

BEFORE

**THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY**

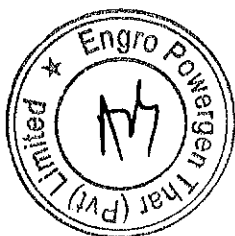
APPLICATION FOR MODIFICATION OF  
GENERATION LICENSE NO. IGSPL/49/2015 DATED SEPTEMBER 23, 2014

ON BEHALF OF

**ENGRO POWERGEN THAR (PRIVATE) LIMITED**

PURSUANT TO REGULATION 10(2) OF THE NEPRA  
(APPLICATION & MODIFICATION PROCEDURE)  
REGULATIONS, 1999 (THE "1999 REGULATIONS") READ  
TOGETHER WITH THE REGULATION OF GENERATION,  
TRANSMISSION AND DISTRIBUTION OF ELECTRIC  
POWER ACT, 1997 AND ALL OTHER ENABLING  
PROVISIONS OF LAW

**DATED: MAY 6, 2019**





May 06, 2019

**The Registrar**

**National Registrar Electric Power Regulatory Authority**

NEPRA Tower, Atatürk Avenue (East),  
G-5/1, Islamabad.

**Ref: EPTL-962-05/2019**

**Subject: Application under Regulation 10(2) of NEPRA (Application & Modification Procedure) Regulations, 1999, on behalf of Engro Powergen Thar (Pvt.) Limited for Modification of its Generation License**

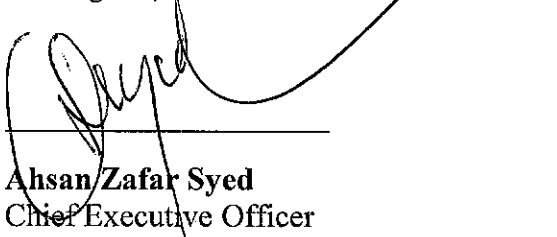
Dear Sir,

I, Ahsan Zafar Syed, being the duly authorized representative of Engro Powergen Thar (Pvt.) Limited by virtue of Board Resolution dated April 29, 2019, hereby apply to the National Electric Power Regulatory Authority for the modification of our Generation License No. IGSPL/ 49/2015 dated March 18, 2015 (the "**Application**").

A pay order# 00000015376 dated April 29, 2019 from ICBC, Karachi Branch in the sum of Rupees Eight Hundred Thirty-Six Thousand Five Hundred Twenty Only (Rs. 836,520/-), being the non-refundable licence application fee calculated in accordance with Schedule II to the National Electric Power Regulatory Authority Licensing (Application and Modification Procedure) Regulations, 1999, is also attached herewith.

Thanking you,

Best regards,



**Ahsan Zafar Syed**  
Chief Executive Officer

Enclosed:

- 1 - Pay order# 000000153 76 dated April 29, 2019 from ICBC, Karachi Branch.
- 2 - Affidavit
- 3 - Extract of Board Resolution dated
- 4 - Licence Proposed Modification (LPM) Application
- 5 - Copy of Generation Licence # IGSPL/49/2015 dated March 18, 2015

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Extract of the Resolution of  
Board of Directors

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**CERTIFIED COPY OF RESOLUTION OF  
BOARD OF DIRECTORS**

I, Sarah Ovais, Company Secretary, Engro Powergen Thar (Private) Limited, hereby certify that the following Circular Resolution was passed by the Board of Directors on April 29, 2019:

*Quote*

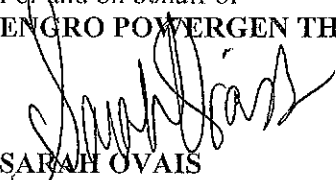
**UNANIMOUSLY RESOLVE** that the Application for Modification of Generation License No. IGSPL/ 49/2015" for 660.00 MW indigenous coal based thermal generation facility located at 5.0 KM from Thar Block-II of Thar Coalfields, District Tharparker, Sindh (the "Application"), is hereby approved for submission by the Company to the National Electric Power Regulatory Authority (the "NEPRA").

**FURTHER UNANIMOUSLY RESOLVE** that Mr. Ahsan Zafar Syed, Chief Executive of the Company, is hereby given the mandate and authorized to:

- (1) review, execute and submit the Application or any other related document, including any contracts, affidavits, statements, documents, powers of attorney, letters, forms, applications, deeds, guarantees, undertakings, approvals, memoranda, amendments, letters, notices, certificates, requests, statements and any other instrument of any nature whatsoever, to NEPRA, for and behalf of the Company, and to proceed with and make any corrections and amendments, if required, in finalizing the Application or any other related document;
- (2) attend, represent and participate in all meetings, negotiations, hearings and conferences of whatsoever nature before NEPRA or any other regulatory authority or official or person in connection with the submission and approval of the Application and pay the necessary fees, for and on behalf of the Company; and
- (3) do all such acts including but not limited to delegation of any of the powers granted herein to any other director or officer of the Company, singly or jointly, and submit all such documents as may be necessary in respect of the foregoing resolutions.

*Unquote*

For and on behalf of  
**ENGRO POWERGEN THAR (PRIVATE) LIMITED**

  
**SARAH OVAIS**  
Company Secretary

May 6, 2019

## 1. DETAILS OF THE PETITIONER

### 1.1 Name and Address

**Name:** Engro Powergen Thar (Private) Limited  
**Address:** 16th Floor, The Harbor Front Building, HC#3, Marine Drive, Block 4, Clifton, Karachi-75600, Pakistan  
**Phone:** 021-35297875-84  
**Fax:** 021-35296018

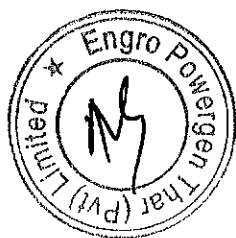
### 1.2 Particulars of Authorized Representative

**Name:** Mr. Ahsan Zafar Syed  
**Designation:** Chief Executive Officer

### 1.3 Project Details

Engro Powergen Thar (Private) Limited (the "**Company**") is a private limited company incorporated under the laws of Pakistan and is establishing a 660 MW indigenous Thar coal based thermal generation facility located at Thar Block II, Village Awer Lanjo, (Bitra), Deh Seengaro, Taluka Islamkot, District Tharparkar, Sindh.

NEPRA granted the Company Generation License No. IGSPL/49/2015 dated September 23, 2014 (the "**Generation License**") under Section 15 of the Regulation of the Generation, Transmission and Distribution of Electric Power Act, 1997.



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Application for  
Licence Proposed Modification  
of Generation License

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## 2. PROPOSED MODIFICATIONS

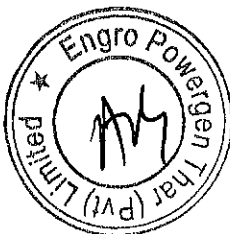
Pursuant to Regulation 10(2) of the 1999 Regulations, the Company hereby applies for the following modifications to the specifications set out in Schedule 1 of the Generation License:

2.1 The Ramping rates (MW/min) set out in row (v) of table F of Schedule 1 of the Generation License (under the heading "Detail of Generation Facility / Power Plant") are proposed to be modified as follows:

| Unit load  | Cold Start (%/ min) | Warm Start (%) | Hot Start (%) |
|------------|---------------------|----------------|---------------|
| 0<25%      | $\leq 0.35$         | $\leq 0.8$     | $\leq 1$      |
| >30% <50%  | $\leq 0.35$         | $\leq 0.8$     | $\leq 1$      |
| >50% <100% | $\leq 0.35$         | $\leq 0.8$     | $\leq 1$      |

2.2 The time required to Synchronize to the Grid (Hrs.) set out in row (vi) of table F of Schedule 1 of the Generation License (under the heading "Detail of Generation Facility/ Power Plant") is proposed to be modified as follows:

| Length of Shutdown                         | Notice required synchronizing (The time start after boiler ignited) |
|--|---|
| Not more than 2 hours                      | 100 mins.   |
| More than 2 hours but less than 8 hours    | 150 mins  |
| More than 8 hours but less than 32 hours   | 350 mins.   |
| More than 32 hours but less than 150 hours | 550 mins  |
| More than 150 hours                        | 770 mins.   |



### 3. STATEMENT OF THE REASONS IN SUPPORT OF THE MODIFICATION

The above modifications to the Ramping rates and the time periods for synchronization to the Grid are necessary because these specifications were provided by the Company to NEPRA at the time of filing of the application for grant of its Generation License and were tentative and indicative in nature. Accordingly, these specifications require modification in light of the actual design and requirements of the power plant and the data and instructions provided by the manufacturer to the Company.

Consistent with NEPRA determination in the matter of similar IPPs modification application and Article 3.3 of the Generation License, the Company is hereby requesting modification of its Generation License in light of the actual design of the power plant and the data provided and instructions received by the Company from the manufacturer.

In addition to the above, we set out below the specific reasons for each modification requested by the Company from NEPRA:

#### 3.1 Rationale for Modification to the Ramping Rates:

Modification to the Ramping rates is necessary because:

- a. Boiler at EPTL is a Circulating Fluidized Bed boiler utilizing Thar lignite coal. For CFB the normal ramp rate is 1 %. Boiler is burning high moisture lignite coal and requires some residence time to ensure proper burning. If the Ramping rate is not followed, the circulation & even heating of the furnace cannot be ensured, a faster ramping may cause additional coal (at lower temperatures) into the furnace which may result in localized explosion, ash fusion and clinker formation in Boiler. Therefore, the modification to the Ramping rate, set out in paragraph 2.1 above, has been proposed to ensure safe and efficient operation of the power plant.
- b. The ramping rate is also crucial to ensure proper heating of the Boiler/ Steam tubes & piping, If the Ramping rate is not observed, it may cause an adverse change in the airflow, distribution of coal, and difficulty in achieving thermal & chemical equilibrium for the CFB boiler, which may impact the boiler & steam piping etc. adversely. Under these circumstances, the boiler may overheat or leak. Furthermore, the operational life span of turbine may be affected due to the excessive heat stress on the cylinder metal.
- c. The operation life span of steam turbine cylinder may be seriously impacted due to the excessive change rate of load and temperature. Furthermore, the Ramping rate at various operation conditions shall be limited within the metal temperature increase rate range of cylinder

In view of above, the Ramping rate of EPTL Power Plant shall be limited within 1%. The Chinese relevant standards and the manufacturer's documentation justifying the proposed modifications to the Ramping rates are attached herewith as Annexure 1.





### 3.2 Rationale for Modification to the Time required for Synchronization to the Grid

The following modifications to the time required for synchronization to the Grid are based on the technical requirements of the manufacture's technical specification (set out in Annex 2 of this Application), and take into consideration the efficient and safe operation of the plant:

**More than 150 hours: Total 770 minutes**, wherein 420 minutes are required for CFB boiler to set up temperature and pressure after the successful ignition; hot flushing time of 100 minutes in addition to Boiler Startup time to achieve the steam purity is required; 30 minutes are required for the pre-warming up of Turbine Cylinder (already included in Boiler Hot Flushing time), 220 minutes is required for steam turbine rush to 3000rpm after admission of steam (including 120 minutes at 1200rpm and 2000rpm cylinder warming) ; Then, 30 minutes is required for synchronize to grid. Therefore, total 770 minutes is required for unit start-up.

**More than 32 hours less than 150 hours: Total 550 minutes**, wherein 420 minutes are required for CFB boiler to set up temperature and pressure after the successful ignition; hot flushing for 25 minutes is needed which will also include the pre-warming up of Turbine Cylinder; 55 minutes is required for steam turbine rush to 3000rpm after admission of steam (including 25 minutes at 3000rpm cylinder warming); Then, 30 minutes is required for synchronize to grid. Therefore, total 550 minutes is required for unit start-up.

**More than 8 hours less than 32 hours: Total 350 minutes**, wherein 260 minutes are required for CFB boiler to set up temperature and pressure after the successful ignition; 40 minutes is required for steam turbine rush to 3000rpm after admission of steam and 20 minutes at 3000rpm cylinder warming; Then, 30 minutes is required for synchronize to grid. Therefore, total 350 minutes is required for unit start-up.

**More than 2 hours less than 8 hours: Total 150 minutes**, wherein 80 minutes are required for CFB boiler to set up temperature and pressure after the successful ignition; 40 minutes is required for steam turbine rush to 3000rpm after admission of steam; then, 30 minutes is required for synchronize to grid. Therefore, total 150 minutes is required for unit start-up.

**Not more than 2 hours: Total 100 minutes**, wherein 60 minutes are required for CFB boiler to set up temperature and pressure after the successful ignition; 20 minutes is required for steam turbine rush to 3000rpm after admission of steam; Then, 20 minutes is required for synchronize to grid. Therefore, total 100 minutes is required for unit start-up.

In support of the proposed modification to the Generation License, reliance is also placed on the following documents which form an integral part of this Application (As annexure 2):

Annexure 2-A: Boiler Startup curves

Annexure 2-B: Steam Turbine curves



**4. STATEMENT OF THE IMPACT OF THE PROPOSED MODIFICATION ON THE TARIFF, QUALITY OF SERVICE, AND PERFORMANCE OF THE COMPANY OF ITS OBLIGATIONS UNDER THE GENERATION LICENSE**

**4.1 Impact of the Proposed Modification on the Tariff**

The Company has opted for upfront coal tariff, for 2 x 330 MW Coal Powered Plant, issued by NEPRA. Since the upfront tariff is a fixed tariff, the proposed modification to the Company's Generation License will have no impact on the tariff.

