Registrar,
NEPRA,
NEPRA Tower, Attaturk Avenue
Sector G-5/1, NEPRA
Islamabad

Ref # KE/BPR/NEPRA/2021/871
April 15, 2021

SUBJECT: MODIFICATION OF GENERATION LICENCE [GL/04/2002]

Dear Sir,

KE was issued Generation Licence No. GL/04/2002 on November 18, 2002 (**"Generation Licence"**) under Section 25 of the NEPRA Act, 1997. In the past, Generation Licence has been modified by NEPRA as per the requests of KE with the latest modification (**"Modification X"**) granted vide NEPRA letter # NEPRA letter # NEPRA/R/ LAG-05/8872-76 dated February 19, 2021.

Through the instant modification application, KE seeks the following, detailed explanation of which is mentioned in succeeding paras:

a. Approval of NEPRA allowing KE to utilize Unit 3 of BQPS I to generate power on an interim basis during summer of FY 2021 i.e. from May 2021 till July 2021 in order to bridge the demand supply gap during peak scenario.

b. Addition of PLL as an RLNG supplier in its generation license for its power plants located in Bin Qasim Power Complex in addition to SSGC;

In light of above, this application is being submitted under Sub Rule (2) of the Rule 10 of the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 (**'licensing regulations'**) for Modifications of the Generation License. In relation, hereto, this is to certify that the following documents in support enclosed with this modification application are prepared and submitted in conformity with the provisions of the Regulations, and that the Company undertakes to abide by the terms and provisions of the Regulations.

a) Text of Proposed Modifications (Annexure A)
b) Statement of Reasons and Specifications in support of Modifications (Annexure A)
c) Statement showing the impact of tariff, quality of service and the performances by KE of its obligations under the License (Annexure A)
d) Certified True Copy of Board Resolution (Annexure B)

e) Power of Attorney (Annexure C)
f) Affidavit (Annexure D)

Additionally, please find enclosed cross cheque of of Rs.458,635/- having # 00003665 dated 14.04.21 of Habib Bank Ltd. being the license modification fee calculated in accordance with Schedule II to the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999, is also attached herewith.

Further, considering the urgency of the matter and detailed process to be followed in compliance to the licensing regulations to finalize the LPM application, KE requests NEPRA to provisionally allow operation of Unit 3 of BQPS I for interim period only, subsequent to which Unit 3 will be decommissionined for completion of Unit 2 of BQPS-III, as well as allow usage of RLNG from PLL to ensure smooth operations and fulfillment of KE's obligations under its license.

We humbly request the Authority that modifications in the Generation License of KE be allowed and approved as per the Regulation 10(11) of the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999.

Sincerely,

Ayaz Jaffar Ahmed
Director – Finance and Regulations

Enclosure: Documents as mentioned at serial (a) to (f) above enclosed as Annexures A – D along with Cheque # 00003665 dated 14.04.21

Annex A.

- **INTERIM POWER GENERATION FROM UNIT 3 OF BIN QASIM POWER STATION I (BQPS-I)**

- **ADDITION OF PAKISTAN LNG LIMITED (PLL) AS A FUEL SUPPLIER FOR BIN QASIM POWER COMPLEX (BQPC) POWER PLANTS - BQPS I AND BQPS II**

A. Text of Proposed Modification

I. Interim Power Generation from Unit 3 of BQPS I During Peak Summer Period

To ensure maximum facilitation to the consumers and to bridge the demand/supply gap during peak summer period, KE after considering all available options emphasizing on least cost of generation and immediate availability of power has made Unit 3 of BQPS I available for power generation for a period of three (03) months i.e. from May 2021 till July 2021 to help bridge the peak demand / supply gap during summer of 2021 to cope with peak summer demand due to reasons mentioned in Part B of this document.

II. Addition of Pakistan LNG Limited (PLL) As an Alternate RLNG Fuel Supplier for KE's Bin Qasim Power Complex (BQPC)

KE has initiated a Gas Infrastructure Grid Project at its Bin Qasim Power Complex (BQPC) to ensure secure supply of RLNG at an adequate pressure at BQPC for swift operations of the plants located inside the complex. As PLL has already been added a primary fuel supplier for BQPS III, therefore, through this modification, KE seeks approval from NEPRA for addition of PLL as a backup RLNG fuel supplier in its generation license for following power plants:

- Bin Qasim Power Station I (BQPS I)
- Bin Qasim Power Station II (BQPS II)

Detailed reasons in support of addition of PLL as an alternate back up fuel supplier for BQPS I and BQPS II are mentioned in Part B of this document.

B. Statement of Reasons and Specification in Support of Modification

I. Interim Power Generation from Unit 3 of BQPS I During Peak Summer Period

To manage the demand supply situation and to provide reliable power supply to the consumers, KE undertook following initiatives for maximum facilitation of its consumers:

a. 450 MW Additional Power Supply from National Grid

KE in collaboration with NTDC has successfully implemented the cross-trip scheme, subsequent to Cabinet Committee on Energy's (CCoE) approval dated August 27, 2020 for import of additional power of 450 MW from existing interconnections, on interim basis. Further rehabilitation of KDA-Jamshoro lines has been completed by NTDC, owing to which the equipment capacity to withdraw power from national grid has been enhanced to 1,400 MW and will enable KE to draw up to 1,100 MMW from National Grid during the summer of FY 2021 as approved by CCoE.

b. 900 MW BQPS III

KE's BQPS III project is progressing on fast track and more than 56% of the project has been completed, with 69% completion of 1st unit (450 MW) of BQPS III as at March 31, 2021. While KE is deploying its best possible efforts to ensure timely availability of first unit of BQPS-III, however, for planning purposes, KE on realistic basis estimates start of commissioning of power from first unit of BQPS-III starting from second week of June 2021.

Based on above initiatives, following demand/supply position during peak summer season (June 2021) is projected:

PEAK DEMAND/SUPPLY SCENARIO

	June 2021
Supply (MW)	
BQPS I (Unit 1, 2, 5 & 6)	720
BQPS I -Total	**720**
BQPS II	500
BQPS III – Unit 1[1]	150
KCCPP	200
KGTPS & SGTPS [2]	100
KE – Total	**1,670**
NTDC	1,100
WPPs – NTDC [3]	50
Solar (Oursun & Gharo) [4]	60
KANUPP	50
Other IPPs	382
NTDC & IPPs	**1,642**
Total Maximum Supply	**3,312**
Projected Peak Demand (MW)	**4,024**
Shortfall against peak demand	**(712)**
Shortfall (Without Unit 3 of BQPS I) – ***after policy based load shed***	**(241)**
BQPS I (Unit 3)	**120**
Shortfall	**(121)**

As evident from above, availability of power from Unit 3 of BQPS I will significantly reduce the shortfall as well as enable KE to avoid utilization of High Speed Diesel (HSD) at KCCPP in case of gas supply shortfall. Further, KE will strive to bridge the remaining shortfall in supply through drawl of additional power from National Grid beyond 1,100 MW.

[1] Supply of 50 MW from 1st unit of BQPS-III from June - 2nd week and thereafter, gradual increase is estimated with full dispatch from July - 3rd week

[2] Supply from SGTPS & KGTPS may be impacted up to 100 MW due to gas pressure issues

[3] Supply from WPPS assumed at 50 MW due to intermittent nature.

[4] Supply from solar assumed at 60 MW due to intermittent nature.

II. Addition of Pakistan LNG Limited (PLL) As an Alternate RLNG Fuel Supplier for KE's Bin Qasim Power Complex (BQPC)

To ensure secure supply of RLNG at an adequate pressure, KE has entered in to Heads of Agreement (HoA) with PLL for a firm supply of 150 MMCFD RLNG as a primary fuel for BQPS III pursuant to decision of CCoE dated March 27, 2020 and is also in discussions with PLL for additional supply of 100 MMCFD RLNG for BQPS I and BQPS II as an alternate backup fuel supply. In respect of aforementioned, KE has initiated a Gas Infrastructure Grid Project at BQPC to ensure qualitative supply of RLNG at adequate pressure at the complex for swift operations of the plants. The construction of gas infrastructure is underway at KE's BQPC and with the grant of transmission pipeline license by OGRA in January, 2021 and the access of Custody Transfer Access (CTS) granted to KE by SSGC in February 2021 the construction of spur pipeline and measuring station has been pushed to advance stage, where 75% of the project has been completed with expected completion by April 2021.

