA Act, relevant rules framed there under, terms & conditions of the Generation Licence and other applicable documents.

Authority

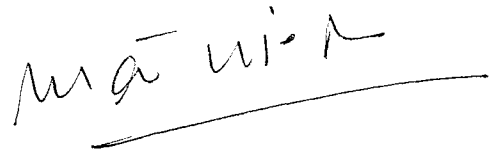
Engr. Maqsood Anwar Khan
(Member)



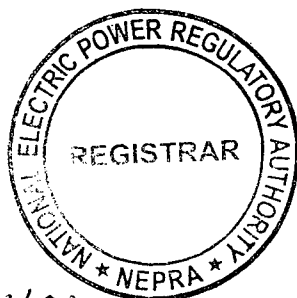
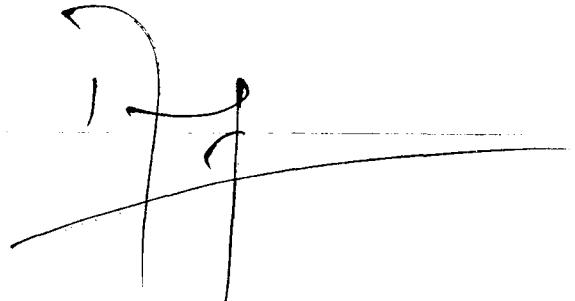
Rafique Ahmed Shaikh
(Member)



Mathar Niaz Rana (nsc)
(Member)



Tauseef H. Farooqi
(Chairman)



National Electric Power Regulatory Authority (NEPRA)

Islamabad – Pakistan

GENERATION LICENCE

GL/03/2002

In exercise of the Powers conferred upon the National Electric Power Regulatory Authority (NEPRA) under Section-26 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, the Authority hereby modifies the Generation Licence granted to Northern Power Generation Company/NPGCL/GENCO-III (issued on July 01, 2002 and modified from time to time), to the extent of changes mentioned as here under:-

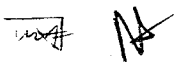
- (i). Changes in **Schedule-I** of the Generation Licence are attached as Revised/Modified Schedule-I; and
- (ii). Changes in **Schedule-II** of the Generation Licence are attached as Revised/Modified Schedule-II.

This **Modification-V** is given under my hand on this 25th of **January Two Thousand & Twenty Three.**



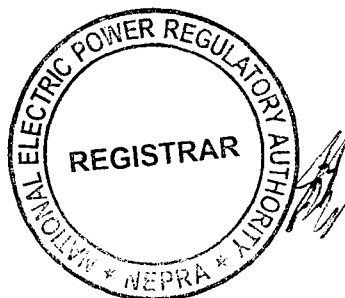
Registrar





SCHEDULE-I
(Revised/Modified)
Modification-V

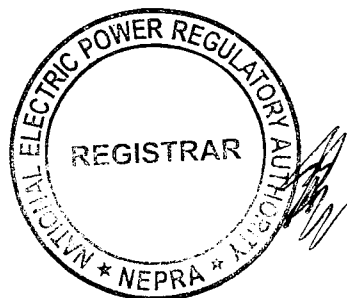
The Location, Size (i.e. Capacity in MW), Type of Technology, Interconnection Arrangements, Technical Limits, Technical/Functional Specifications and other details specific to the Generation Facilities of the Licensee are described in this Schedule.