**4.2 Impact of the Proposed Modification on Quality of Service**

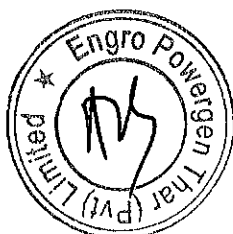
The Company hereby certifies that the Upfront Tariff and the obligations enunciated in the Generation License are fully acceptable to the Company and that the proposed modification will not impact the quality of service. Rather, the modification is necessary as explained above in order to avoid any impairment in the quality of service.

**4.3 Impact of the Proposed Modification on the Performance of the Company of Its Obligations under the Generation License**

For the reasons explained above, the proposed modification would facilitate the Company in fulfilling its obligations under the Generation License.

It is further submitted that the proposed modification may be accepted as it:

- (a) does not cause NEPRA to act or acquiesce in any act or omission of the licensee in a manner contrary to the provisions of the Regulation of the Generation, Transmission and Distribution of Electric Power Act, 1997 or the rules or regulations framed thereunder;
- (b) is beneficial to the consumers as it will ensure safe and efficient operation of the power plant;
- (c) is reasonably necessary for the Company to effectively and efficiently perform its obligations under the Generation Licence;
- (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 Company; and
- (e) is in accordance with the design requirements of the manufacturer, as certified by the manufacturer.



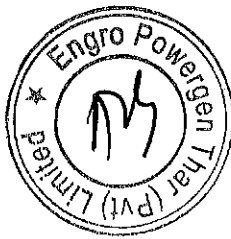
## 5. PRAYER

In view of the above, it is hereby most respectfully requested that NEPRA may kindly:

(i) accept the proposed modification to the Generation License to ensure safe and efficient operation of the Company's ~~1320~~ <sup>660</sup> MW power plant;

(ii) treat the Company's request for modification to the Generation License on a nondiscriminatory basis; and

(iii) grant such other relief as NEPRA may deem appropriate in the circumstances



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## Annexure 2

Annexure 2-A: Boiler Startup curves

Annexure 2-B: Steam Turbine curves

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密级：普通商密

Classification: general confidential business information



**东方电气集团东方汽轮机有限公司**  
**DONGFANG TURBINE CO., LTD OF DEC**

Thar 2×330MW CFB coal-fired power plant project, PAKISTAN

## Startup Curve of Steam Turbine



## DESIGN

莫瑛輝

2017-09-15

CHECK

刘洪

2017-09-29

## VERIFICATION

黃連

2017-09-30

STD ENGINEER

徐亚刚

2017-09-30

## REVIEW

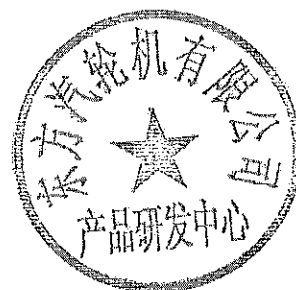
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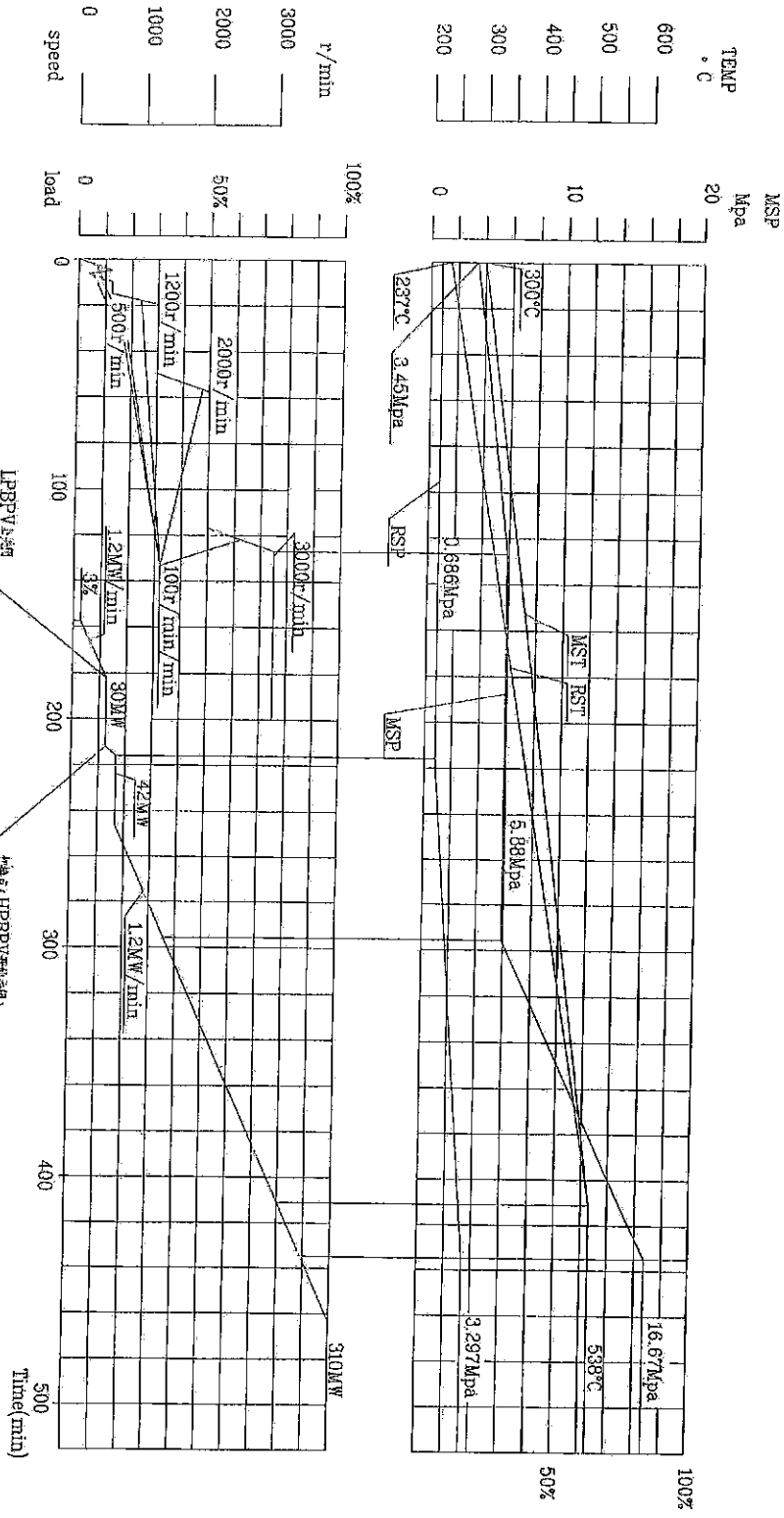
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APPROVE

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2017-10-09





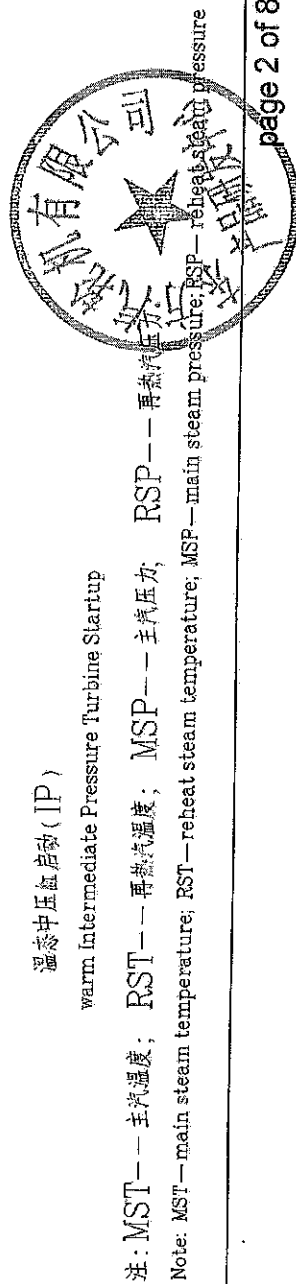
中压缸启动 (不包括提升转速试验) (IP)  
cold Intermediate Pressure Turbine Startup

注: MST—主汽温度; RST—再热汽温度; MSP—主汽压力; RSP—再热汽压力。

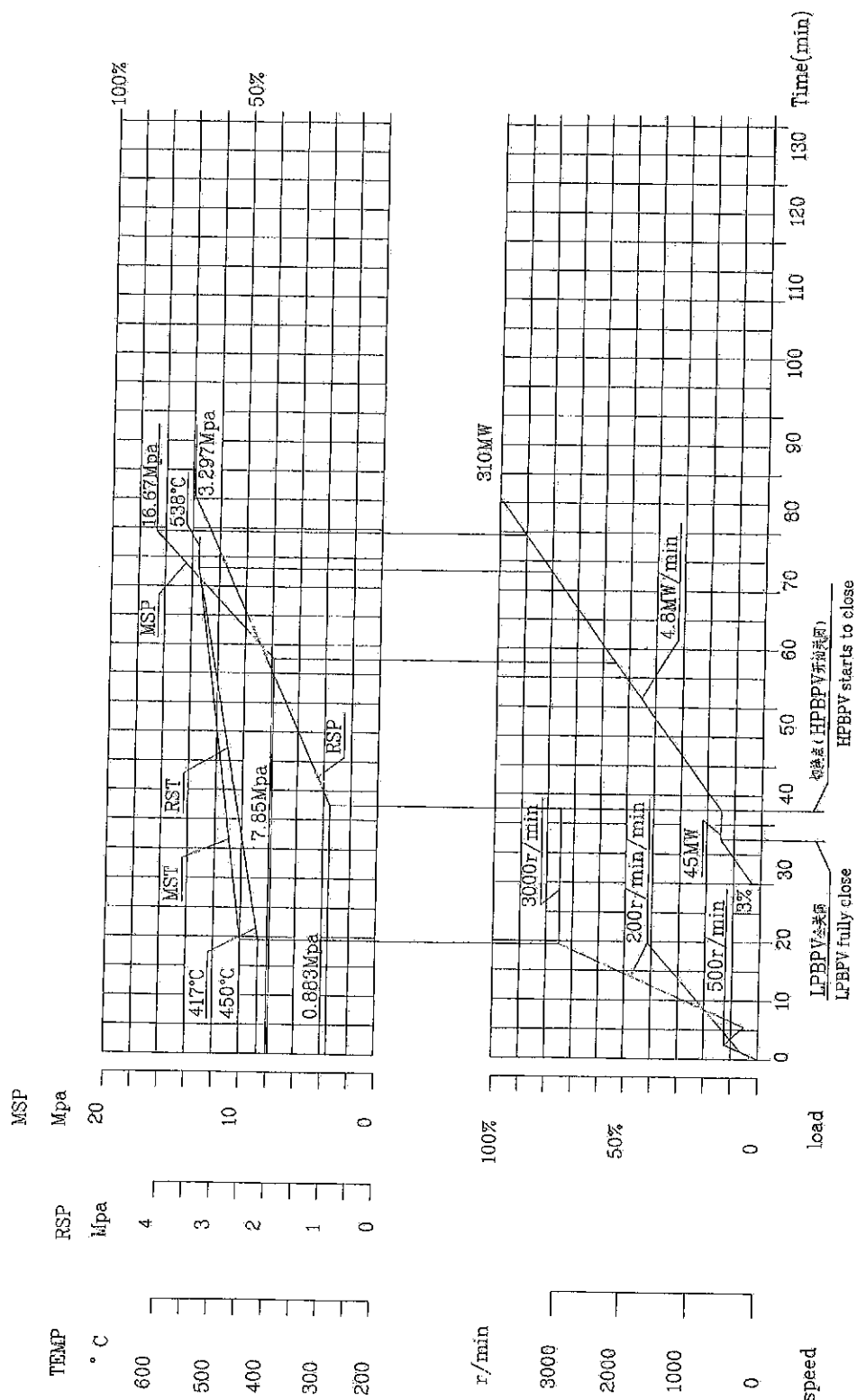
Note: MST—main steam temperature; RST—reheat steam temperature; MSP—main steam pressure; RSP—reheat steam pressure.

本曲线为室温冷态启动曲线, 不包括高压缸预暖时间, 用户可根据系统的稳定状态及自身经验进行适当调整。  
This curve is room temperature cold state curve, don't include prewarm time of HP casing, user may carry through relevant adjustment base on systemic steady state and own experience.