The infrastructure under the project will incorporate all the requirements of pressure reduction to ensure uninterrupted and smooth operation of facilities at BQPC by supplying RLNG received at complex boundary, to the receiving equipment within their operational limits. The infrastructure shall remain connected to existing gas supply lines of equipment / facilities in a manner that operation of individual gas turbines / facility can be seamlessly switched from RLNG to currently operating fuel or vice versa.

Here it is pertinent to mention that the design of gas infrastructure allows receiving of RLNG not only for BQPS-III, but it also encompasses provision of receiving RLNG for BQPS-I (if required, in future) and BQPS-II via a common header. The integrated gas infrastructure grid is being designed in a fashion, which will allow diversion of BQPS III RLNG to BQPS-I and BQPS-II, in case of any outages at BQPS-III, in order to optimize fuel mix and to manage "Take or Pay" obligations along with following benefits.

Benefits:

The benefits associated are entailed below:

- Confirmed availability of RLNG of 150 MMCFD by PLL resulting in optimal utilization of KE's BQPC fleet due to removal of fuel supply constraints.
- Improvement in operational flexibility and availability of the BQPC generation fleet by having a dedicated supply of RLNG at cheaper rates and adequate pressure.
- Benefits for consumers due to potential reduction in usage of Furnace Oil at BQPS-I as well as a cheaper source of power as compared to other alternative fuel i.e. HSD.
- Benefits for consumers due to potential auxiliary savings, as the compressors at BQPS II could be by-passed for high pressure RLNG as compared to existing gas from SSGC at low pressure.

Accordingly, KE requests NEPRA to include PLL as an alternate RLNG fuel supplier in KE's generation license for its BQPS I and BQPS II power plants located at BQPC.

C. Impact on Tariff

I. Interim Power Generation from Unit 3 of BQPS I During Peak Summer Period

KE's existing fleet already operates on Furnace Oil (FO), which is costlier than gas, therefore, for protection of consumer interests, KE will ensure utilization of Unit 3 on the basis of Economic Merit Order (EMO) to manage the peak summer demand for smooth operations. Further, as the fuel cost of Unit 3 will be allowed as per NEPRA determined benchmarks, hence the incremental impact on fuel cost per unit based on projected utilization will be as follows:

FUEL COST COMPARISON – MAY & JUNE 2021

	Excluding Unit 3 - BQPS I		Including Unit 3 - BQPS I		Variance	
	May' 21	June'21	May'21	June'21	May'21	June'21
Fuel Cost Per Unit - PKR/Unit						
KE Own [5]	5.68	5.66	5.92	6.22	(0.23)	(0.56)
Power Purchases [6]	3.48	3.74	3.45	3.65	0.03	0.09
Total Fuel Cost Per Unit	**9.17**	**9.40**	**9.37**	**9.87**	**(0.2)**	**(0.5)**

Though operation of Unit 3 on FO will result in slight increase in tariff, however, it is in the best interests of the consumers that power generation from Unit 3 of BQPS I is permitted to avoid resultant load shed during the summers. Further, the power generation from Unit 3 of BQPS I will enable KE to avoid generation from HSD, which is costlier as evident from below:

	Unit 3 of BQPS I			KCCPP	Savings
Fuel Type	**FO**	**RLNG**	**NG**	**HSD**	**-**
Fuel Cost Per Unit (PKR/kWh)	**21.34[7]**	**15.94**	**9.42**	**22.23 [8]**	**(0.89) [9]/(6.29) [10]/ (12.81) [11]**

[5] Following forecasted prices excluding GST have been considered for May 21 & June 21 for KE's own generation
- Natural Gas – (PKR/mmbtu) @ 857 (May 2021 & June 2021)
- Furnace Oil – (PKR/M. Ton) @ 83,122 (May 2021) & @ 83,528 (June 2021)
- RLNG (distribution tariff) – (PKR/mmbtu) @ 1,764 (May 2021) & @ 1,823 (June 2021)
- RLNG (transmission tariff) – (PKR/mmbtu) @ 1,654 (May 2021) & @ 1,709 (June 2021)

[6] Following forecasted prices excluding GST have been considered for May 21 & June 21 for power purchases
- Furnace Oil – (PKR/M. Ton) @ 83,122 (May 2021) & @ 83,528 (June 2021)
- Industrial/Captive – Natural Gas (PKR/mmbtu) - @ 1,022 (May 2021 & June 2021)
- Coal (PKR/Ton) – @ 15,426 (May 2021) and @ 15,293 (June 2021)
- NTDC – (PKR/kWh) - @ 4.17 (May 2021) and @ 4.46 (June 2021)
- KANUPP – (PKR/kWh) - @ 13.25 (May 2021) and @ 13.10 (June 2021)

[7] Based on NEPRA provided provisional heat rates for BQPS I
[8] Based on the heat rate allowed by NEPRA for Natural Gas vide its decision dated September 02, 2020. Heat rate for HSD will be determined post commissioning.
[9] Savings on Furnace Oil
[10] Savings on RLNG
[11] Savings on Natural Gas

II. Addition of Pakistan LNG Limited (PLL) As an Alternate RLNG Fuel Supplier for KE's Bin Qasim Power Complex (BQPC)

Under KE's Multi Year Tariff (MYT) fuel and power purchase cost are passed through to the consumers as per NEPRA determined benchmarks to ensure consumer interest are protected. Considering aforementioned, addition of PLL as an alternate RLNG supplier for BQPC plant will ensure protection of consumer interests, as under the HoA, RLNG will be procured from PLL at transmission tariff rates of PLL notified by OGRA, which are lower as compared to the RLNG being purchased at a distribution tariff from SSGC. Further, as RLNG from PLL will be received at high pressure, therefore the compressors at BQPS II for correcting pressure could be by-passed resulting in potential auxiliary savings, benefit of which shall be passed on to the consumers. Difference in rates are tabulated below for ease of reference:

Power Plant	Cost per unit sent out - PKR / kWh			Savings
	RLNG (PLL) NOTES 12 & 14	RLNG (Distribution) NOTES 13 & 14	Furnace Oil NOTE 15	
BQPS II	**10.20** NOTE 16	**12.15**	**-**	**(1.95)**
BQPS I				
Unit 1	13.37	15.66	20.97	(7.59) / (5.31)
Unit 2	13.19	15.44	20.67	(7.49) / (5.23)
Unit 3	13.61	15.94	21.34	(7.73) / (5.40)
Unit 5	12.76	14.94	20.00	(7.24) / (5.06)
Unit 6	12.69	14.86	19.89	(7.20) / (5.04)
Average Cost of Generation [17]	**13.12**	**15.37**	**20.57**	**(7.45) / (5.21)**

Accordingly, as demonstrated above, the procurement of RLNG from PLL will result in lower cost per unit at BQPS I and BQPS II, impact of which will be passed to the consumers in the form of

[12] Transmission tariff of PLL without GST based on OGRA determination of RLNG prices for the month of April vide its notification dated April 07, 2021

[13] Weighted average sale price without GST based on OGRA determination of RLNG prices for the month of April vide its notification dated April 07, 2021

[14] Exchange rate as per Business Recorder as at April 14, 2021

[15] Weighted average cost without GST based on first fortnightly price of April 2021

[16] Calculated on the basis of net heat rates determined by NEPRA which have been adjusted for potential auxiliary savings of one gas compressor at BQPS II owing to receipt of RLNG at an adequate pressure of minimum 45~50 MMCFD from PLL.