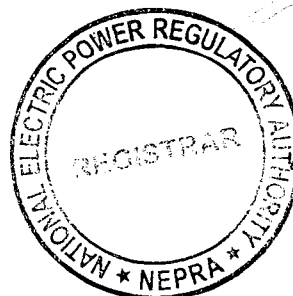
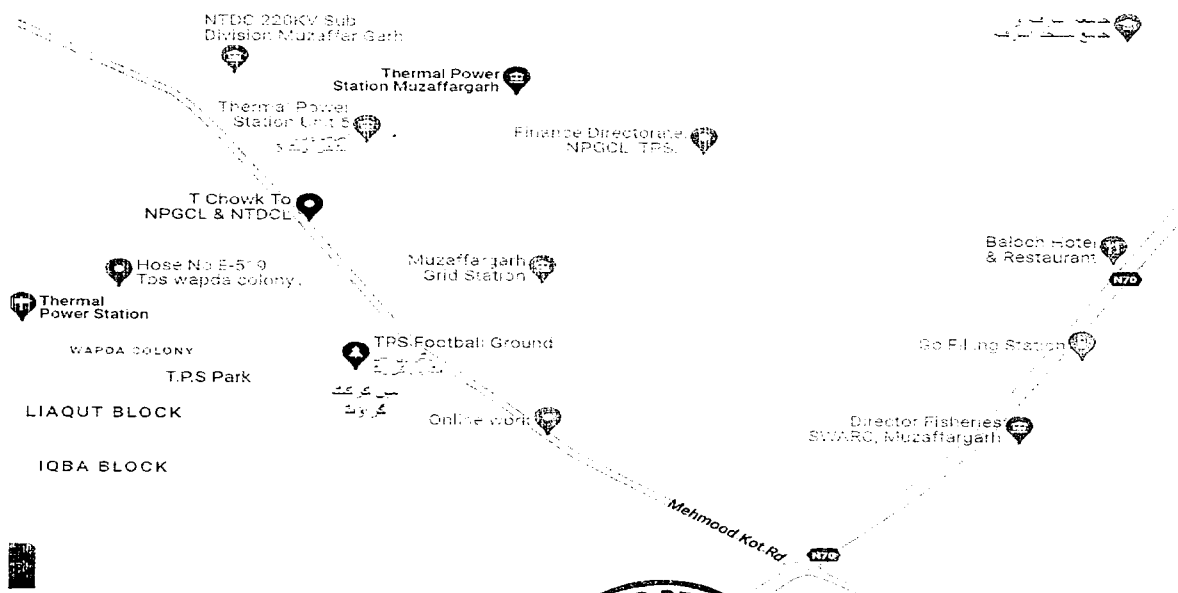
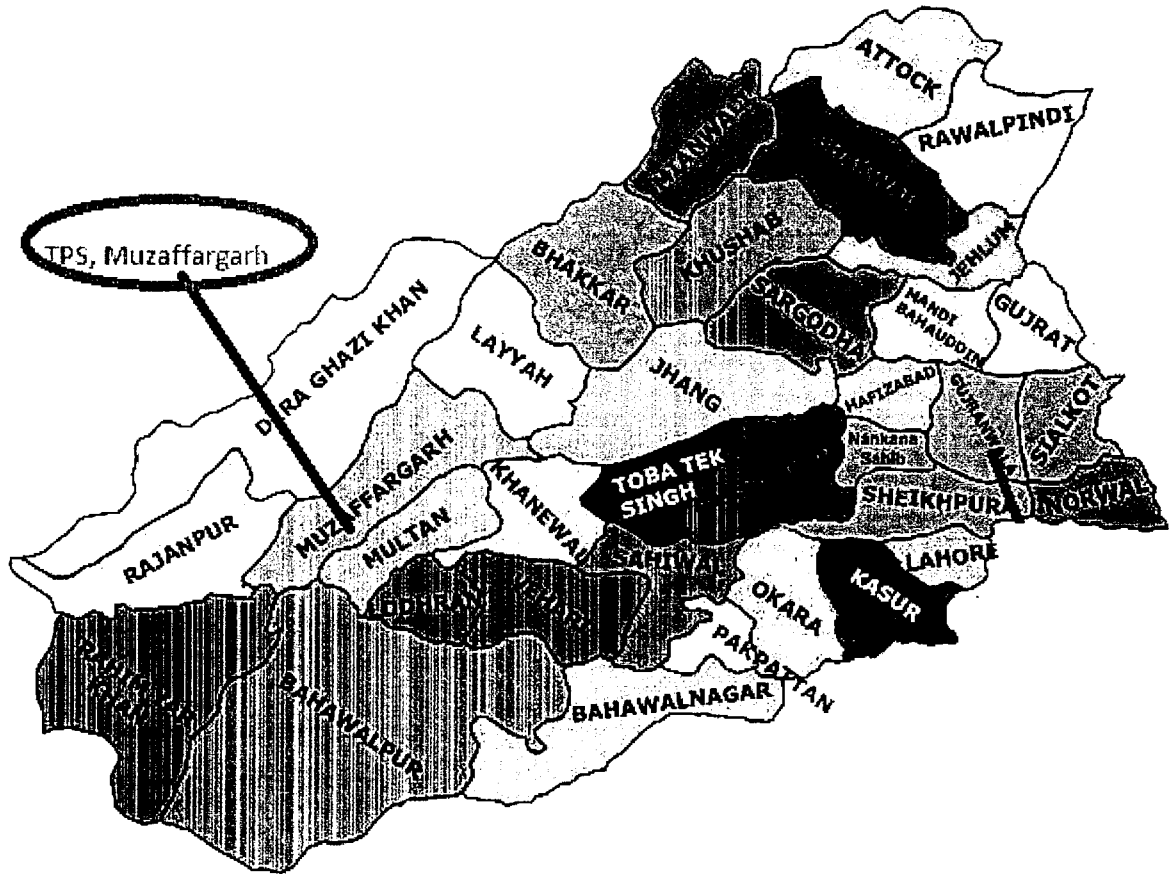
LOCATION
OF THE GENERATION FACILITY OF THE LICENCEE
ON THE MAP OF PAKISTAN