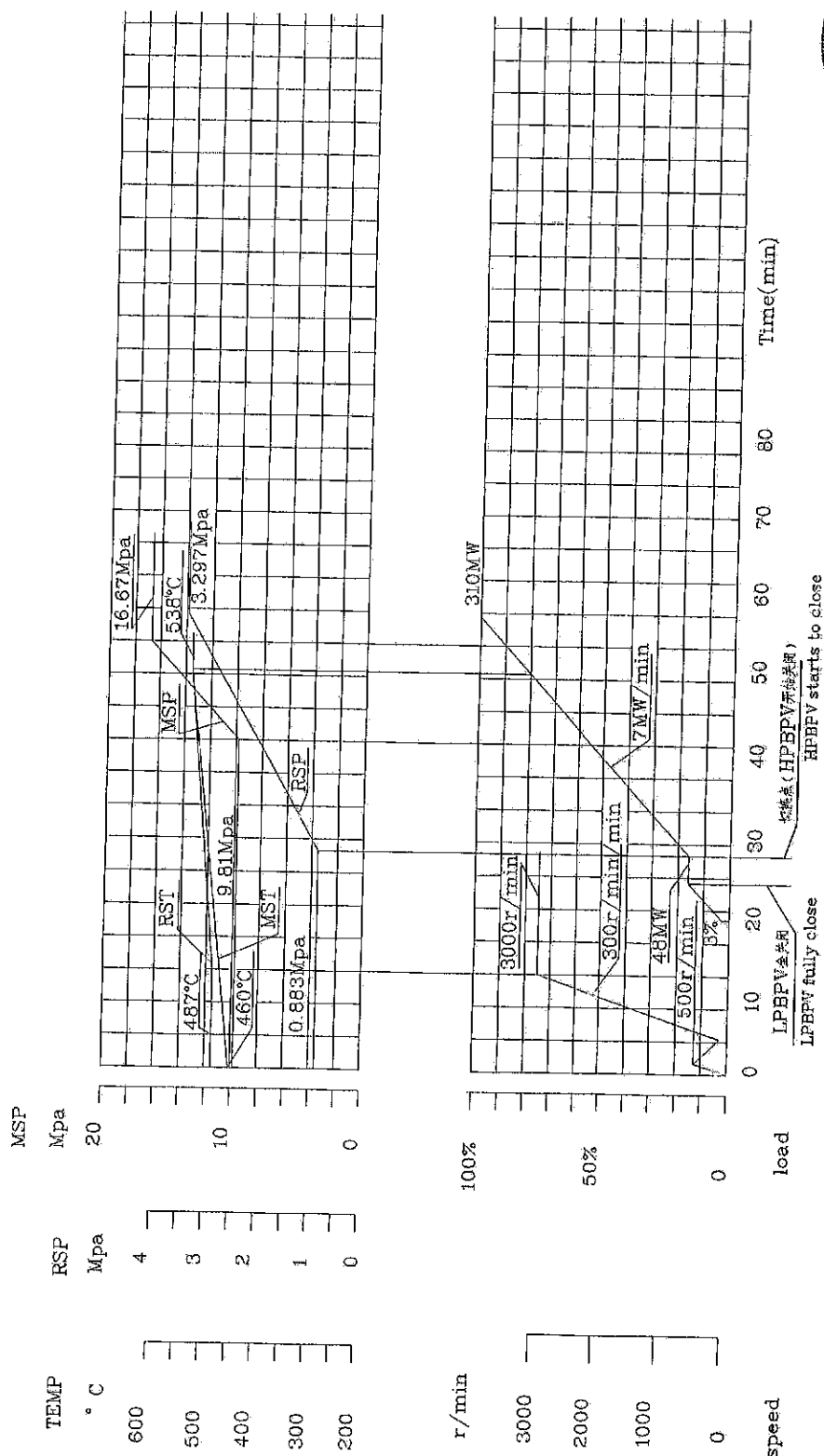
### 热态中压缸启动 (IP)

hot Intermediate Pressure Turbine Startup

注: MST—主汽温度; RST—再热汽温度; MSP—主汽压力; RSP—再热汽压力。

Note: MST—main steam temperature; RST—reheat steam temperature; MSP—main steam pressure; RSP—reheat steam pressure.

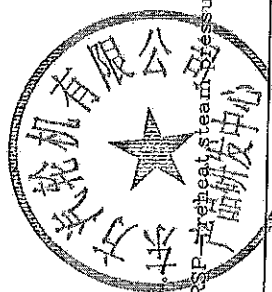




### very hot Intermediate Pressure Turbine Startup

注: MST—主汽温度; RST—再热汽温度; MSP—主汽压力; RSP—再热汽压力

Note: MST—main steam temperature; RST—reheat steam temperature; MSP—main steam pressure; RSP—reheat steam pressure





Contract Name: Thar Block II  
Contract No.: I2B-000114

Document No.: I2B-000114-02.05

Date: 2019-04-30

Revision No.: 03

Erection Doc.: (Y/N):N

**Boilers Engineering**  
**ENGINEERING SELECTION SHEET**  
**FOR**  
**STARTUP CURVES**

Document No.: I2B-000114-02.05

| Revision Log |            |          |           | Template Form Rev. No.: 06   |
|--------------|------------|----------|-----------|--|
| Revision No. | Date       | Eng'd By | Appv'd By | Description  |
| 00           | 2016-06-01 | CJK      | BWW       | C0 - Initial Release   |
| 01           | 2016-08-02 | CJK      | BWW       | C1 - Customer Change   |
| 02           | 2016-08-18 | CJK      | BWW       | C1 - Customer Change   |
| 03           | 2019-04-30 | SZY      |           | C1 - Removed turbine sync, roll and hold points per CMEC request. Please note: turbine sync, roll and hold periods are outside GE control & should be confirmed by others. |
|              |            |          |           |  |



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**GE POWER**

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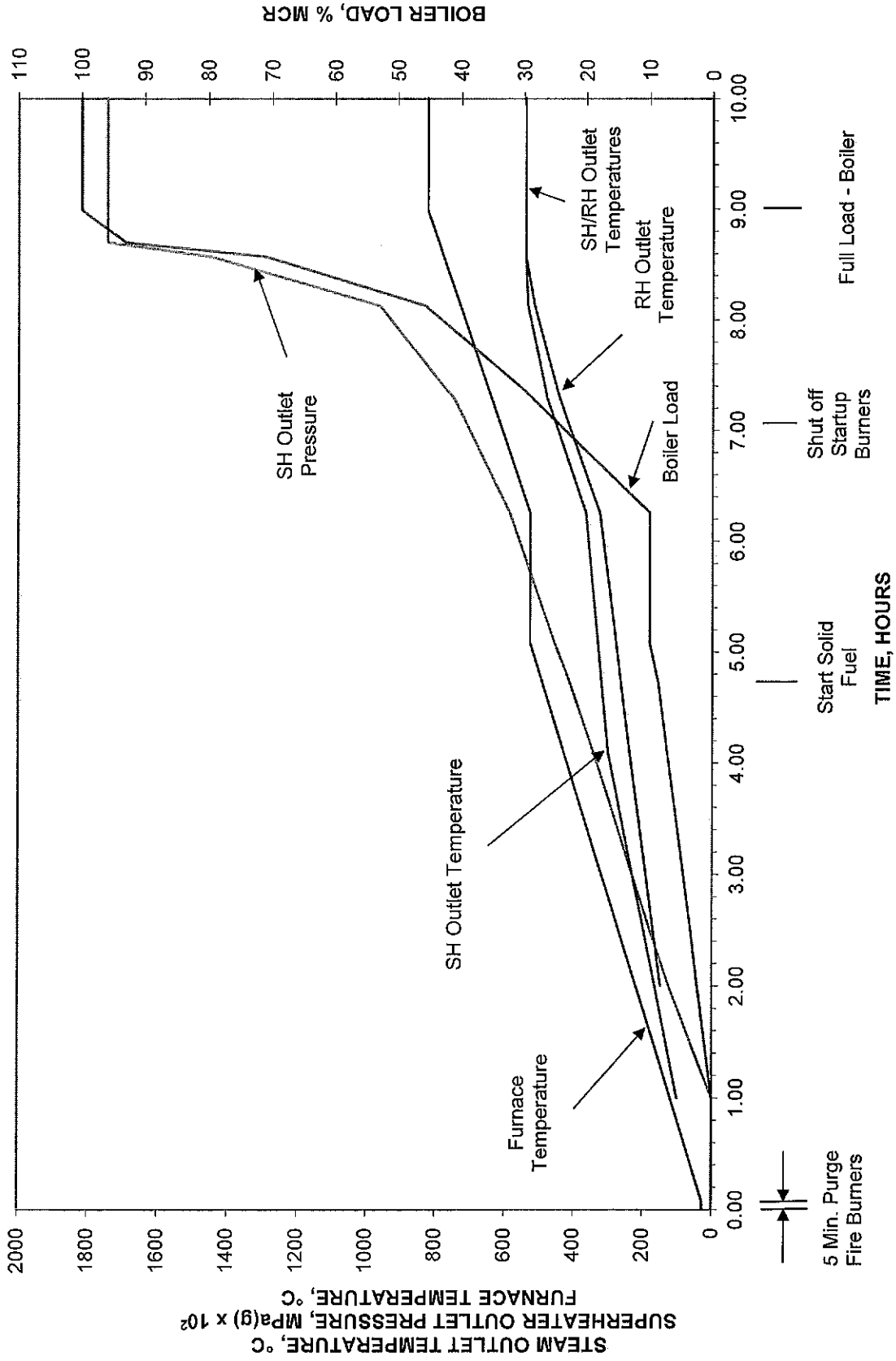
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Contract Name: Thar Block II  
Contract No.: I2B-000114

Document No.: I2B-000114-02.05  
Date: 2019-04-30  
Revision No.: 03  
Erection Doc.: (Y/N):N

## COLD START-UP



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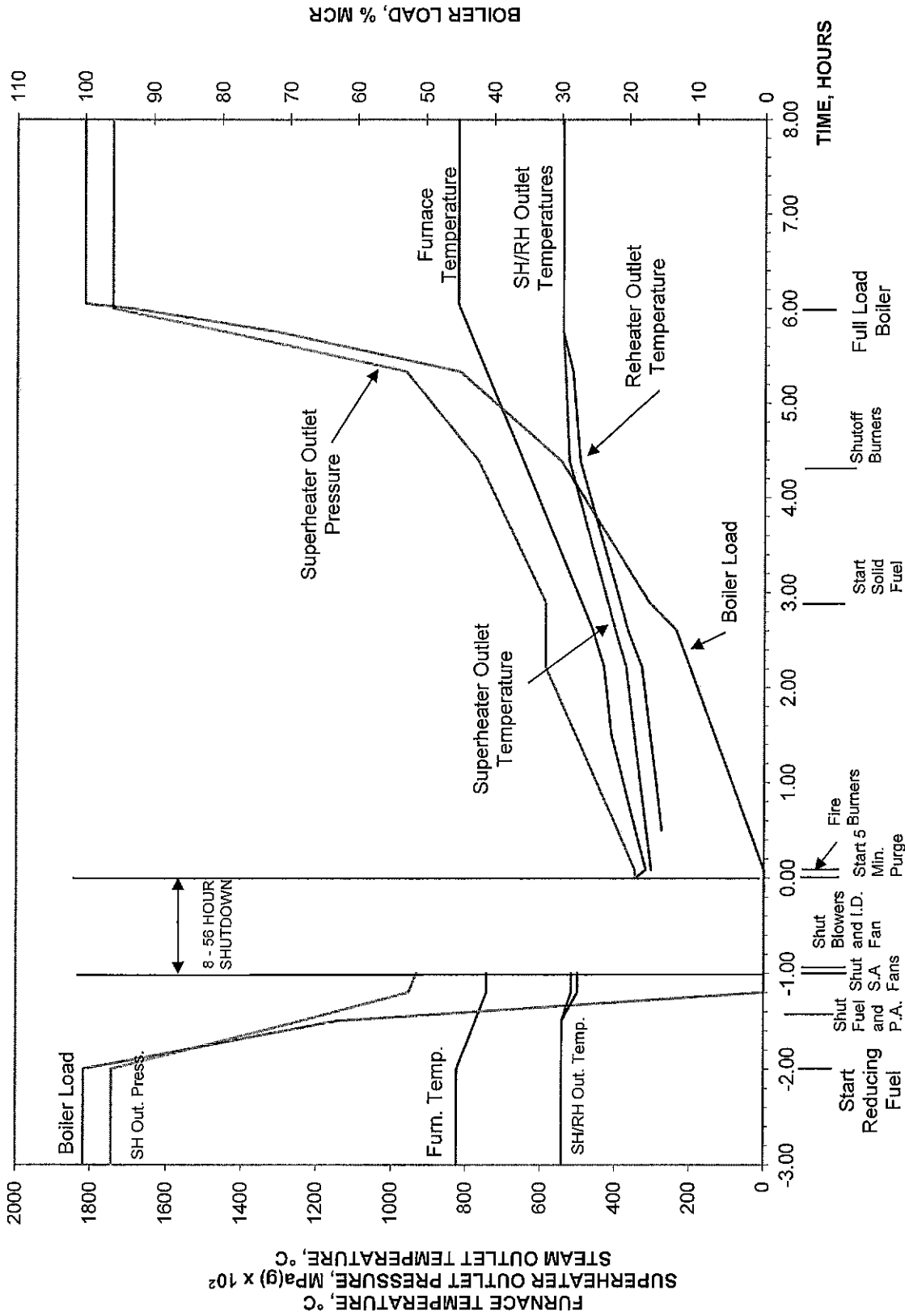
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Contract No.: I2B-000114

Document No.: I2B-000114-02.05  
Date: 2019-04-30  
Revision No.: 03  
Erection Doc.: (Y/N):N