[17] Based on simple averages

lower tariff. Further, moving forward, KE plans to engage other private fuel suppliers, which will promote competition amongst the fuel suppliers resulting in reduced fuel rates, benefit of which will also be passed on to the consumers.

D. Impact on Quality of Service and the Performances by KE of its Obligations Under the License

I. Interim Power Generation from Unit 3 of BQPS I During Peak Summer Period

Utilization of Unit 3 of BQPS I is necessary for providing continuous power supply and maintain the demand supply gap until full dispatch from 1st unit of BQPS III is added into the system subsequent to its commissioning. Utilization of Unit 3 during peak summer will protect consumer interest as well as enable KE to fulfill its license obligations for ensuring reliable and smooth power supply to its consumers.

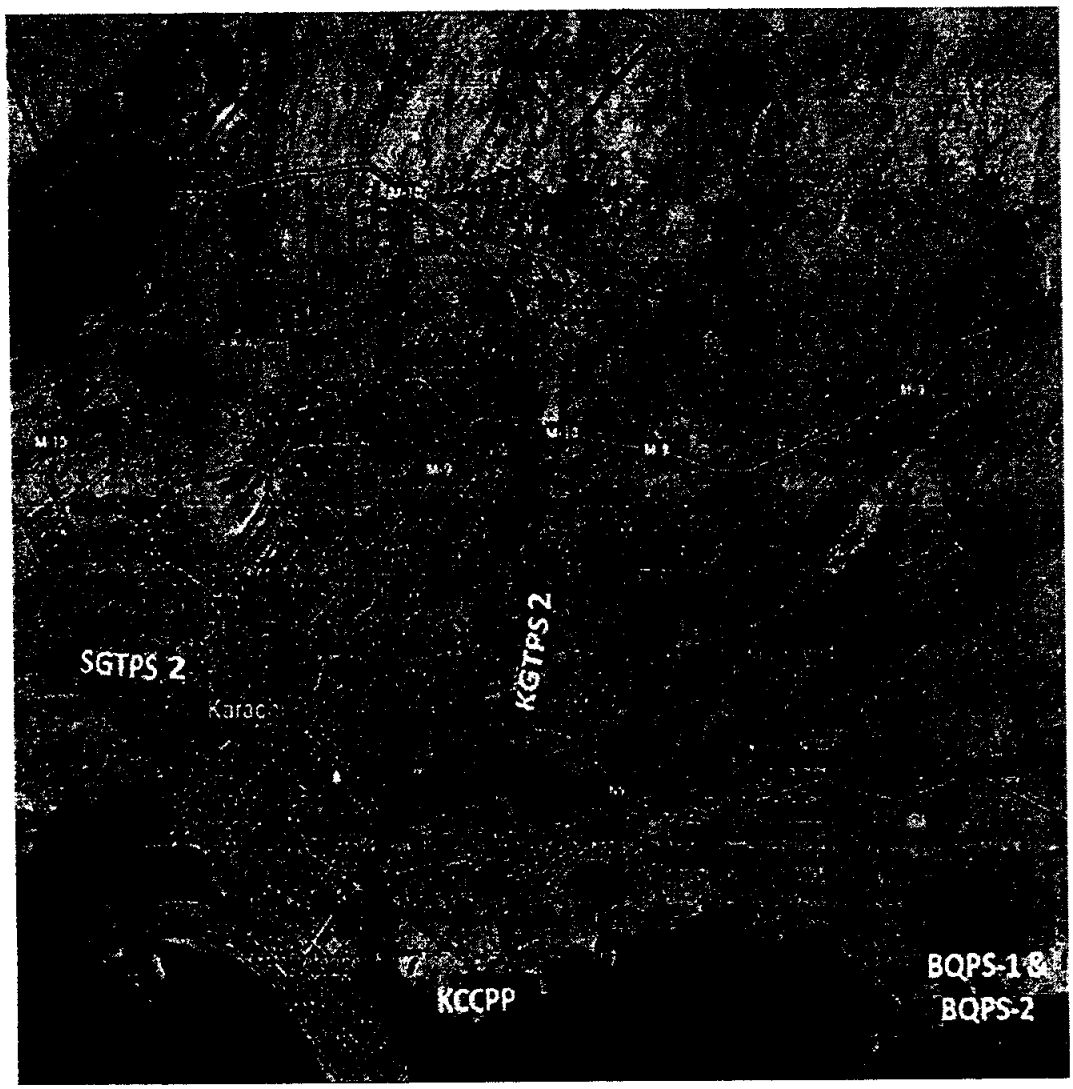
II. Addition of Pakistan LNG Limited (PLL) As an Alternate RLNG Fuel Supplier for KE's Bin Qasim Power Complex (BQPC)

Addition of PLL will ensure flexibility of operations and resultantly improve the availability of supply through the addition of an alternate fuel supplier, subsequently improving the performance of KE as per its obligations under its license. Further as supply from PLL will be received at adequate pressure, therefore the same will result in improvement of service quality as well as enable KE to fulfill its obligations under its license.

The requested modification would benefit consumers as it would ensure that the generation capacity continues to be available and maintained. Moreover, there will be no adverse impact on the quality of service provided by KE if this Licensee Proposed Modification (LPM) Application is accepted. The Company certifies that it has been fully diligent and dedicated in the performance of its services and aspires to ensure uninterrupted and reliable supply of power to its consumers.

ANNEXURE A1

Location of Bin Qasim Power Station - I



Details of Unit 3 of Bin Qasim Power Station – I

(A). Plant Configuration

		Unit No. - 3
(i).	Plant Size Installed Capacity (Gross ISO)	210 MW
(ii)	De-rated Capacity (Gross RSC)	129.16 MW [1]
(iii)	Expected Remaining Life	3 years & 5 months
(ii).	Type of Technology	Conventional Thermal Power Generation Plant with Sub-Critical Boilers and Steam Turbines
(iv).	Unit Make & Model	Ercole
(v).	Commissioning / Commercial Operation date (of each Unit)	1989

(B). Fuel Details

			Unit No. - 3
(i).	Primary Fuel		Natural Gas
(ii).	Alternative Fuel		Residual Furnace Oil (RFO)
			Re-Gasified Liquefied Natural Gas (RLNG)
(iii).	Start-Up Fuel		Light Diesel Oil (LDO) / Natural Gas/RLNG
(iv).	Fuel Source for each of the above (i.e. Imported/ Indigenous)		Imported / Indigenous
(v).	Fuel Supplier for each of the above	Natural Gas	SSGC
		RFO	PSO / BYCO
		RLNG	SSGC / PLL
		LDO	PSO / BYCO
(vi).	Supply Arrangement for each of the above	Natural Gas	Through Pipeline
		RFO	PSO – through pipeline
			BYCO – through tankers
		RLNG	Through Pipeline
		LDO	Tankers
(vii).	No of Storage Tanks		• Six tanks for RFO. Tank 1,2: Under BYCO custody for Storage and transfer to KE. Tank 6: Under PSO custody for storage and transfer to KE.) • Two tanks for LDO
(viii).	Storage Capacity of each Tank		LDO : Two tanks of 500 m^3 each

[1] Based on 3rd party heat rate tests corrected results at maximum load

		RFO: Tank # 1 & 2: 10000 m^3 each. Tank # 3, 4,5, 6: 25000 m^3 each [2]
(ix).	Gross Storage	RFO / LDO: 1,20,000 / 1000 m^3

(C). Emission/Effluents Values

(i).	SO_x (mg/Nm^3)	The Plant is old and Emission Equipment not Installed.
(ii).	NO_x(mg/Nm^3)	
(iii).	CO_2 (%)	
(iv).	Effluents	
(v).	CO (mg/Nm^3)	
(vi).	PM_{10}	

(D). Cooling System

		Unit No. - 3
(i).	Cooling Water Source/Cycle	Sea Water / open and once through

(E). Plant Characteristics

		Unit No. - 3
(i).	Generation Voltage	18 KV
(ii).	Frequency	50 Hz
(iii).	Power Factor	0.85
(iv).	Automatic Generation Control (AGC) (MW control is the general practice)	MW / Hz
(v)	Auxiliary Consumption[3]	8.5%
(vi).	**Ramping Rate**	
	(a). Light mode	1 %
	(b). Medium mode	3 %
	(c). Heavy mode	5 %
(vii).	**Time required to Synchronize to Grid and loading the complex to full load.**	
	Ambient cold start(hours)	09 + 3.5
	Cold start mode	09 + 3.5
	Warm start mode	3.5 + 3.5
	Hot start mode	1.3 + 2.3
	Very hot mode	1.3 + 2.3

(F). Efficiency Parameters

		Unit No. - 3
(i).	Designed Efficiency of power plant (%)	**37.5** (On HFO, HHV basis)

[2] This includes unpumpable stock of approximately 2,772 m^3/tank for tanks 3, 4 and 5

[3] Based on 3rd party heat rate test at maximum load.