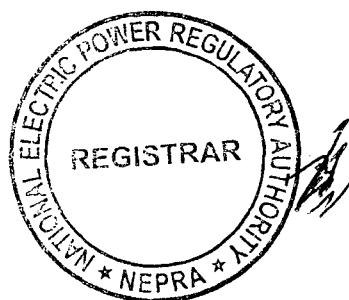
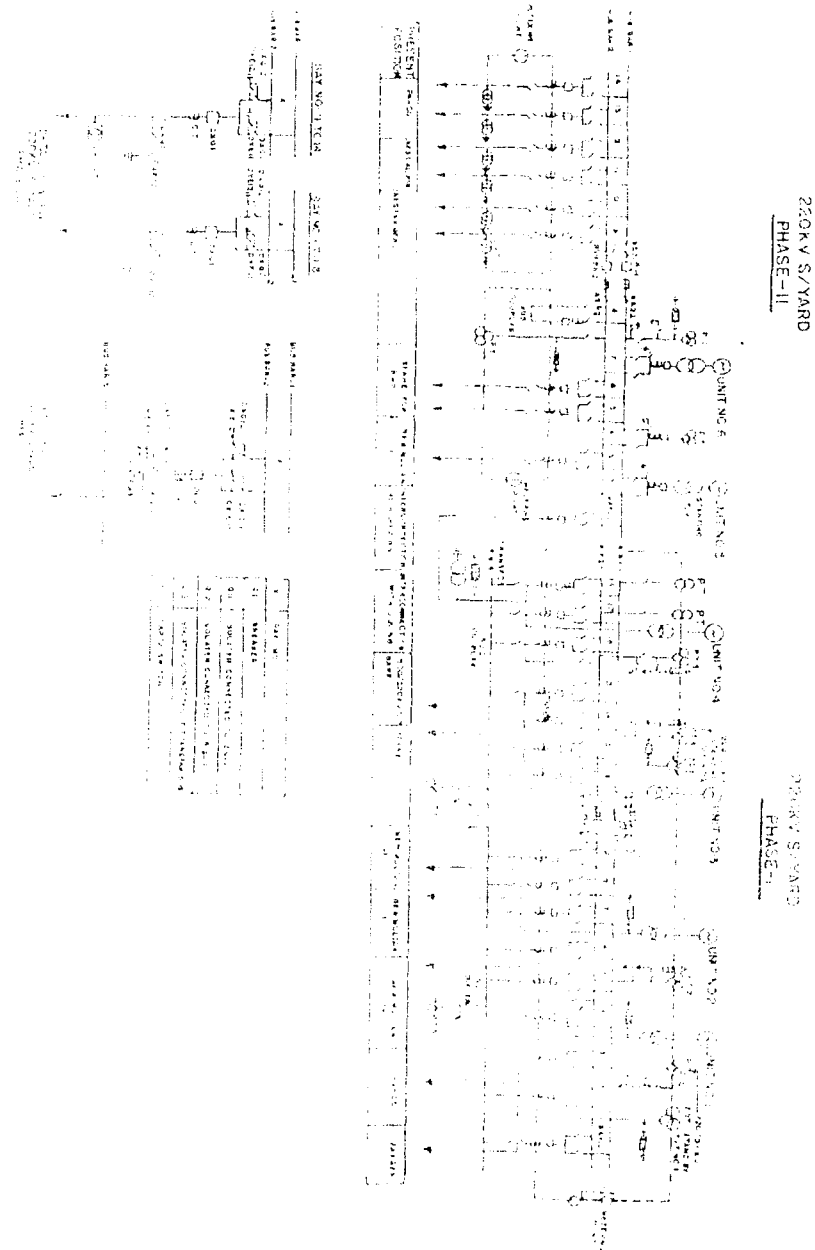
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LOCATION **OF THE GENERATION FACILITY/POWER PLANT OF THE LICENCEE** **ON THE MAP OF PUNJAB**