## WARM START-UP



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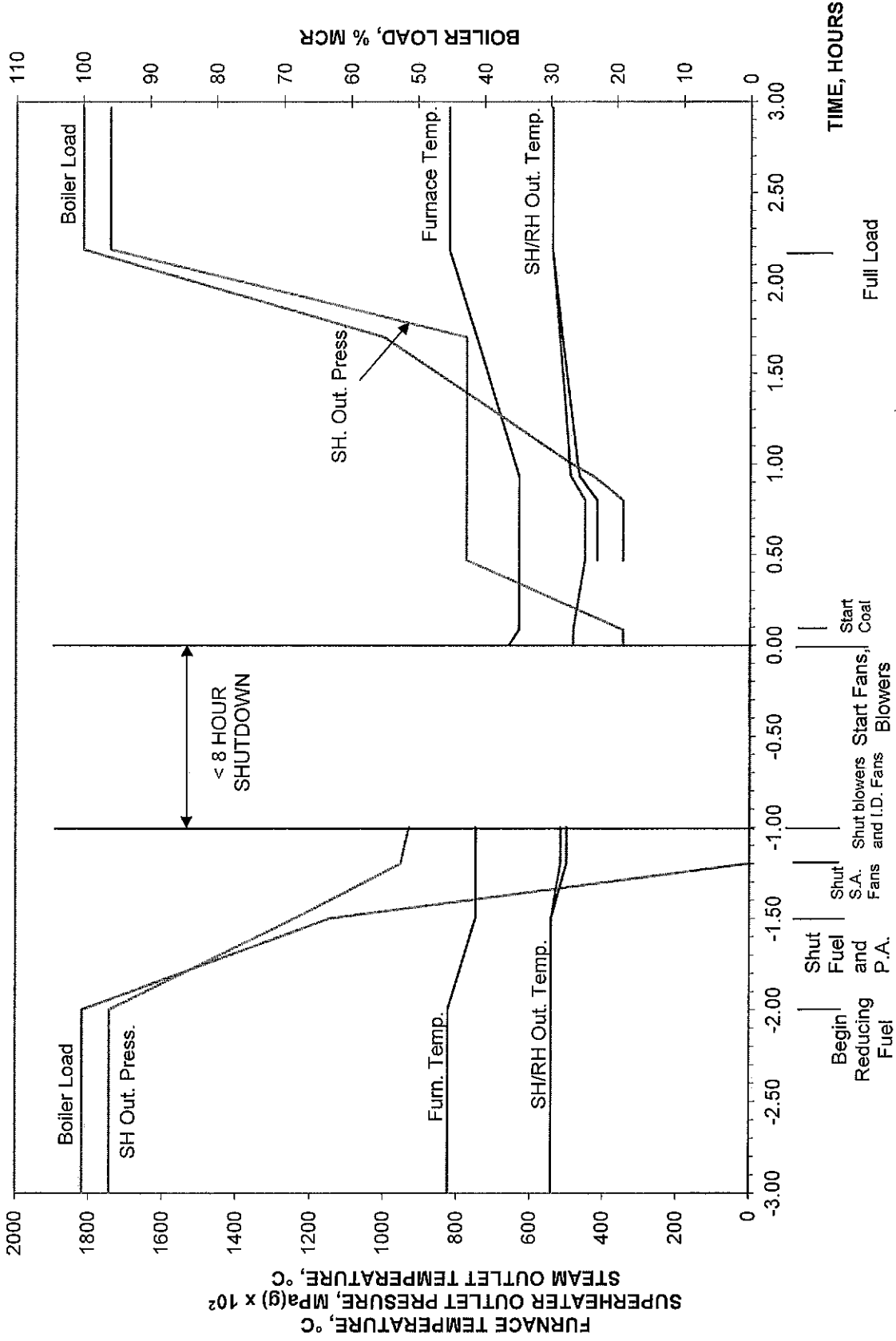
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Contract No.: I2B-000114

Document No.: I2B-000114-02.05  
Date: 2019-04-30  
Revision No.: 03  
Erection Doc.: (Y/N):N

## HOT START-UP



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GE POWER

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# National Electric Power Regulatory Authority

## Islamic Republic of Pakistan

NEPRA Tower, Ataturk Avenue(East), G-5/1, Islamabad  
Ph: +92-51-9206500, Fax: +92-51-2600026  
Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

**Registrar**

No. NEPRA/R/DL/LAG-285/ 4034-39

March 18, 2015

Mr. Shamsuddin A. Shaikh  
Chief Executive Officer  
Engro Powergen Thar (Pvt.) Limited  
4<sup>th</sup> Floor, The Harbor Front Building,  
HC-3, Marine Drive, Block 4,  
Clifton, Karachi-75600

Subject: **Generation Licence No. IGSP/L/49/2015**  
**Licence Application No. LAG-285**  
**Engro Powergen Thar (Pvt.) Limited**

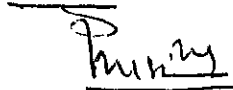
Reference: Your letter No. EPTL-001-11/2014, dated December 02, 2014.

Enclosed please find herewith Determination of the Authority in the matter of Generation Licence Application of Engro Powergen Thar (Pvt.) Limited (EPGTPL) along with Generation Licence No. IGSP/L/49/2015 annexed to this determination granted by the National Electric Power Regulatory Authority to EPGTPL for its 660.00 MW indigenous coal based thermal generation facility located at 5.0 KM from Thar Block-II of Thar Coalfields, District Tharparker, Sindh, pursuant to Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997).

2. Please quote above mentioned Generation Licence No. for future correspondence.

Enclosure: **Generation Licence**  
**(IGSP/L/49/2015)**



  
18.03.15  
(Syed Safeer Hussain)

Copy to:

1. Managing Director, Private Power & Infrastructure Board, 50-Nazimuddin Road, F-7/4, Islamabad
2. Chief Executive Officer, NTDC, 414-WAPDA House, Lahore
3. Chief Operating Officer, CPPA, 107-WAPDA House, Lahore
4. Chief Executive Officer, Hyderabad Electric Supply Company, WAPDA Water Wing Complex, Hussainabad, Hyderabad

**National Electric Power Regulatory Authority**  
**(NEPRA)**

**Determination of the Authority**  
**in the Matter of Application of Engro Powergen Thar (Pvt.)**  
**Limited for the Grant of Generation Licence**

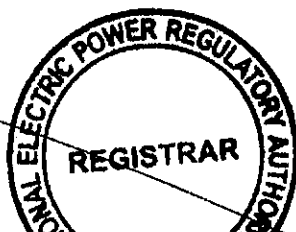
**March 16, 2015**  
**Application No. LAG-285**

**(A). Background**

(i). Pakistan is a coal-rich country, with an estimated reserves around 185.00 Billion. Most of these reserves are situated in the area of Thar in the Province of Sindh. The Federal Government and Provincial Governments are continuously trying to promote and develop the indigenous coal for power generation.

(ii). In order to develop and tap a part of the Thar Coal for Power Generation, the Sindh Engro Coal Mining Company Limited (SECMCL) has been established as a joint venture between the Government of Sindh (GoS) and Engro Powergen Limited-EPGL (a subsidiary of Engro Corporation Limited), for the purpose of mining coal from Thar Block II. In order to develop the power project, Engro Powergen Thar (Pvt.) Limited (EPGTPL) was incorporated as a subsidiary of EPGL. In order to implement the project, Private Power Infrastructure Board (PPIB) issued a Letter of Intent (LoI) to the company.

(iii). According to the terms and conditions of the above mentioned LoI, the company has been directed to approach the Authority for the grant of the Generation Licence. Further, the LoI directs EPGTPL for acceptance of the Up-Front Tariff which the Authority had announced for the project to be based on Thar Coal (Block-II).



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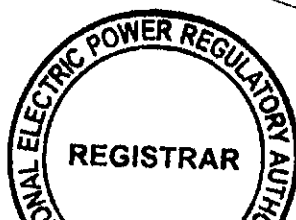


**(B). Filing of Generation Licence Application**

(i). In accordance with Section-15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the NEPRA Act), EPGTPL submitted an application on December 04, 2014 requesting for the grant of Generation Licence.

(ii). The Registrar examined the submitted application to confirm its compliance with the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 (the "Regulations"). It was observed that some of required information/documentation was missing. Accordingly, Registrar directed EPGTPL for submitting the missing information/documentation. EPGTPL completed the missing information/documentation on December 24, 2014. The Authority admitted the same under Regulation-7 of the Regulations on January 15, 2015 for consideration of grant of a Generation Licence and approved the advertisement about the Notice of Admission (NoA) to be published in daily newspapers, seeking comments of the general public as stipulated in Regulation-8 of the Regulations.

(iii). The Authority also approved the list of Interested/affected parties for inviting comments or otherwise assisting the Authority in the matter as stipulated in Regulation-9 of the Regulations. Accordingly, NoA was published in one Urdu and one English National Newspaper on January 21, 2015. Further, separate letters were also sent to Individual Experts/Government Ministries/Representative Organizations etc. on January 21, 2015 for submitting their views/comments in the matter for the assistance of the Authority to arrive at an informed decision.



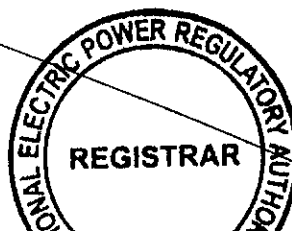
### **(C). Comments of Stakeholders**

(i). In reply to the above, the Authority received comments from two (02) stakeholders. These included Energy Department Government of Sindh (EDGoS) and Ministry of Petroleum and Natural Resources (MoP&NR).

(ii). The salient points of the comments offered by the above stakeholder are summarized in the following paragraphs: -

(a). EDGoS submitted that the Government of Sindh (GoS) supports the project as it will be a milestone achievement for construction of Power Plant based on indigenous resources. The development of local communities in accordance with Corporate Social Responsibility-CSR policy and provision of jobs to locals from Tharparkar District may be ensured. Efficient Power Plant technologies should be adopted to lower the power tariff. The company must take suitable measures for to meet the prevailing policies/National Environmental Quality Standards (NEQS) guidelines. Provision should be available in Power Purchase Agreement-PPA/Generation Licence to provide power to the coal mines and other industries within Thar Coalfield in order to facilitate industrialization of the area. National Transmission and Despatch Company Limited (NTDC) must complete the necessary infrastructure for evacuating electric power from the project; and

(b). MoP&NR commented that in the wake of current energy supply scenario of the country warranting greater emphasis on coal based power generation and the GoP is focusing on utilization of indigenous coal resources. Therefore, the



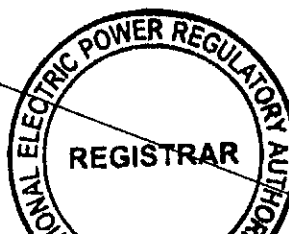
MoP&NR supports the grant of Generation Licence to EPGTPL. Further, MoP&NR commented that Coal is a Provincial subject therefore, it is understood that the application had been admitted with prior consent of the GoS. The concern raised by any stakeholder in the matter may be shared with MoP&NR.

(iii). The above comments of the stakeholders were examined and found to be supportive of the project. However, EDGoS made certain observations regarding completion of the Interconnection of the Project, compliance with Environmental Standards and CSR policies. In view of the said, it was considered appropriate seeking perspective of EPGTPL on the observations of EDGoS. In its rejoinder. EPGTPL confirmed that the CSR policies will also be followed in letter and spirit. EPGTPL also reiterated that the project will comply with the required environmental standards. Further, EPGTPL clarified that for timely dispersal of electric power from the proposed generation facility NTDC has already submitted a PC-I for the approval of the Planning Commission of the Govt. of Pakistan (GoP).

(iv). In view of the above clarification, the Authority considered it appropriate to process the application of EPGTPL for the grant of Generation Licence as stipulated in the Regulations and NEPRA Licensing (Generation) Rules, 2000 (the Rules).

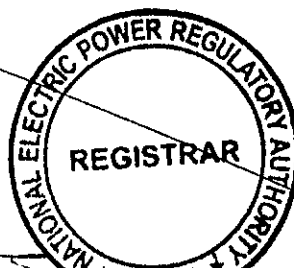
**(D). Grant of Generation Licence**

(i). Electricity is a key infrastructural element for economic growth. The electricity consumption per capita has a strong correlation to the Social Development indices (HDI, life expectancy at birth, infant mortality rate, and maternal mortality) and Economic Indices (such as GDP per capita).



(ii). Increasing electricity consumption per capita can directly stimulate faster economic growth and indirectly achieve enhanced social development. In short, the Economic Growth of any country is directly linked with the availability of safe, secure, reliable and cheaper supply of electricity. In view of the said, the Authority is of the considered opinion that for sustainable development all types of indigenous power generation resources including Coal, Hydel, Wind, Solar and other Renewable Energy (RE) resources must be tapped and developed on priority basis both in Public and Private Sectors.

(iii). The existing energy mix of the country is heavily skewed towards the costlier thermal Generation Facilities/Power Plants, operating on Imported Furnace Oil. The Import of Furnace Oil not only creates a pressure on the precious foreign exchange reserves of the country but also causes an increase in the consumer end tariff. The increase in the consumer end tariff not only results in higher inflation but it also affects the competitiveness of the local Industry with its foreign peers. In order to address the said issues, the Authority considers it imperative that efforts must be made to change the energy mix based on relatively cheaper fuels. With the depleting Natural Gas Reserves in the country and relatively longer lead time for the construction of Hydro Electric Power Projects, the Coal Power Plants are considered the best option in the Short and Medium Term Planning. Therefore, to reduce the Demand-Supply gap and to achieve sustainable development, it is vital that indigenous as well as imported Coal Projects are given priority for power generation and their development is encouraged. In view of the said, the Counsel of Common Interests (CCI) approved the Power Policy 2013 which envisages rationalizing the energy mix and reducing the demand-supply gap through Imported and Indigenous coal based power generation. In consideration of the said, the Authority is of the view that the proposed project of EPGTPL is consistent with the provisions of Power Policy 2013.