(ii).	Gross Efficiency of power plant at Mean Site Conditions (%)[4]	**30.65** (HHV Basis)
(iii).	Net Efficiency of power plant at Mean Site Conditions (%) [4]	**28.00** (HHV Basis)

(G). Interconnection Arrangement

(i).	Interconnection &Transmission Arrangement for Power Plant-I	(a). 220KV D/C to Pipri West Circuit No. 1 (b). 220KV D/C to Pipri West Circuit No. 2 (c). 220KV D/C to Pipri West Circuit No. 3 (d). 220KV D/C Circuit No.4 to Pipri West Grid with loop in/loop out to ICI grid. (e). 220KV D/C Short Line/SL-1(interconnection with BQPS-II/Plant-V) [5] (f). 220KV Short Line/SL-2(interconnection with BQPS-II/Plant-V) [5]

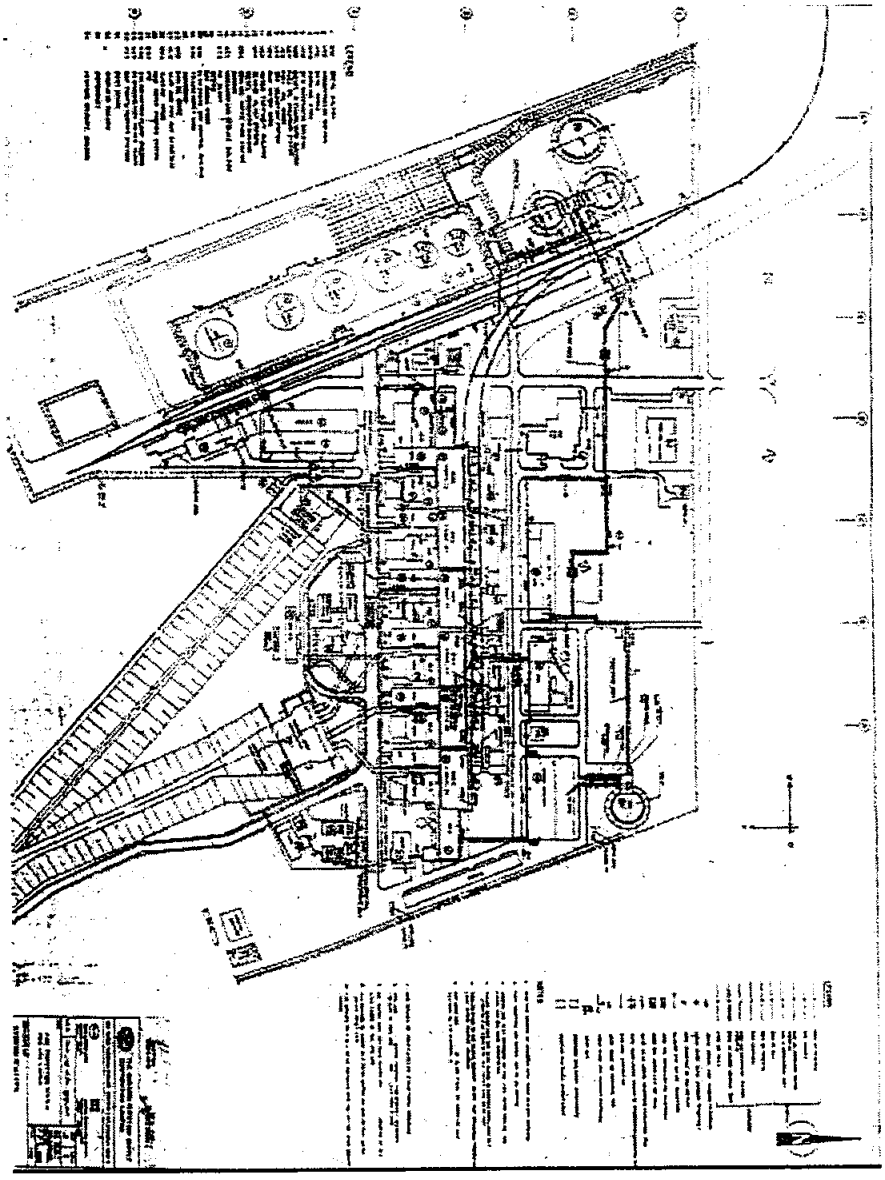
(H). Other Details

		Unit No. - 3
(i).	Training and Development	These units are part of existing plant and are sufficiently manned and the staff is equipped with adequate training skills, which are regularly updated through our training and development programs.
(ii).	Environmental Data	KE regularly submits its environmental compliance reports to relevant authorities. Copy of reports sent are **enclosed in CD labelled as Annexure A2**
(iii).	Rehabilitation Plans	Details of major activities carried out enclosed as **Annexure A3**
(iv).	Operational Record for last five years and constraints in dispatching	Operational record enclosed as **Annexure A4**

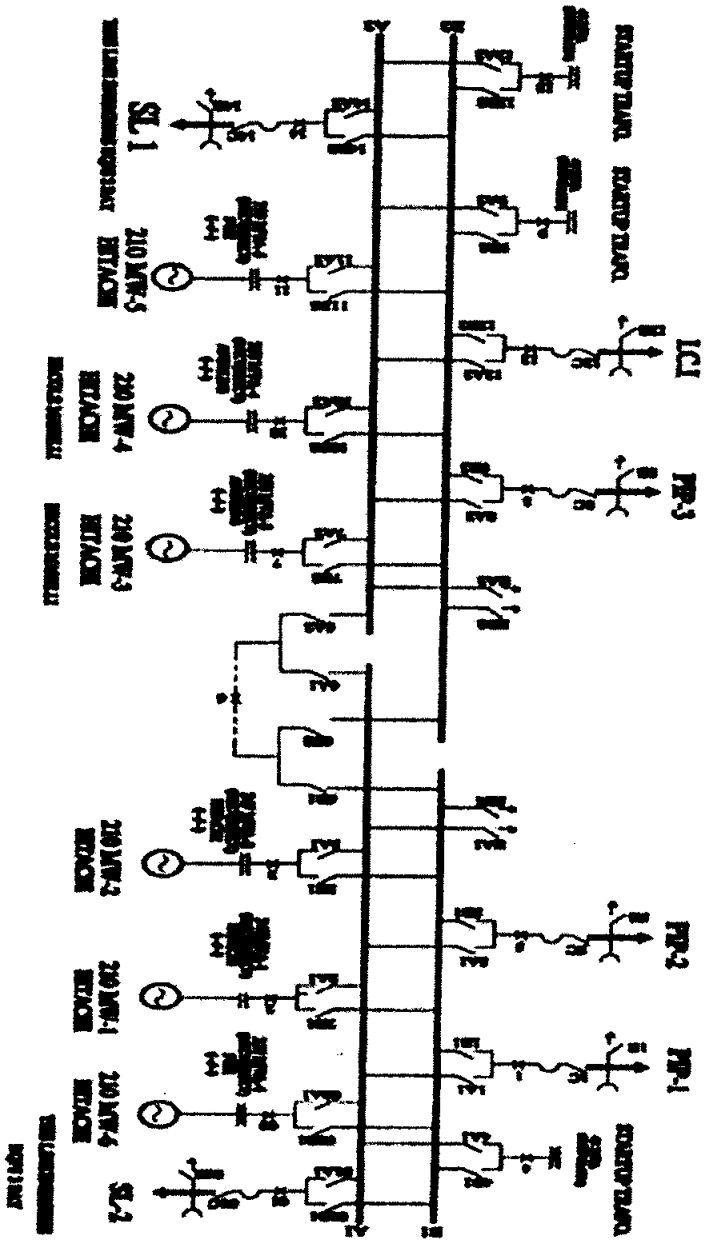
[4] Based on 3rd party heat rate tests at maximum load.