SINGLE LINE DIAGRAM **OF THE GENERATION FACILITY/POWER PLANT** **OF THE LICENCEE**



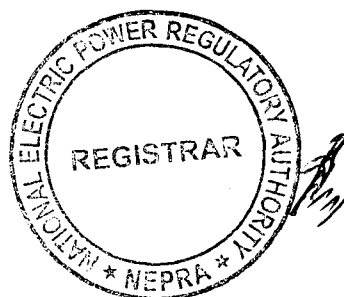
Details of Generation Facility/Power Plant of the Licensee

(A). General Information

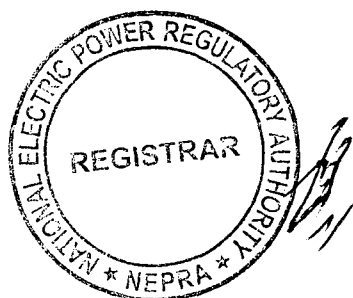
(i).	Name of the Company/ Licensee	Northern Power Generation Company Limited (NPGCL)/GENCO-III
(ii).	Registered /Business Office	Thermal Power Station Muzaffargarh (TPS Muzaffargarh), Punjab
(iii).	Location the of Plants	TPS Muzaffargarh, in the Province of Punjab
(iv).	Type of the Generation Facilities	Thermal Power Generation

(B). Plant Configuration

(i).	Plant Size/ Installed Capacity (Gross ISO)	1350 MW					
(ii).	Type of Technology	Conventional Steam Turbine Thermal Power Plant					
(iii).	Number of Units/Size (MW)	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		210 MW Steam Turbine	210 MW Steam Turbine	210 MW Steam Turbine	320 MW Steam Turbine	200 MW Steam Turbine	200 MW Steam Turbine
(iv).	Unit Make & Model	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		T.P.E USSR	T.P.E USSR	T.P.E USSR	CMEC China	CMEC China	CMEC China
(v).	Commercial Operation date (of each Unit)	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		Sep. 1993	Mar. 1994	Feb. 1995	Dec. 1997	Dec. 1995	Dec. 1995
(vi).	Expected Useful	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI



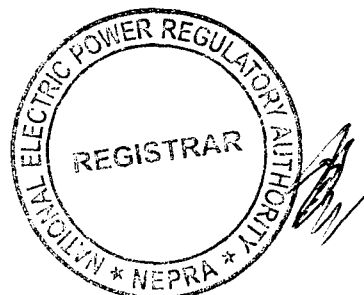
	Life of the Generation Facility/Plant-I from Commercial Operation Date (of each Unit)	39 Years	38 Years	37 Years	35 Years	37 Years	37 Years
(vii).	Expected Useful Life of the Generation Facility/Plant-I (Each Unit) at the time of Grant of Generation Licence dated July 01, 2002	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		30 Years	30 Years	30 Years	30 Years	30 Years	30 Years
(viii).	Expected Useful Life of the Generation Facility/Plant-I (Each Unit) at the time of Modification-I dated April 16, 2014	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		19 Years	19 Years	19 Years	19 Years	19 Years	19 Years
(ix).	Expected Useful Life of the Generation Facility/Plant-I (Each Unit) at the time of Modification-II in Generation Licence (dated October 31, 2014)	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		19 Years	19 Years	19 Years	19 Years	19 Years	19 Years
(x).	Expected Useful Life of the Generation Facility/Plant-I (Each Unit) at the time of Modification-III in Generation Licence (dated May 02, 2018)	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		15 Years	15 Years	15 Years	15 Years	15 Years	15 Years



(xi).	Expected Useful Life of the Generation Facility/Plant-I (Each Unit) at the time of Modification-IV in Generation Licence (dated April 13, 2020)	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		13 Years	13 Years	13 Years	13 Years	13 Years	13 Years
(xii).	Expected Useful Life of the Generation Facility/Plant-I (Each Unit) at the time of this Modification-V in Generation Licence (dated January , 2023)	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		10 Years	10 Years	10 Years	10 Years	10 Years	10 Years