(iv). The Authority has examined the details of the proposed Generation Facility of EPGTPL with reference to its location, the type of technology being deployed, interconnection arrangements for dispersal of electric power and other specific details. The Authority has observed that the Project will be located at 5.0 KM from Thar Block II Thar Coalfields (Latitude: 24° 43' 38" - 24° 50' 18" & Longitude: 70° 17' 36" - 70° 26' 16"), District Tharparker, in the Province of Sindh. The proposed Power Project/Generation Facility of EPGTPL with an Installed Capacity of 660.00 MW will be the first part of the Energy Park (total generating capacity of approximately 3600 MW) which will be utilizing the lignite coal of Block-II. In this regard an area of around 120 hectare has been designated for the current Power Project/Generation Facility of EPGTPL. The Authority has observed that the proposed Generation Facility/Thermal Power Plant will be consisting of two (02) units each of 330.00 MW. Each unit will have a Sub-Critical Circulating Fluidized Bed (CFB) Coal Boiler, Steam Turbine and Generator. The Authority considers that the proposed Sub-Critical Technology is very mature with many units in operation worldwide for many years with good track records. EPGTPL has confirmed that the Net Efficiency of the proposed Generation Facility/Power Plant will be around 37.00% in line with that determined/set by the Authority in the Up-Front Tariff for the Thar Coal based Projects.

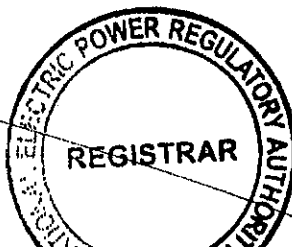
(v). The Authority is extremely satisfied that the proposed Power Project is included in the Least Expansion Plan of the Purchaser (i.e. CPPA/NTDC). Further, NTDC has confirmed about carrying out of the required studies pertaining to the dispersal of electric power from the proposed Generation Facility. NTDC has also confirmed that the electric power from the Thar Coal based Generation Facility of EPGTPL will be evacuated through two (02) Transmission Lines of 500 KV (Quad Bundled) on AAAC Araucaria Conductor (Measuring about 250.00 KM in length), connecting the said Generation Facility with proposed 500 KV Matiari Grid Station.



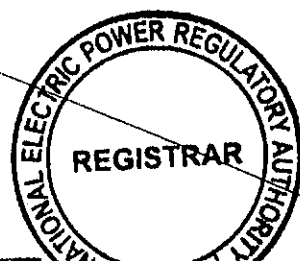
(vi). The term of a Generation Licence under the Rule-5 (1) of the Rules, is to be commensurate with the maximum expected useful life of the units comprised in a generating facility. The proposed Generation Facility/Power Plant of EPGTPL will be consisting of two Steam Turbine Units of 330.00 MW each. According to the International benchmarks available, the useful life of a Steam Turbine is normally taken as thirty (30) years from its Commercial Operation Date (COD). Further, EPGTPL has also confirmed that it will be negotiating a Power Purchase Agreement (PPA) with Power Purchaser having a term based on this available benchmark. In view of the said, the Authority fixes the term of the proposed Generation Licence of EPGTPL to be thirty (30) years from its COD.

(vii). Regarding the Tariff that the generation company (i.e. EPGTPL) will charge from its Power Purchaser, EPGTPL has applied for the unconditional acceptance of the Up-Front Tariff for Coal. However, the application of EPGTPL is still under consideration and the same will be decided within the time prescribed in the relevant regulations. Pending the acceptance and grant of the Up-Front Tariff, the Authority directs EPGTPL to charge only such tariff which has been determined, approved or specified by the Authority as stipulated in Article-6 of its proposed Generation Licence.

(viii). As explained above, the proposed Generation Facility/Power Plant/Power Project of EPGTPL, for which Generation Licence has been sought is based on Indigenous Coal of Thar. The Coal based Generation Facilities may be harmful to environment because of emission of SO<sub>x</sub>, NO<sub>x</sub>, Particulate Matters, Green House Gases-GHG, production of ash and other effluents. In this regard, EPGTPL confirmed that proposed Generation Facility would have Air Emission Control equipment including an Electro Static Precipitator-ESP. Further, for Flue Gas Desulfurization, the CFB boiler will have the in-situ desulfurization capability which will reduce the SO<sub>x</sub> emissions upto NEQS acceptable levels. CFB Boilers



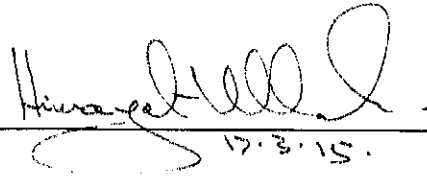
are low temperature combustion boilers which will ensure that NO<sub>x</sub> emission complies with National and Global standards. Waste water would be treated and utilized in-plant, with a small quantity of effluent discharged after further treatment to meet environmental standards. Conventional solid wastes (Bottom and Fly Ash) would be disposed at the ash yard, while hazardous waste would be collected and treated in-plant. Periodic monitoring of groundwater would be done to prevent water contamination. Efforts would be made to maximize use of fly ash and gypsum to reduce waste disposal. Water would be constantly sprayed in the coal yard to reduce coal dust. Sound attenuation material would be applied on machinery generating high noise levels. Pollution monitoring system inside and around the station would be set up to constantly monitor the environmental conditions. For the Coal based Power Plant, a lot of ash is produced during its operation. In order to handle ash, it has been informed that there are two alternates available for disposal of ash i.e. ash yard (which will be built for initial few years of operation) and the Mine Dump (inside dumping with overburden of mine). In order to prevent ash yard from rainwater washing a rain water drain system will be developed. Further, to prevent fly ash and bottom ash from polluting underground water after being wetted by rainwater an impervious membrane will be laid on bottom of ash yard. In short, EPGTPL has assured compliance of the Environmental Standards and has also provided a No Objection Certificate from Environmental Protection Agency Govt. of Sindh (EPAGoS). However, to ensure that the Generation Facility/Power Plant/Power Project conforms to the environmental standards during the term of the Generation Licence, a separate article has also been included along with other terms and conditions. The said Article binds the Licensee/EPGTPL to comply with relevant environmental standards. Further, the Authority also directs EPGTPL to submit a report on bi-annual basis confirming that operation of its proposed Generation Facility is compliant with required Environmental Standards as prescribed by EPAGoS.



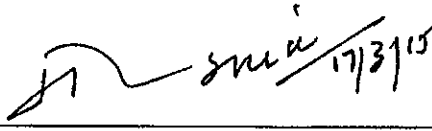
(ix). In view of the above, the Authority hereby decides to approve the grant of Generation Licence to EPGTPL on the terms and conditions as set out in the Generation Licence annexed to this determination. The grant of Generation Licence will be subject to the provisions contained in the NEPRA Act, relevant rules, regulations framed there under and the other applicable documents.

**Authority**

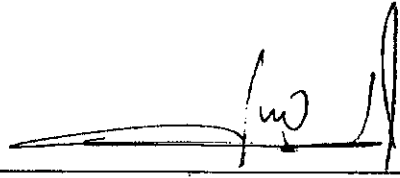
Himayat Ullah Khan  
(Member)

  
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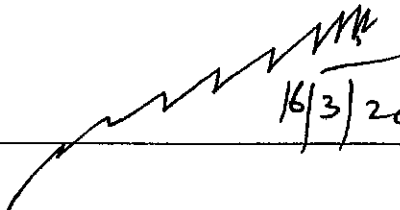
Maj. (R) Haroon Rashid  
Member

  
17/3/15

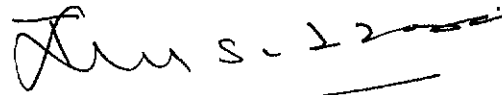
Khawaja Muhammad Naeem  
Member

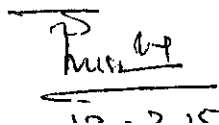
  
17.3.15

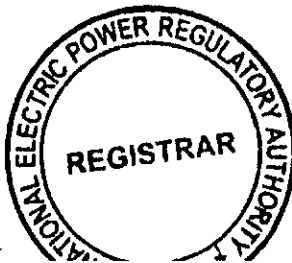
Habibullah Khilji  
Member/Vice Chairman

  
16/3/2015

Brig. (R) Tariq Sadozal  
Chairman

  
17/3)

  
17.3.15





**National Electric Power Regulatory Authority  
(NEPRA)**

**Islamabad – Pakistan**

**GENERATION LICENCE**

**No. IGSPL/49/2015**

In exercise of the Powers conferred upon the National Electric Power Regulatory Authority (NEPRA) under Section-15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, the Authority hereby grants a Generation Licence to:

**ENGRO POWERGEN THAR (PVT.) LIMITED**

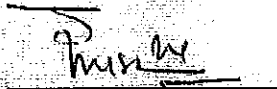
Incorporated under the Companies Ordinance, 1984  
Under Corporate Universal Identification No. 0089995  
Dated September 23, 2014

for its Indigenous Coal based Thermal Generation Facility  
Located at 5.0 KM from Thar Block II of Thar Coalfields, District Tharparker  
In the Province of Sindh

(Installed Capacity: 660.00 MW Gross)

to engage in generation business subject to and in accordance with the Articles of this Licence.

Given under my hand this 10<sup>th</sup> day of March Two Thousand & Fifteen and expires on 30<sup>th</sup> day of April Two Thousand & Forty Eight.

  
Registrar

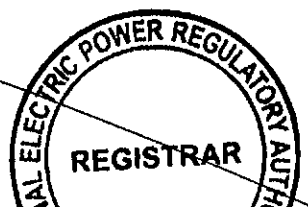




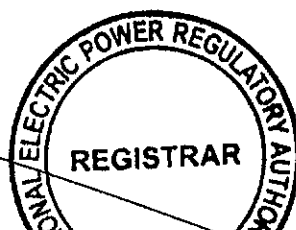
**Article-1**  
**Definitions**

1.1 In this Licence

- (a). "Act" means "the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997";
- (b). "Authority" means "the National Electric Power Regulatory Authority constituted under Section-3 of the Act";
- (c). "Bus Bar" means a system of conductors in the generation facility of the Licensee on which the electric power of all the generators is collected for supplying to the Power Purchaser;
- (d). "Commercial Operations Date (COD)" means the Day immediately following the date on which the generation facility of the Licensee is Commissioned;
- (e). "CPPA" means "the Central Power Purchasing Agency of NTDC" or any other entity created for the like purpose;
- (f). "Grid Code" means the grid code prepared by NTDC and approved by the Authority, as it may be revised from time to time by NTDC with any necessary approval by the Authority;
- (g). "Grid System" The transmission facilities owned by the Power Purchaser, other than the Interconnection Facilities of the Licensee through which the net electric power output will be received and distributed by the Power Purchaser;



- (h). "IEC" means International Electrotechnical Commission or any other entity created for the like purpose and its successors or permitted assigns;
- (i). "IEEE" means the Institute of Electrical and Electronics Engineers and its successors or permitted assigns;
- (j). "Interconnection Point" the physical point or points where the generation facility and the Grid System are to be connected;
- (k). "HESCO" means "Hyderabad Electric Supply Company Limited and its successors or permitted assigns;
- (l). "Licensee" means "Engro Powergen Thar (Pvt.) Limited" and its successors or permitted assigns;
- (m). "NTDC" means National Transmission and Despatch Company Limited and its successors or permitted assigns;
- (n). "Power Purchase Agreement" means the power purchase agreement, entered or to be entered into by and between the Power Purchaser and the Licensee, for the purchase and sale of electric energy generated by the generation facility, as may be amended by the parties thereto from time to time;
- (o). "Power Purchaser" means the CPPA of NTDC purchasing power on behalf of XW-DISCOs;
- (p). "Rules" mean "the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000";



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(q). "XW DISCO" means "an Ex-WAPDA distribution company engaged in the distribution of electric power".

1.2 Words and expressions used but not defined herein bear the meaning given thereto in the Act or in the Rules.

**Article-2**  
**Application of Rules**

This Licence is issued subject to the provisions of the Rules, as amended from time to time.

**Article-3**  
**Generation Facilities**

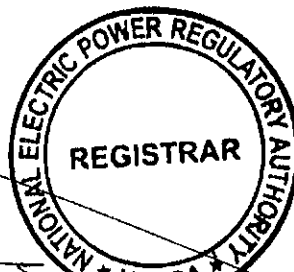
3.1 The location, size (capacity in MW), technology, interconnection arrangements, technical limits, technical and functional specifications and other details specific to the generation facility of the Licensee are set out in Schedule-I of this Licence.

3.2 The net capacity of the generation facility of the Licensee is set out in Schedule-II hereto.

3.3 The Licensee shall provide the final arrangement, technical and financial specifications and other specific details pertaining to its generation facility before its COD.

**Article-4**  
**Term of Licence**

4.1 The Licence is granted for a term of thirty (30) years from the COD of the generation facility.



4.2 Unless suspended or revoked earlier, the Licensee may within ninety (90) days prior to the expiry of the term of the Licence, apply for renewal of the Licence under the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 as amended or replaced from time to time.

**Article-5**  
**Licence fee**

After the grant of the Generation Licence, the Licensee shall pay to the Authority the Licence fee, in the amount and manner and at the time set out in the National Electric Power Regulatory Authority (Fees) Rules, 2002.

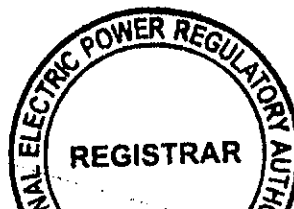
**Article-6**  
**Tariff**

The Licensee shall charge only such tariff which has been determined, approved or specified by the Authority in terms of Rule-6 of the Rules.