[5] Subsequent to addition of BQPS III/Plant VI, it will be interconnected with BQPS III/Plant VI

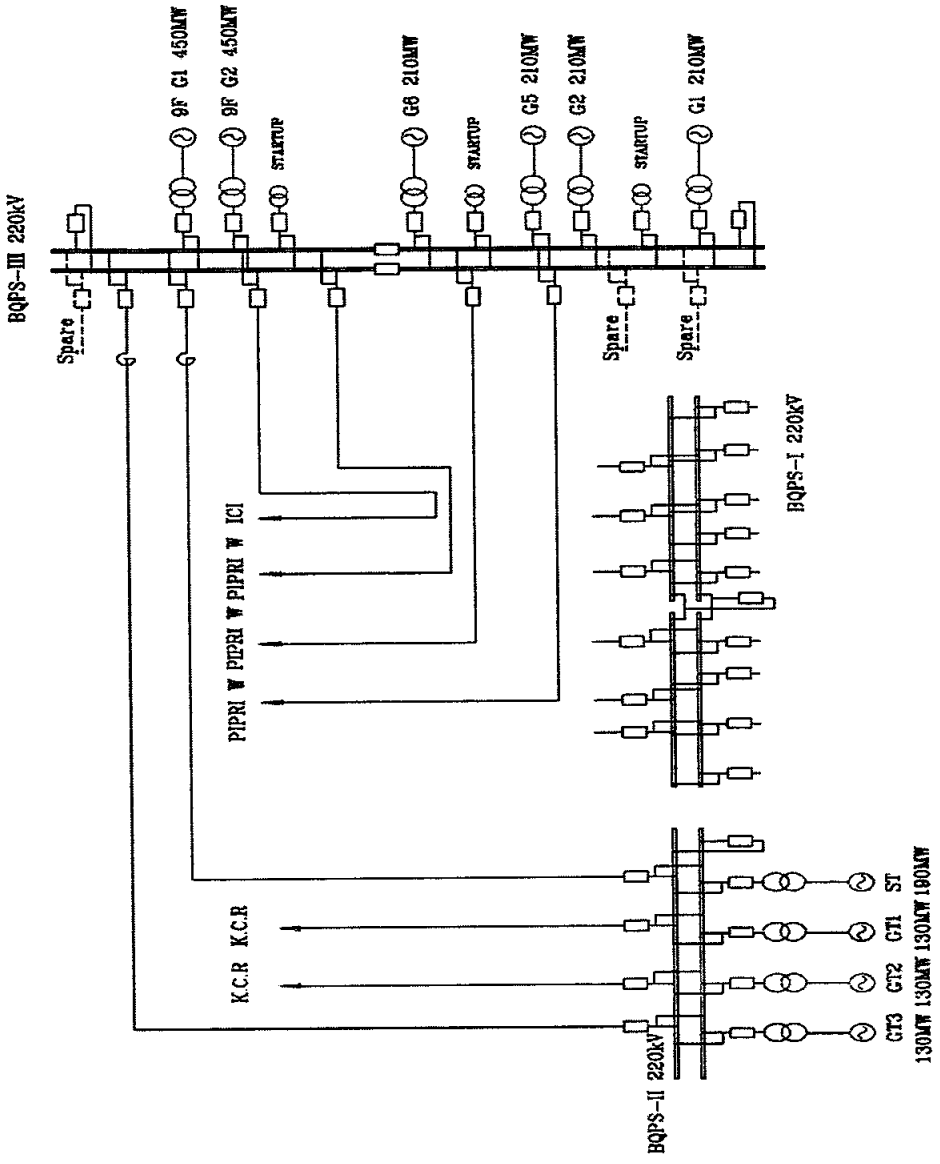
Layout of Bin Qasim Power Station - I



Single Line Electrical Diagram of Bin Qasim Power Plant-I



Proposed Single Line Electrical Diagram of Bin Qasim Power Plant-I [6]



[6] Single Line Diagram subsequent to commissioning of BQPS III (Plant VI)

ANNEXURE A3

EQUIPMENT	ACTIVITIES	YEAR
Boiler	• INSTALLATION & COMMISSIONING OF BOILER REGENERATIVE AIR HEATER (RAH)-B ROTOR • REPLACEMENT OF FIN TUBES OF STEAM COILER AIR HEATER (A&B) • COMPLETE INSPECTION, DIAGNOSIS, CONDITION ASSESSMENT AND REMAINING LIFE ASSESSMENT OF MAIN PRESSURE PARTS OF BOILER	FY 2016-2017
	• INSTALLATION & COMMISSIONING OF COMPLETE LOWER PORTION OF BOILER FURNACE HOPPER UP TO 7.5 METER • BOILER ECONOMIZER TUBE REPLACEMENT LOWER BANK TUBES • BOILER DUCTS AND BELLOWS REHABILITATION • INTERCONNECTION OF CONDENSATE POLISHING SYSTEM	FY 2017-2018
	• REPLACEMENT OF RAH BASKETS / ELEMENTS • REHABILITATION OF BOILER AIR HEATER SEALING SYSTEM	FY 2019-2020
	• REHABILITATION OF DOSING SYSTEM FOR NEUTRALIZATION BASINS	FY 2020-2021
Turbine	• BOILER FEED PUMP # 03 BOOSTER PUMP OVERHAULING WORK	FY 2018-2019
	• STEAM TURBINE BALANCING WORK • LOW PRESSURE TURBINE LAST STAGE BLADE INSPECTION • HIGH PRESSURE (HP) /LOW PRESSURE BYPASS SKID ACCUMULATOR REPLACMENT • HP HEATER 5 AND 6 EDDY CURRENT TESTING	FY 2019-2020
Generator	• REPLACEMENT OF 6.6KV 4080KW THREE PHASE AC INDUCTION MOTOR FOR BOILER FEED PUMP #1 • BATTERY BANK REPLACEMENT WORK	FY 2016-2017
	• COMPLETE REWINDING OF STATOR CORE FOR 6.6 KV Condensate Pump MOTOR-3	FY 2017-2018
	• SUPPLY, TESTING, TRAINING, INSTALLATION AND COMMISSIONING INCLUDING DESIGN OF GENERATOR STATIC EXCITATION SYSTEM • REPLACEMENT OF 12 NO THYRISTOR STACKS ACCESSORIES FOR GENERATOR STATIC EXCITATION SYSTEM • OVERHAULING OF 220KV BAY ADA07	FY 2018-2019
	• REPAIR/REPLACEMENT OF GENERATOR HYDROGEN SEAL RINGS	FY 2019-2020
Control System	• REHABILITATION OF HFO AND GAS BURNERS' ACTUATORS SOLENOIDS AND LIMIT SWITCHES	FY 2017-2018
	• WATER TREATMENT PLANT-2 INSTALLATION AND COMMISSIONING OF SILICA ANALYSERS	FY 2019-2020
Balance of Plant	• INSTALLATON OF RAW WATER BASIN PUMP	FY 2016 -2017
	• INTERNAL REPAIRING AND PROTECTIVE COATING OF CICULATING WATER LINES AND DISCHARGE VALVES	FY 2018-2019
	• INSTRUMENT AIR COMPRESSOR#2 MAJOR OVERHAULING	FY 2019-2020
	• DIESEL ENGINE GENERATOR-3 OVERHAUING	FY 2020-2021