(C). Fuel Details

(i).	Primary Fuel	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		Furnace Oil					
(ii).	Alternative Fuel	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		Natural Gas					
(iii).	Start-Up Fuel	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		Natural Gas / HSD					
(iv).	Fuel Source for each of the above (i.e. Imported/ Indigenous)	Imported/Indigenous					



(v).	Fuel Supplier for each of the above	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		PSO / Shell & SNGPL					
(vi).	Supply Arrangement for each of the above	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
		Railway Wagons / Tankers / Pipelines					
(vii).	No of Storage Tanks	Primary Fuel		Alternative Fuel		Start-Up Fuel	
		11		N/A		2	
(viii).	Storage Capacity of each Tank	Primary Fuel		Alternative Fuel		Start-Up Fuel	
		6*18500 MT 3*25000 MT 2*18500 MT		N/A		2*1000 MT	
(ix).	Gross Storage	Primary Fuel		Alternative Fuel		Start-Up Fuel	
		223000 M.Ton		N/A		2000 M.Ton	

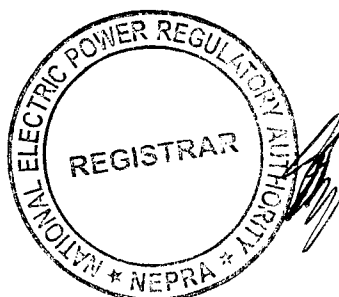
(D). Emission/Effluents Values

(i).	SO _x (mg/Nm ³)	164 M.Ton/Day
(ii).	NO _x (mg/Nm ³)	55 M.Ton/Day
(iii).	CO ₂	7988 M.Ton/Day
(iv).	Effluents	525 M.Ton/Day
(v).	CO (mg/Nm ³)	Negligible
(vi).	PM ₁₀	6.4 M.Ton/Day

(E). Cooling System

(i).	Cooling Water Source/Cycle	Tube Wells
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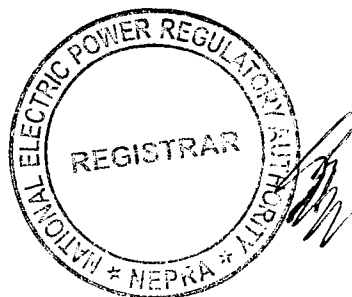
(F). Plant Characteristics

		Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Unit-VI
(i).	Generation Voltage (KV)	15.75	15.75	15.75	15.75	15.75	15.75
(ii).	Frequency (HZ)	50	50	50	50	50	50
(iii).	Power Factor	0.85	0.85	0.85	0.85	0.85	0.85
(iv).	Automatic Generation Control (AGC) (MW control is the general practice)	-	-	-	-	-	-
(vi).	Time required to Synchronize to Grid (Hrs.)	2-6	2-6	2-6	3-4	3-5	3-5

(G). Interconnection Arrangement

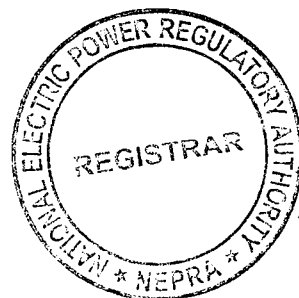
(i).	Interconnection & Transmission Arrangement	The Generation Facility/TPS Muzaffargarh has its own 220KV Grid Station in the premises of Power Plant.
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SCHEDULE-II
(Revised/Modified)
Modification-V

The Installed/ISO Capacity (MW), De-Rated Capacity at Mean Site Conditions (MW), Auxiliary Consumption (MW) and the Net Capacity (MW) of the Generation Facilities of Licensee is given in this Schedule



SCHEDULE-II

Power Station	Unit Detail	Installed Capacity (MW)	De-Rated Capacity (MW)		Net Capacity after Auxiliary Consumption (MW)	
Thermal Power Station Muzaffargarh	Unit-1	210	Unit-1	190	Unit-1	174.93
	Unit-2	210	Unit-2	182.50	Unit-2	168.27
	Unit-3	210	Unit-3	182.50	Unit-3	170.49
	Unit-4	320	Unit-4	272.20	Unit-4	245.96
	Unit-5	200	Unit-5	181.44	Unit-5	167.25
	Unit-6	200	Unit-6	173.88	Unit-6	158.09
	<u>Sub-Total-I</u>	<u>1350</u>	=	<u>1183.52</u>	=	<u>1085.05</u>