**Article-7**  
**Competitive Trading Arrangement**

7.1 The Licensee shall participate in such manner as may be directed by the Authority from time to time for development of a Competitive Trading Arrangement. The Licensee shall in good faith work towards implementation and operation of the aforesaid Competitive Trading Arrangement in the manner and time period specified by the Authority. Provided that any such participation shall be subject to any contract entered into between the Licensee and another party with the approval of the Authority.

7.2 Any variation or modification in the above-mentioned contracts for allowing the parties thereto to participate wholly or partially in the Competitive Trading Arrangement shall be subject to mutual agreement of the parties thereto and such terms and conditions as may be approved by the Authority.



**Article-8**  
**Maintenance of Records**

For the purpose of sub-rule (1) of Rule-19 of the Rules, copies of records and data shall be retained in standard and electronic form and all such records and data shall, subject to just claims of confidentiality, be accessible by authorized officers of the Authority.

**Article-9**  
**Compliance with Performance Standards**

The Licensee shall comply with the relevant provisions of the National Electric Power Regulatory Authority Performance Standards (Generation) Rules 2009 as amended from time to time.

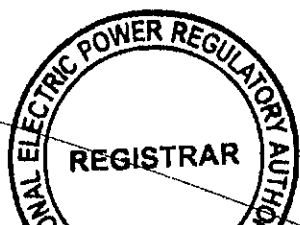
**Article-10**  
**Compliance with Environmental Standards**

10.1 The Licensee at all times shall comply with the environmental standards as may be prescribed by the relevant competent authority as amended from time to time.

10.2 The Licensee shall provide a certificate on a bi-annual basis, confirming that the operation of its generation facility is in line with environmental standards as prescribed by the relevant competent authority.

**Article-11**  
**Power off take Point and Voltage**

The Licensee shall deliver power to the Power Purchaser at the outgoing bus bar of its grid station. The up-gradation (step up) of generation voltage up to the required voltage level for Interconnection Point will be the responsibility of the Licensee.



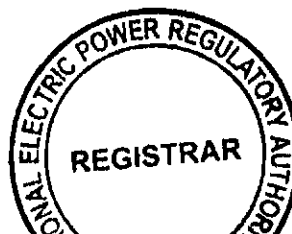
**Article-12**  
**Provision of Information**

12.1 The obligation of the Licensee to provide information to the Authority shall be in accordance with Section-44 of the Act.

12.2 The Licensee shall be subject to such penalties as may be specified in the relevant rules made by the Authority for failure to furnish such information as may be required from time to time by the Authority and which is or ought to be or has been in the control or possession of the Licensee.

**Article-13**  
**Design & Manufacturing Standards**

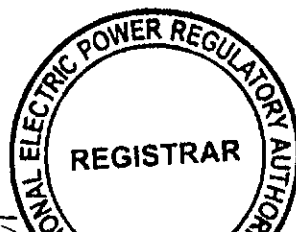
All the components of the generation facility/power plant shall be designed, manufactured and tested according to the latest IEC, IEEE or any other equivalent standards. All plant and equipment shall be unused and brand new.



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## **SCHEDULE-I**

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

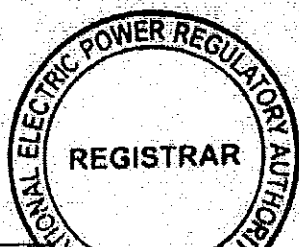
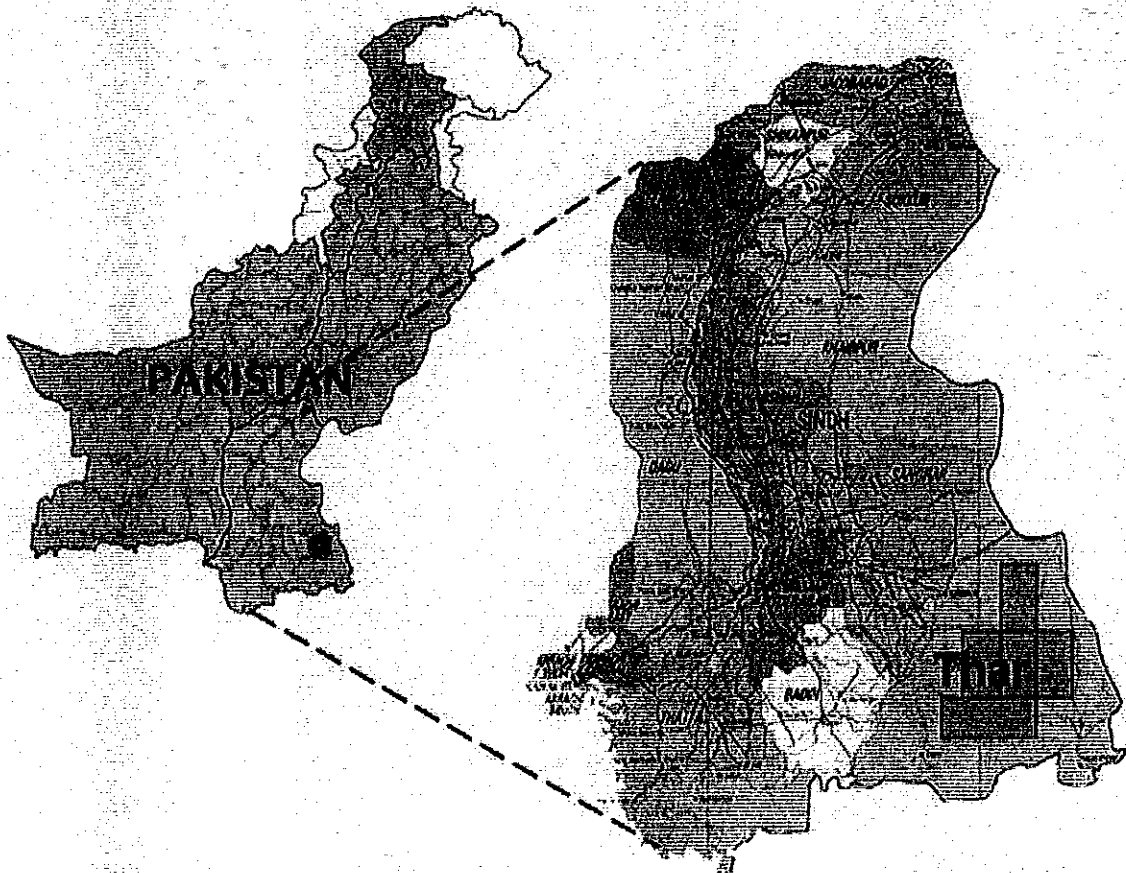


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Generation Licence  
Engro Powergen Thar (Pvt.) Limited  
5.0 KM from Thar Block II  
Thar Coalfields, District Tharparker,  
in the Province of Sindh

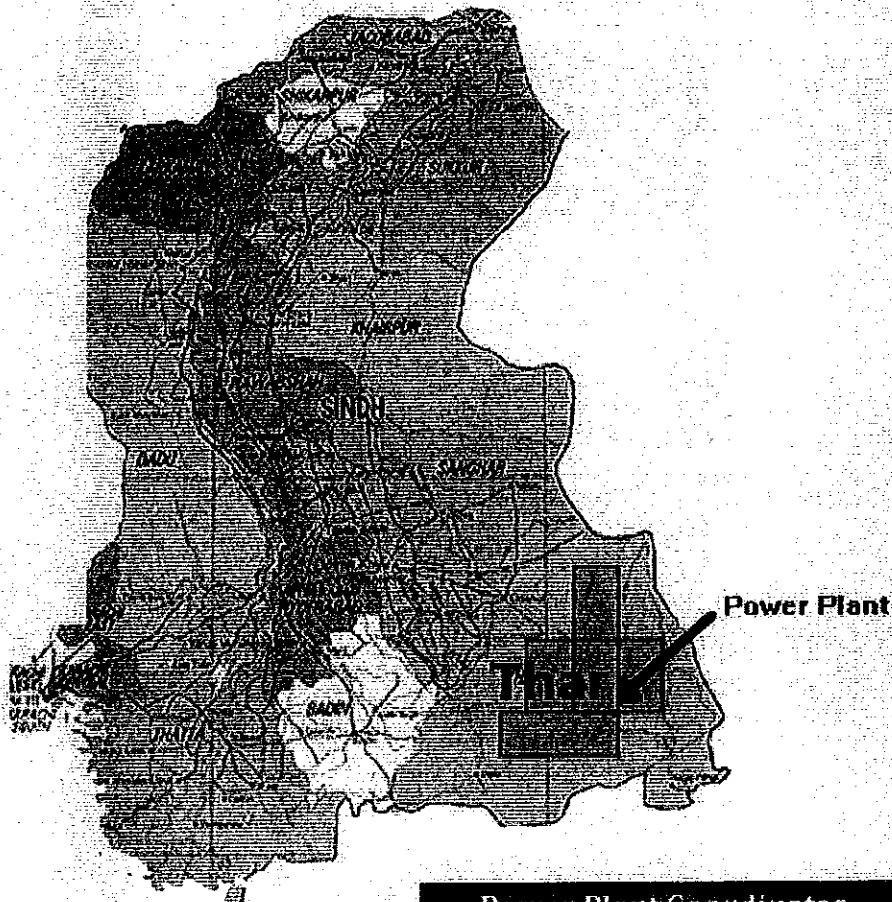
Location of the  
Generation Facility/Power Plant on the  
Map of Pakistan



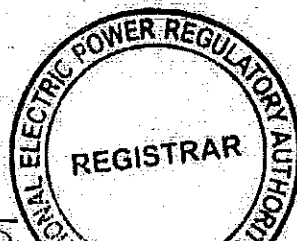
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Generation Licence  
Engro Powergen Thar (Pvt.) Limited  
5.0 KM from Thar Block II  
Thar Coalfields, District Tharparker,  
in the Province of Sindh

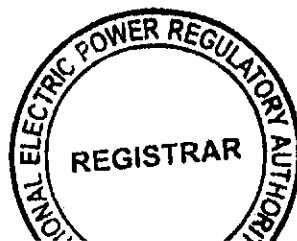
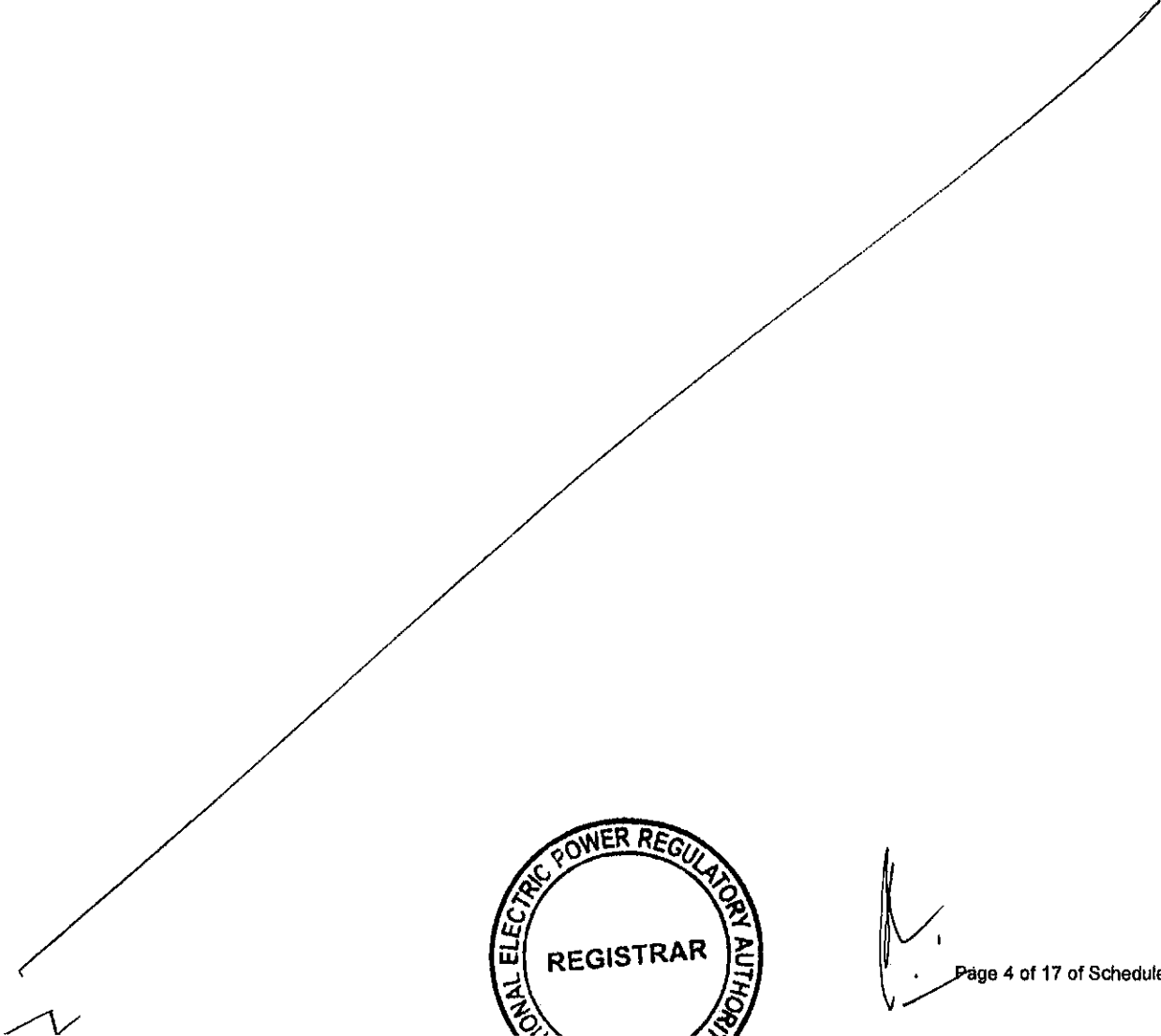
Location of the  
Generation Facility/Power Plant on the  
Map of Province of Sindh



| Power Plant Coordinates |             |            |
|-------------------------|-------------|------------|
|                         | N(m)        | E(m)       |
| A1                      | 2744696.803 | 640658.573 |
| A2                      | 2744778.831 | 640748.529 |
| A3                      | 2744859.338 | 640679.010 |
| A4                      | 2745361.721 | 641253.372 |
| A5                      | 2745066.300 | 641511.880 |
| A6                      | 2744480.890 | 640842.362 |