Bin Qasim Thermal Power Station

Combined Generation Report

Gas GCV Av Btu/CFt: 1046.52

01/07/2015 To 30/06/2016

Factors*
- LF: Load Factor
- FOF: Forced Outage Factor
- PF: Plant Factor
- AF: Availability Factor

Unit No.	Capacity MW Installd / Actual	Generation (Kwh): Total U.Gen / Aux Consp.	Total USO / Total Reactive	% Aux: Gen Loss %	Load: Max/Min Opr hrs	Outages: Total No Hrs	Planned No Hrs	Forced No Hrs	StBy No Hrs	Factors %: LF / FOF	PF / AF	Fuel Consumption: HFO MTons	LDO KL / Gas mmcf	Fuel /kwh: HFO Kg / LDO Lit	Gas (Cft)	Heat Rate Btu/Kwh: Gross / Net	Over all Efficiency
Unit # 1	210 / 185	769,302,000 72,016,020	697,285,980 358,167,000	9.36%	185 / 0 6,936.40	35 1,847.60 183.03	2 945.28 719.28	26	7	60.0% 41.7% 12.0% 87.2%		159,591.01 SCM 53363065	0.00 1,894.063	0.27 #Error	10.46	10,947 12,078	31.17%
Unit # 2	210 / 195	795,699,000 64,699,430	730,999,570 279,033,000	8.13%	195 / 20 6,382.71	28 2,401.29 2,277.32	2 121.75 2.22	25	1	63.9% 43.1% 1.9% 72.7%		139,392.49 SCM 74291856	0.00 2,636.908	0.26 #Error	10.07	10,537 11,470	32.38%
Unit # 3	210 / 170	353,572,000 42,563,720	311,008,280 159,288,300	12.04%	170 / 0 4,376.70	47 4,407.30 1,694.10	3 1,011.27 1,701.93	28	16	47.5% 19.2% 18.8% 69.2%		100,145.55 SCM 5337529	0.00 189.450	0.30 #Error	11.46	11,990 13,631	28.46%
Unit # 4	210 / 150	158,307,000 21,514,470	136,792,530 49,770,900	13.59%	150 / 5 1,472.90	44 7,311.10 4,821.51	3 1,683.95 805.63	33	8	71.7% 8.6% 53.3% 25.9%		34,636.10 SCM 11376636	0.00 403.801	0.28 #Error	10.99	11,498 13,306	29.67%
Unit # 5	210 / 185	804,410,000 55,854,470	748,555,530 153,012,000	6.94%	185 / 5 5,978.35	27 2,805.65 2,349.98	2 395.25 60.42	24	1	72.7% 43.6% 6.2% 68.7%		47,128.27 SCM 175689492	0.00 6,235.905	0.26 #Error	10.01	10,477 11,259	32.57%
Unit # 6	210 / 195	1,076,942,000 79,266,500	997,675,500 437,892,000	7.36%	195 / 6 8,115.65	17 668.35 288.47	1 49.84 330.05	13	3	68.1% 58.4% 0.6% 96.1%		141,864.22 SCM 140656426	0.00 4,992.445	0.25 #Error	9.71	10,167 10,975	33.56%
DEGit 1	1.7 /	25,610 0	25,610	0.00%	/	0.00				0.0% 0.0%		0.00 SCM 0	12.80 0.000	#Error 0.43	#Error	17,861 17,861	19.10%
PLANT	1260 1080	3,958,257,610 335,914,610	3,622,343,000 1,437,163,200	8.49%	985 / 50 8,757.07		8 26.93			45.9% 35.8% 99.7%		622,757.64 SCM 460715004	12.80 16,352.572			10,672 11,662	31.97%

22 October 2020 13:51:15

•Unit sent out and net heat rate do not include bus bar losses.

•Overall efficiency is gross HHV.

Annex-A4

Bin Qasim Thermal Power Station

Combined Generation Report

Gas GCV Av Btu/CFt: 1057.80

01/07/2016 To 30/06/2017

Factors*
- LF: Load Factor
- FOF: Forced Outage Factor
- PF: Plant Factor
- AF: Availability Factor

Unit No.	Capacity MW Installd / Actual	Generation (Kwh): Total U.Gen / Aux Consp.	Total USO / Total Reactive	% Aux: Gen Loss %	Load: Max/Min Opr hrs	Outages: Total No Hrs	Planned No Hrs	Forced No Hrs	StBy No Hrs	Factors % LF / FOF	PF / AF	Fuel Consumption: HFO MTons	LDO KL / Gas mmcf	Fuel /kwh: HFO Kg / LDO Lit	Gas (Cft)	Heat Rate Btu/Kwh: Gross / Net	Over all Efficiency
Unit # 1	210 / 181	608,992,000 56,540,310	552,451,690 258,869,000	9.28%	181 / 10 5,073.17	35 3,686.83 2,988.13	2 634.75 63.95	32 1		66.3% 11.1%	33.1% 58.6%	143,957.96 SCM 18050736	0.00 640.691	0.26 #Error	10.07	10,651 11,742	32.03%
Unit # 2	210 / 190	851,814,000 72,330,590	779,483,410 302,485,000	8.49%	190 / 10 7,780.25	27 979.75 708.47	1 159.10 112.18	24 2		57.6% 2.0%	46.3% 90.1%	197,200.88 SCM 25960750	0.00 921.448	0.26 #Error	9.91	10,486 11,459	32.54%
Unit # 3	210 / 130	379,143,000 43,435,060	335,707,940 149,159,700	11.46%	130 / 10 4,749.45	40 4,010.55 1,724.62	3 1,067.08 1,218.85	30 7		61.4% 18.3%	20.6% 68.1%	111,379.06 SCM 4647779	0.00 164.968	0.31 #Error	11.64	12,314 13,907	27.71%
Unit # 4	210 / 130	449,415,000 51,392,380	398,022,620 194,723,100	11.44%	130 / 6 5,187.15	61 3,572.85 1,243.32	3 2,034.30 295.23	54 4		66.6% 28.2%	24.4% 62.6%	93,675.96 SCM 39365841	0.00 1,397.247	0.29 #Error	11.06	11,700 13,210	29.16%
Unit # 5	210 / 190	1,009,441,000 71,281,750	938,159,250 236,434,000	7.06%	190 / 10 7,791.43	30 968.57 824.92	3 133.62 10.03	26 1		68.2% 1.7%	54.9% 89.1%	157,059.34 SCM 112252421	0.00 3,984.276	0.26 #Error	9.88	10,453 11,248	32.64%
Unit # 6	210 / 205	1,030,441,000 77,921,600	952,519,400 313,800,000	7.56%	205 / 50 7,757.46	18 1,002.54 742.93	1 259.60	17		64.8% 3.2%	56.0% 88.6%	209,663.85 SCM 49548821	0.00 1,758.681	0.25 #Error	9.47	10,016 10,835	34.07%
DEG# 1	1.7 /	12,690 0	12,690	0.00%	/	0.00				0.0% 0.0%		0.00 SCM 0	6.32 0.000	#Error 0.42	#Error	17,784 17,784	19.19%
PLANT	1260 / 1026	4,329,258,690 372,901,690	3,956,357,000 1,455,470,800	8.61%	960 / 80 8,757.98		1 2.02			51.5% 100.0%	39.2%	912,937.05 SCM 249826348	6.32 8,867.311			10,676 11,682	31.96%

22 October 2020 13:50:27

•Unit sent out and net heat rate do not include bus bar losses.

•Overall efficiency is gross HHV.

Bin Qasim Thermal Power Station

Combined Generation Report

Gas GCV Av Btu/CFt: 1058.98

01/07/2017 To 30/06/2018

Factors*
LF: Load Factor
FOF: Forced Outage Factor
PF: Plant Factor
AF: Availability Factor

Unit No.	Capacity MW	Generation (Kwh)		% Aux	Load	Outages				Factors %		Fuel Consumption		Fuel /kwh		Heat Rate Btu/Kwh	Over all Efficiency
	Installd / Actual	Total U.Gen / Aux Consp.	Total USO / Total Reactive	Gen Loss %	Max/Min Opr hrs	Total No Hrs	Planned No Hrs	Forced No Hrs	StBy No Hrs	LF / FOF	PF / AF	HFO MTons	LDO Kl. Gas mmcf	HFO Kg / LDO Lit	Gas (Cft)	Gross / Net	
Unit # 1	210 / 195	1,016,198,000 82,107,365	934,090,635 316,231,000	8.08%	195 / 15 7,216.32	36 1,543.68 328.30	7 971.92 243.47	26	3	72.2% 55.2% 11.9% 85.2%		208,478.89 0.00 1,853.525 SCM 52220955		0.25 #Error	9.64	10,210 11,107	33.42%
Unit # 2	210 / 185	349,695,000 31,532,375	318,162,625 123,481,000	9.02%	185 / 50 2,610.05	18 6,149.95 5,319.17	1 826.78 4.00	17		72.4% 19.0% 24.1% 29.8%		69,331.22 0.00 873.926 SCM 24621869		0.26 #Error	10.05	10,647 11,702	32.05%
Unit # 3	210 / 155	661,134,000 61,635,435	599,498,565 233,279,100	9.32%	155 / 20 5,736.85	37 3,023.15 1,966.20	5 630.05 426.90	27	5	74.4% 35.9% 9.9% 70.4%		181,494.01 0.00 131.235 SCM 3697383		0.28 #Error	10.66	11,287 12,448	30.23%
Unit # 4	210 / 155	767,215,000 67,753,155	699,461,845 374,115,600	8.83%	155 / 17 6,194.45	27 2,565.55 1,526.15	5 348.07 691.33	18	4	79.9% 41.7% 5.3% 74.6%		167,127.05 0.00 1,515.822 SCM 42706542		0.27 #Error	10.28	10,882 11,936	31.35%
Unit # 5	210 / 200	845,824,000 59,849,550	785,974,450 310,740,000	7.08%	200 / 30 5,910.47	14 2,849.53 2,586.87	1 230.45 32.22	11	2	71.6% 46.0% 3.8% 67.8%		164,291.12 0.00 1,935.225 SCM 54522759		0.25 #Error	9.69	10,261 11,042	33.25%
Unit # 6	210 / 190	1,124,631,000 83,927,500	1,040,703,500 326,886,000	7.46%	190 / 20 8,251.38	20 508.62 227.10	1 281.52	19		71.7% 61.1% 3.3% 94.2%		224,851.45 0.00 2,248.684 SCM 63354091		0.25 #Error	9.62	10,185 11,006	33.50%
DEG# 1	1.7 /	11,430 0	11,430	0.00%	/	0.00				0.0% 0.0%		0.00 5.71 0.000 SCM 0		#Error 0.43	#Error	17,837 17,837	19.13%
PLANT	1260 1080	4,764,708,430 386,805,380	4,377,903,050 1,684,732,700	8.12%	1005 / 0 8,756.48		1 3.52			54.1% 43.2% 100.0%		1,015,573.74 5.71 8,558.417 SCM 241123599				10,503 11,431	32.49%

22 October 2020 13:49:07

•Unit sent out and net heat rate do not include bus bar losses.

•Overall efficiency is gross HHV.

Bin Qasim Thermal Power Station

Combined Generation Report

Gas GCV Av Btu/CFt: 1040.10

01/07/2018 To 30/06/2019

Factors*
LF: Load Factor
FOF: Forced Outage Factor
PF: Plant Factor
AF: Availability Factor

Unit No.	Capacity MW	Generation (Kwh)		% Aux	Load	Outages				Factors %		Fuel Consumption		Fuel /kwh		Heat Rate Btu/Kwh	Over all Efficiency
	Installd / Actual	Total U.Gen / Aux Consp.	Total USO / Total Reactive	Gen Loss %	Max/Min Opr hrs	Total No Hrs	Planned No Hrs	Forced No Hrs	StBy No Hrs	LF / FOF	PF / AF	HFO MTons	LDO KL / Gas mmcf	HFO Kg / LDO Lit	Gas (Cft)	Gross / Net	
Unit # 1	210 / 190	722,666,000 65,749,990	656,916,010 343,961,000	9.10%	190 / 20 5,765.83	34 2,994.17 2,003.47	3 990.70	31		66.0% 14.7%	39.3% 65.8%	129,265.35 2,369.236 SCM 66750503	0.00	0.26 #Error	10.22	10,628 11,691	32.10%
Unit # 2	210 / 190	896,460,000 71,125,100	825,334,900 335,150,000	7.93%	190 / 5 6,728.40	34 2,031.60 1,067.10	2 315.95 648.55	29	3	70.1% 4.5%	48.7% 84.2%	168,114.69 2,655.525 SCM 74816387	0.00	0.26 #Error	10.24	10,648 11,566	32.04%
Unit # 3	210 / 150	621,284,000 59,566,490	561,717,510 266,418,900	9.59%	150 / 0 5,396.63	44 3,363.37 1,418.92	12 215.40 1,729.05	18	14	76.7% 3.8%	33.8% 81.1%	166,018.66 188.038 SCM 5297755	0.00	0.28 #Error	10.67	11,097 12,274	30.75%
Unit # 4	210 / 165	663,370,000 65,277,790	598,092,210 336,064,500	9.84%	165 / 25 5,906.05	38 2,853.95 1,662.12	4 525.40 666.43	25	9	68.1% 8.2%	36.1% 75.0%	156,706.01 933.122 SCM 26289642	0.00	0.27 #Error	10.57	10,995 12,195	31.03%
Unit # 5	210 / 200	1,081,996,000 77,508,050	1,004,487,950 273,707,000	7.16%	200 / 10 8,158.93	29 601.07 496.25	1 101.78 3.03	27	1	66.3% 1.2%	58.8% 93.2%	144,245.12 5,159.737 SCM 145369671	0.00	0.26 #Error	9.94	10,339 11,137	33.00%
Unit # 6	210 / 185	660,384,000 56,091,200	604,292,800 359,266,000	8.49%	185 / 7 5,089.18	27 3,670.82 2,685.17	1 648.12 337.53	25	1	70.1% 11.3%	35.9% 61.9%	125,456.88 1,729.137 SCM 48716446	0.00	0.26 #Error	9.99	10,389 11,354	32.84%
DEG# 1	1.7	19,740 0	19,740	0.00%	/	0.00				0.0% 0.0%		0.00 0.000 SCM 0	9.95	#Error 0.43	#Error	18,013 18,013	18.94%
PLANT	1260 1080	4,646,179,740 395,318,620	4,250,861,120 1,914,567,400	8.51%	1015 / 0 8,723.43		10 36.57			52.5% 99.6%	42.1%	889,806.71 13,034.794 SCM 367240404	9.95			10,646 11,636	32.05%

22 October 2020 13:48:19

•Unit sent out and net heat rate do not include bus bar losses.

•Overall efficiency is gross HHV.