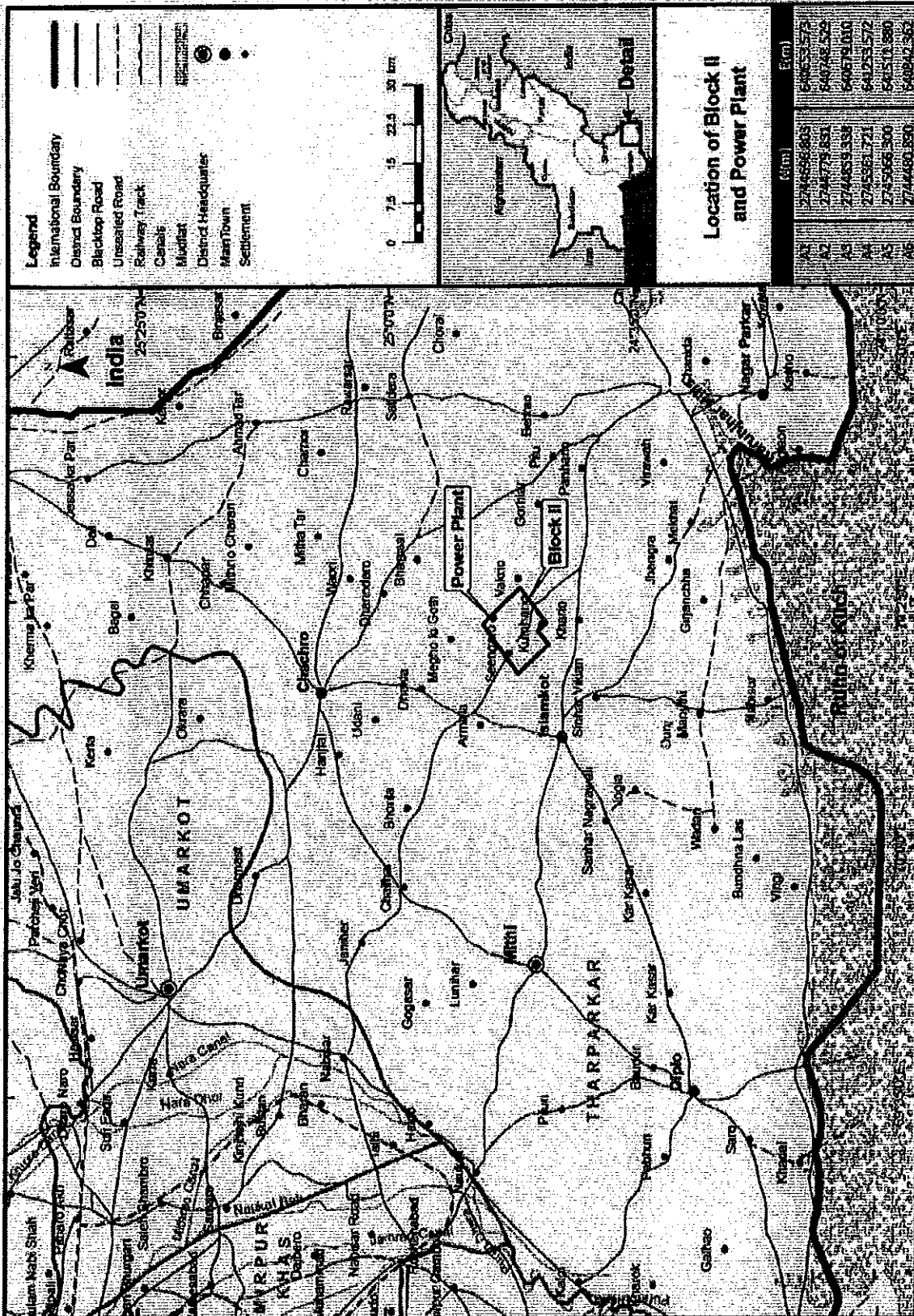
Location of the  
Generation Facility/Power Plant on the Map of District  
Tharparker of Province of Sindh

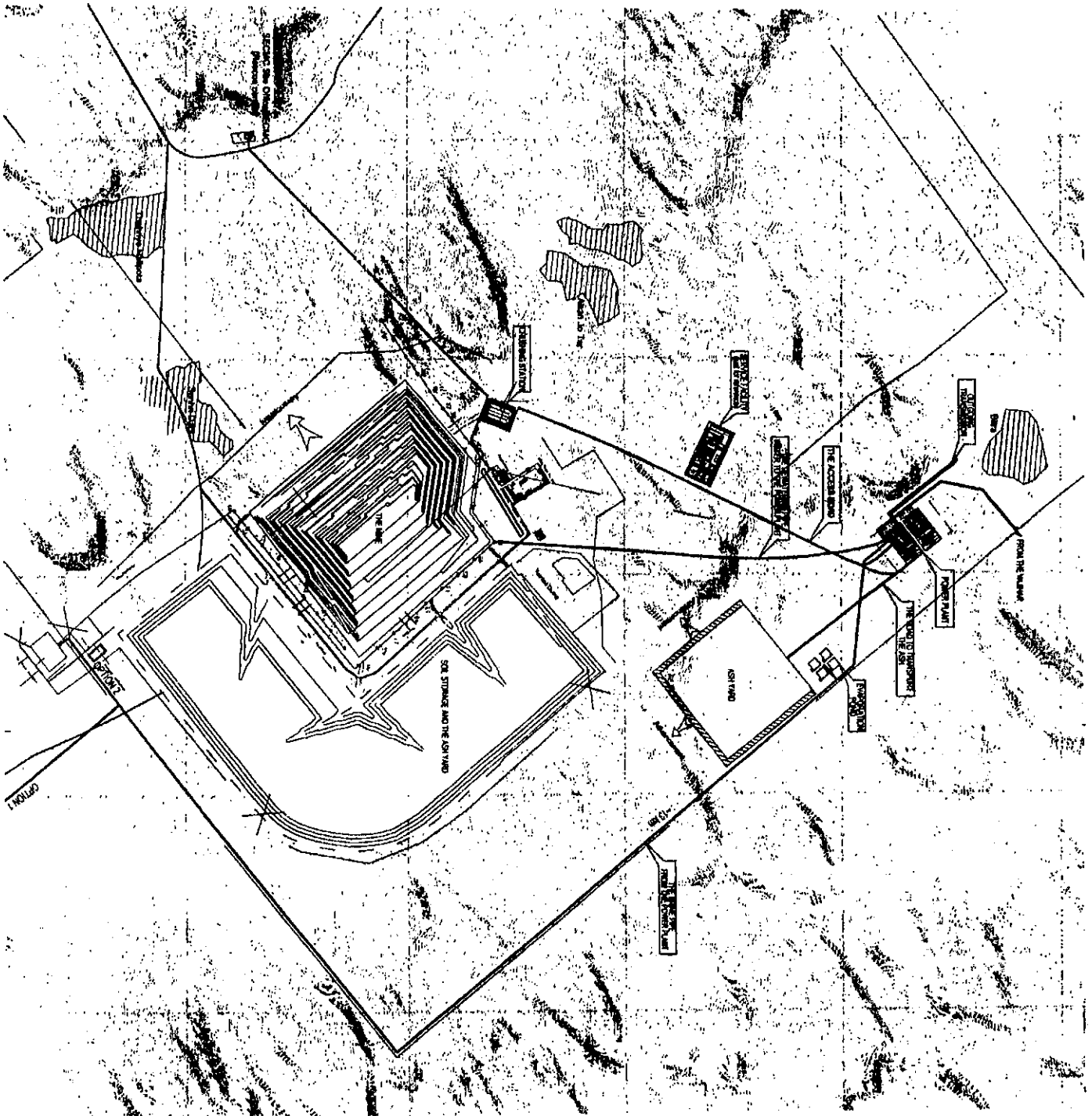


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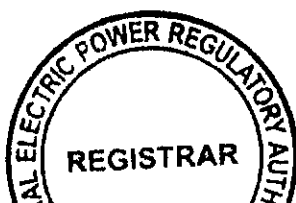
# Location of Block II and Power Plant







Generation Licence  
Engro Powergen Thar (Pvt.) Limited  
5.0 KM from Thar Block II  
Thar Coalfields, District Tharparkar,  
In the Province of Sindh





| LEGEND |                            |
|--------|----------------------------|
| FIGURE | NAME                       |
|        | BOUNDARY LINE              |
|        | NEW BUILDING AND STRUCTURE |
|        | NEW FACILITY               |
|        | NEW ROAD                   |
|        | NEW WALL OF THE PLANT      |
|        | NEW FENCE                  |

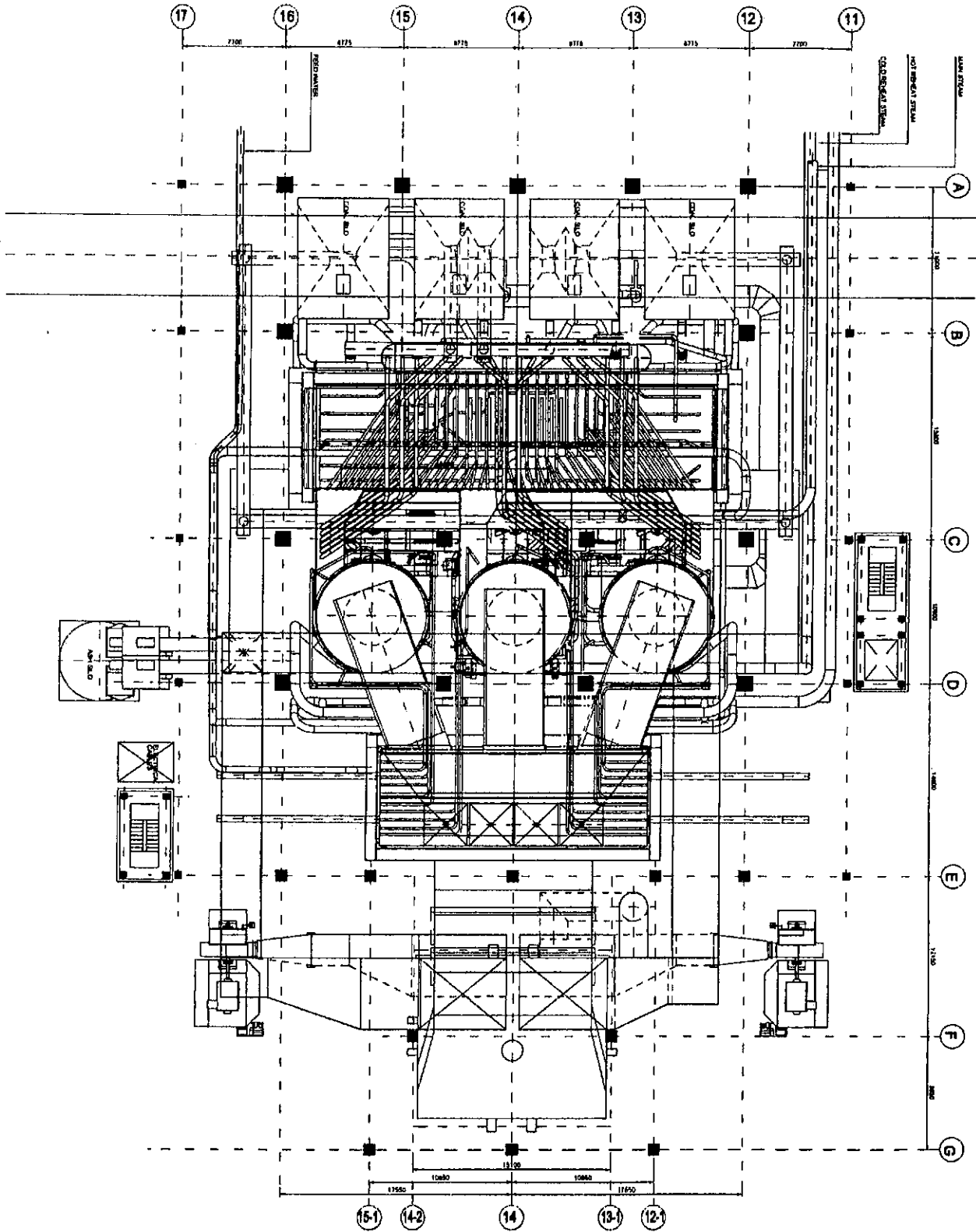


| LEGEND  |                                   |
|---|-----------------------------------|
| FIGURE  | NAME                              |
|  | ROCKWELL JAM                      |
|  | RAISING THE TELLING               |
|  | TRIO                              |
|  | TRILL OF THE BIRD                 |
|  | PISTOL                            |
|  | TRAIL OF THE BIRD AND THE TELLING |