Bin Qasim Thermal Power Station

Combined Generation Report

Gas GCV Av Btu/CFt: 1008.35

01/07/2019 To 30/06/2020

Factors*
LF: Load Factor
FOF: Forced Outage Factor
PF: Plant Factor
AF: Availability Factor

Unit No.	Capacity MW	Generation (Kwh)		% Aux	Load	Outages				Factors %		Fuel Consumption		Fuel /kwh		Heat Rate Btu/Kwh	Over all Efficie-ncy
	Installd / Actual	Total U.Gen / Aux Consp.	Total USO / Total Reactive	Gen Loss %	Max/Min Opr hrs	Total No Hrs	Planned No Hrs	Forced No Hrs	StBy No Hrs	LF / FOF	PF / AF	HFO MTons	LDO KL / Gas mmcf	HFO Kg / LDO Lit	Gas (Cft)	Gross / Net	
Unit # 1	210 / 190	690,970,000 / 60,512,035	630,457,965 / 274,569,000	8.76%	190 / 9 / 5,429.45	23 / 3,354.55 / 709.50	1 / 453.24	12 / 2,191.82	10	67.0% / 7.7%	37.5% / 86.8%	136,848.88 / 1,683.448 / SCM 47429214	0.00	0.26 / #Num!	10.36	10,448 / 11,451	32.66%
Unit # 2	210 / 190	760,166,000 / 61,134,355	699,031,645 / 239,701,000	8.04%	190 / 20 / 5,520.78	31 / 3,263.22 / 615.42	2 / 309.14	20 / 2,338.67	9	72.5% / 5.3%	41.2% / 89.5%	136,247.69 / 2,477.408 / SCM 69798126	0.00	0.26 / #Num!	10.43	10,519 / 11,439	32.44%
Unit # 3	210 / 165	491,409,000 / 47,690,945	443,718,055 / 219,065,400	9.70%	165 / 15 / 4,357.43	42 / 4,426.57 / 852.95	4 / 294.77	22 / 3,278.85	16	68.3% / 6.3%	26.6% / 86.9%	129,267.39 / 274.825 / SCM 7742889	0.00	0.28 / #Num!	11.09	11,179 / 12,380	30.52%
Unit # 4	210 / 165	465,218,000 / 45,586,245	419,631,755 / 205,127,100	9.80%	165 / 10 / 3,885.05	32 / 4,798.95 / 999.52	3 / 438.72	16 / 3,360.72	13	70.8% / 9.9%	25.2% / 83.6%	113,401.08 / 552.516 / SCM 15566512	0.00	0.27 / #Num!	10.94	11,034 / 12,232	30.92%
Unit # 5	210 / 200	842,959,000 / 59,975,560	782,983,440 / 269,018,000	7.11%	200 / 10 / 6,096.60	20 / 2,687.40 / 1,118.98	1 / 137.25	12 / 1,431.17	7	69.1% / 2.2%	45.7% / 85.7%	116,453.64 / 3,876.980 / SCM 109229485	0.00	0.25 / #Num!	10.13	10,212 / 10,994	33.41%
Unit # 6	210 / 193	944,349,000 / 69,133,400	875,215,600 / 415,049,000	7.32%	193 / 10 / 6,350.51	19 / 2,433.49 / 915.92	3 / 204.23	8 / 1,313.34	8	77.0% / 3.1%	51.2% / 87.2%	102,216.82 / 5,508.219 / SCM 155187771	0.00	0.25 / #Num!	10.16	10,249 / 11,059	33.29%
DEG# 1	1.7	10,570 / 0	10,570	0.00%	/	0.00				0.0% / 0.0%		0.00 / 0.000 / SCM 0	5.39	#Num! / 0.43	#Num!	18,223 / 18,223	18.72%
PLANT	1260 / 1103	4,195,081,570 / 344,032,540	3,851,049,030 / 1,622,529,500	8.20%	1060 / 0 / 7910.43		1 / 1.07			50.0% / 100%	37.9%	734,435.49 / 14,373.397 / SCM 404953997	5.39			10,519 / 11,459	32.44%

26 March 2021 16:19:46

Unit sent out and net heat rate do not include bus bar losses.
Overall efficiency is gross HHV..

ANNEXURE B

Certified True Copy (CTC) of Resolutions
passed by K-Electric Board of Directors at its Meeting No. 1198
held on Thursday, 07 June 2018 in KE's Board Room,
3RD Floor, KE House, 39-B, Sunset Boulevard, Phase-II, DHA, Karachi

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Re: <u>Appointment of Chief Executive Officer (CEO)</u>

RESOLVED THAT a General Power of Attorney as per draft set out in **Appendix "A"** be and is hereby given to Mr. Syed Moonis Abdullah Alvi, CEO, KE and any two (2) Directors of the Company be and are hereby jointly authorized to sign, on behalf of the Board of Directors, the General Power of Attorney for Mr. Syed Moonis Abdullah Alvi and affix common seal of the Company on the instrument.

Muhammad Rizwan Dalia
Company Secretary

Certified True Extract of the General Power of Attorney
given to Syed Moonis Abdullah Alvi, CEO, K-Electric
pursuant to above resolution passed by KE BOD

Clause 14) To make and sign applications to appropriate Federal, Provincial or Local Government departments, authorities or other competent authority for all and any licenses, filing of any and all applications, petitions with NEPRA which include Licensee Proposed Modifications (LPMs) and others, permissions and consents required by any order, statutory instrument, regulation, byelaw or otherwise in connection with the business, management and affairs of the Company;

Clause 26) To delegate to any person such of the powers as he deems fit and revoke the same at his discretion.

Muhammad Rizwan Dalia
Company Secretary

MUHAMMAD RIZWAN DALIA
Company Secretary
K-ELECTRIC LIMITED

ANNEXURE C

Dated: April 5, 2021

Authority Letter

WHEREAS, I, **Syed Moonis Abdullah Alvi** s/o Syed Riazuddin Alvi, Muslim, Adult, holder of CNIC No. 42201-6886191-3, the Chief Executive Officer of K-Electric Limited (the "Company"), having its registered office at KE House, 39-B, Sunset Boulevard DHA, Phase-II, Karachi, in terms of clause 14 of General Power Attorney (GPA) dated 11th June 2018 given to me by the Board of Directors (BOD) of the Company, am empowered to make and sign applications to appropriate Federal, Provincial or Local Government Departments, authorities or other competent authority for all and any licenses, filing of any and all applications, petitions with NEPRA which include Licensee Proposed Modifications (LPMs) and others, permissions and consents required by any order, statutory instrument, regulation, byelaw or otherwise in connection with the business, management and affairs of the Company.

WHEREAS, Clause 26 of the GPA empowers me to delegate to any person such of the powers as I deem fit.

Now, therefore, in exercise of powers vested in me by the BOD of the Company through the above GPA, I, hereby authorize Ayaz Jaffar Ahmed s/o Jaffar Ahmed, CNIC No. 42000-5311358-3, Muslim, Adult Director Finance, KE to sign and file LPM with NEPRA related to addition of Pakistan LNG Limited (PLL) as an RLNG supplier for power plants located at Bin Qasim Power Complex (BQPC) and generation of power on an interim basis from Unit 3 of Bin Qasim Power Station – I (BQPS I) under peak demand scenario during summer season along with such other deeds, documents, instruments, etc. and take all necessary actions incidental and related to the LPM and appear before the Authority for and behalf of the Company.

Syed Moonis Abdullah Alvi
Chief Executive Officer
K-Electric Limited

Authorized Person:

Ayaz Jaffar Ahmed
Director Finance & Regulations
K-Electric Limited

MUHAMMAD RIZWAN DALIA
Company Secretary
K-ELECTRIC LIMITED

ANNEXURE D

R911945

100
Rupees

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روپیہ

MUHAMMAD SIKANDAR STAMP VENDOR
Licence # 159, Shop # 60, SITE Market
Habib Bank Chowrangi, S.I.T.E., Karachi

S.No. 83869 DATE

M. SHAUKAT IQBAL
ADVOCATE
No. 4251/HC

STAMP VENDOR'S SIGNATURE

This Stamp paper is for the Service and Free Vial purpose

19 JAN 2021

S. RIZWAN ... LL.B
Notary Public
KARACHI ... PAKISTAN

LICENSEE PROPOSED MODIFICATION (LPM) IN GENERATION LICENSE (NO. GL/04/2002) BEFORE THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY (NEPRA)

AFFIDAVIT

I, Ayaz Jaffar Ahmed s/o Jaffar Ahmed, having CNIC # 42000-5311358-3, Muslim, Adult, resident of Karachi, Director Finance & Regulations - KE, do hereby solemnly affirm and declare as under:

1. That I am the applicant in the subject matter and well conversant with the facts of the Licensee Proposed Modification (LPM).

2. The contents of the enclosed modification to the Generation License under Regulation 10(2) of the National Electric Power Regulatory Authority Licensing (Application and Modification Procedure)