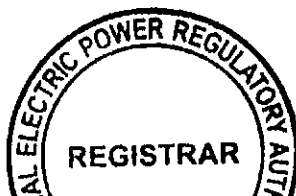
| Age Group | Percentage |
|-----------|------------|
| 18-24     | 10         |
| 25-34     | 20         |
| 35-44     | 30         |
| 45-54     | 25         |
| 55-64     | 15         |
| 65-74     | 10         |
| 75-84     | 5          |
| 85+       | 5          |

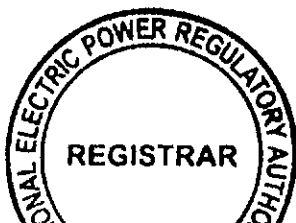
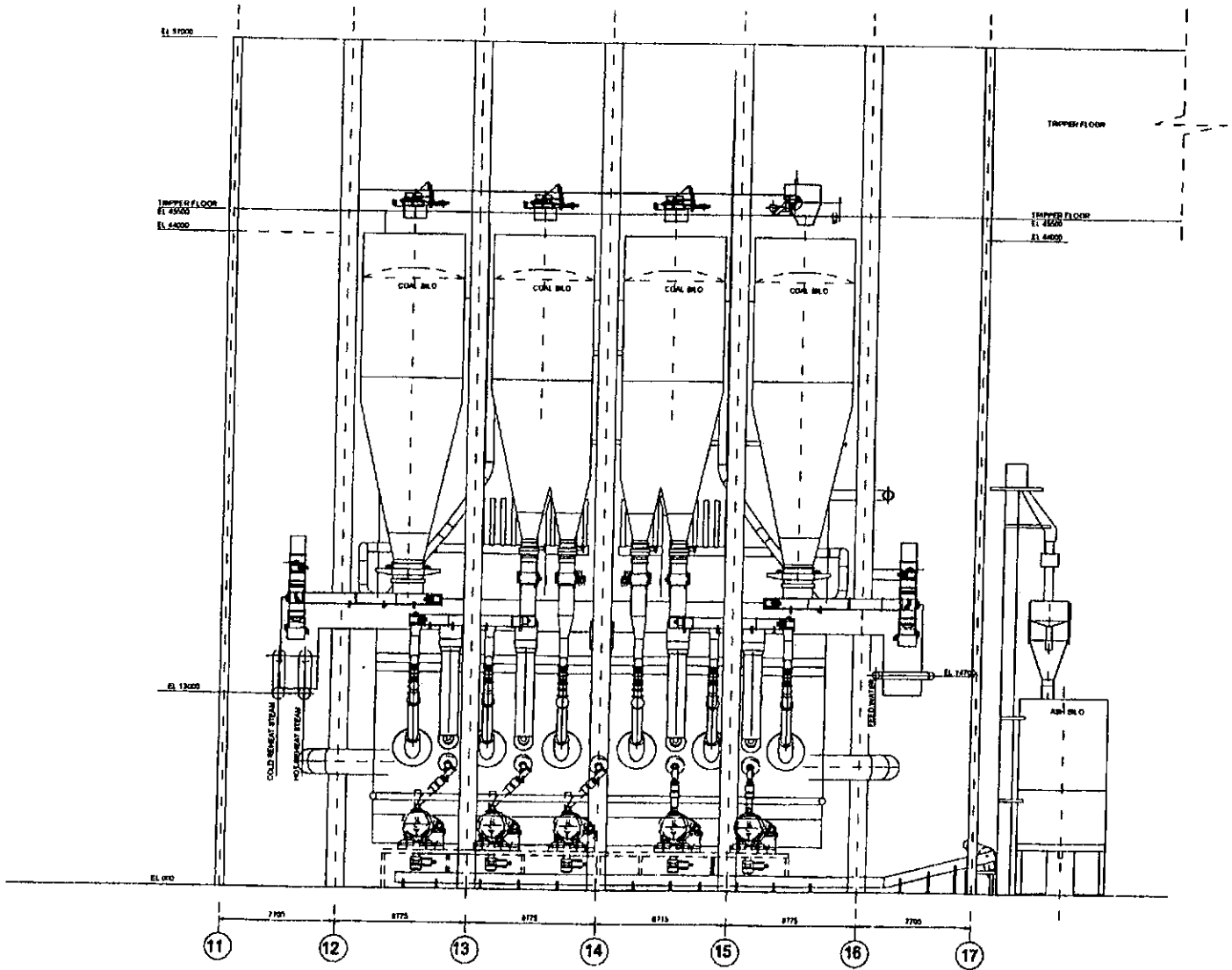
[illegible]

**ELECTRIC POWER REGULATORY AU**  
**REGISTRAR**

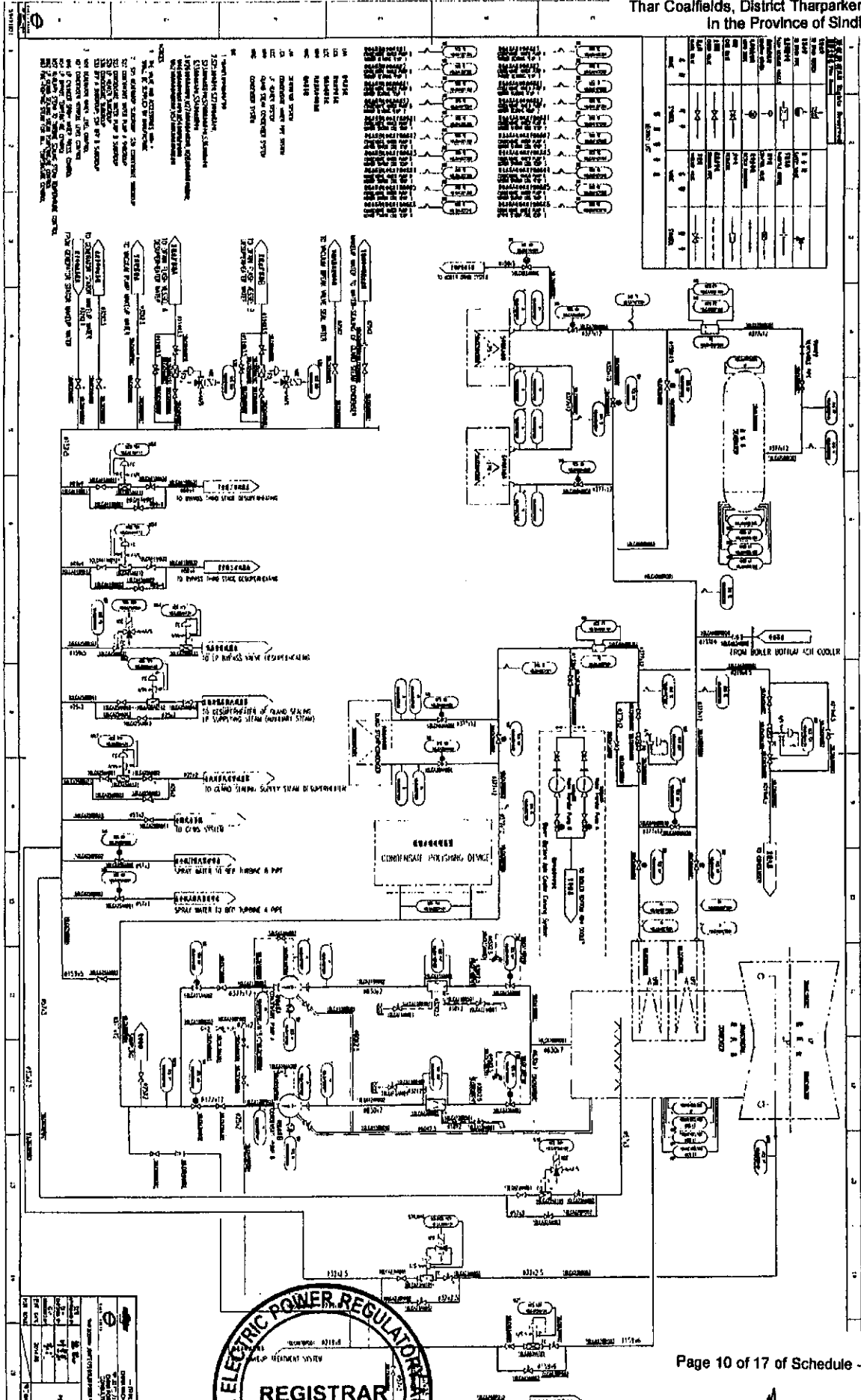


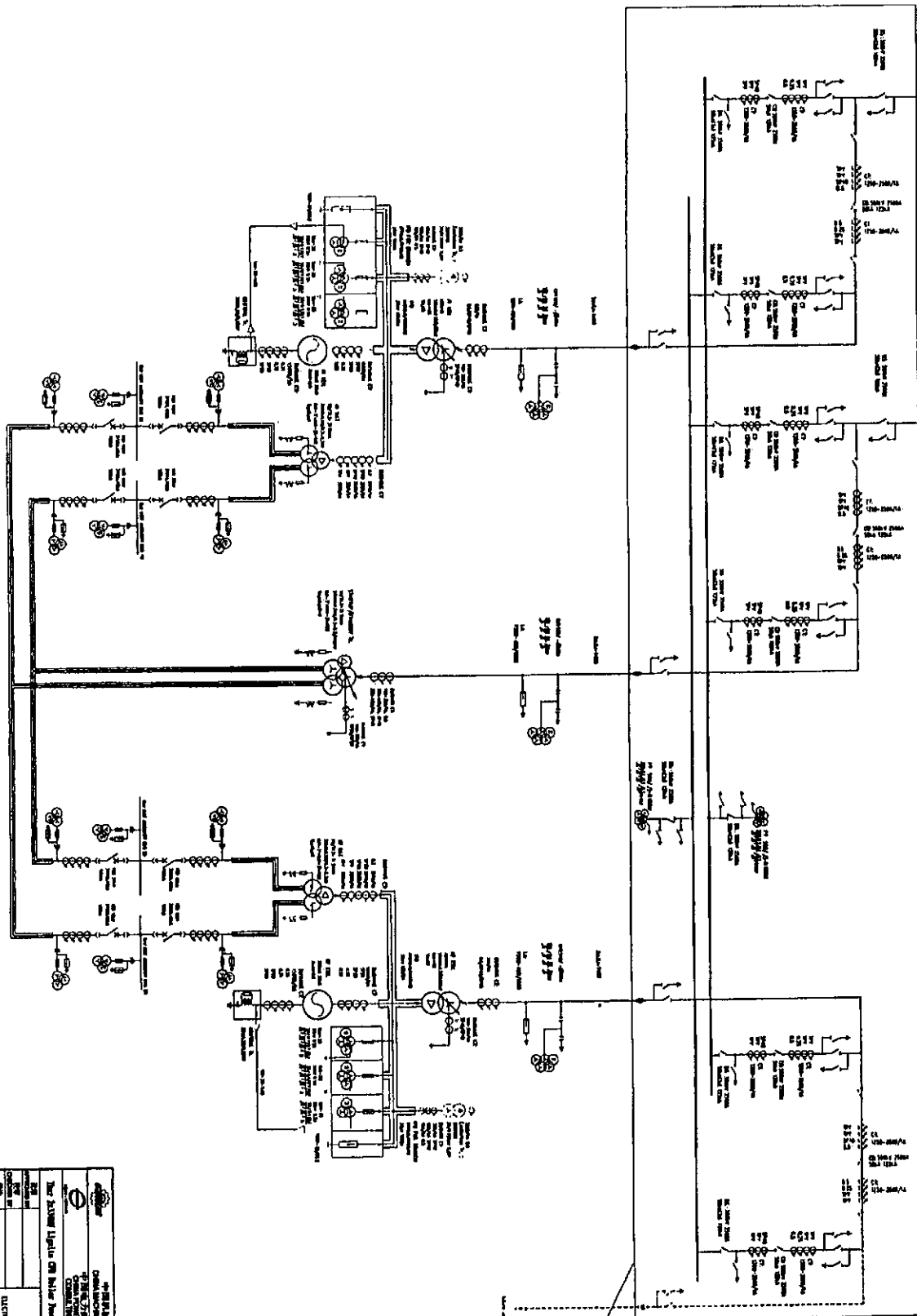
BOILER GENERAL ARRANGEMENT  
 PLAN VIEW











|   |                                 |
|---|---------------------------------|
|   |                                 |
| 中国机械设备工程股份有限公司<br>CHINA NATIONAL ENGINEERING CONSTRUCTION CORPORATION LIMITED<br>CHINA NATIONAL ENGINEERING CONSTRUCTION GROUP CO., LTD.<br>CHINA NATIONAL ENGINEERING CONSTRUCTION GROUP CO., LTD. |                                 |
| This drawing is for the use of the<br>Electrical Engineering Department<br>of the Thar Coalfields<br>Thar Coalfields<br>Thar Coalfields   | JUNE 2011<br>2011.03<br>2011.03 |
| ELECTRICAL GROUP (LNG POWER)<br>ELECTRICAL GROUP (LNG POWER)  | 2011.03<br>2011.03              |

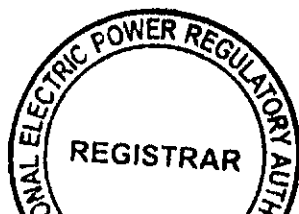


**Interconnection Facilities/  
Transmission Arrangements for Dispersal of Power from  
the Generation Facility**

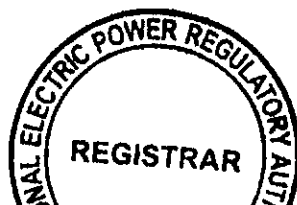
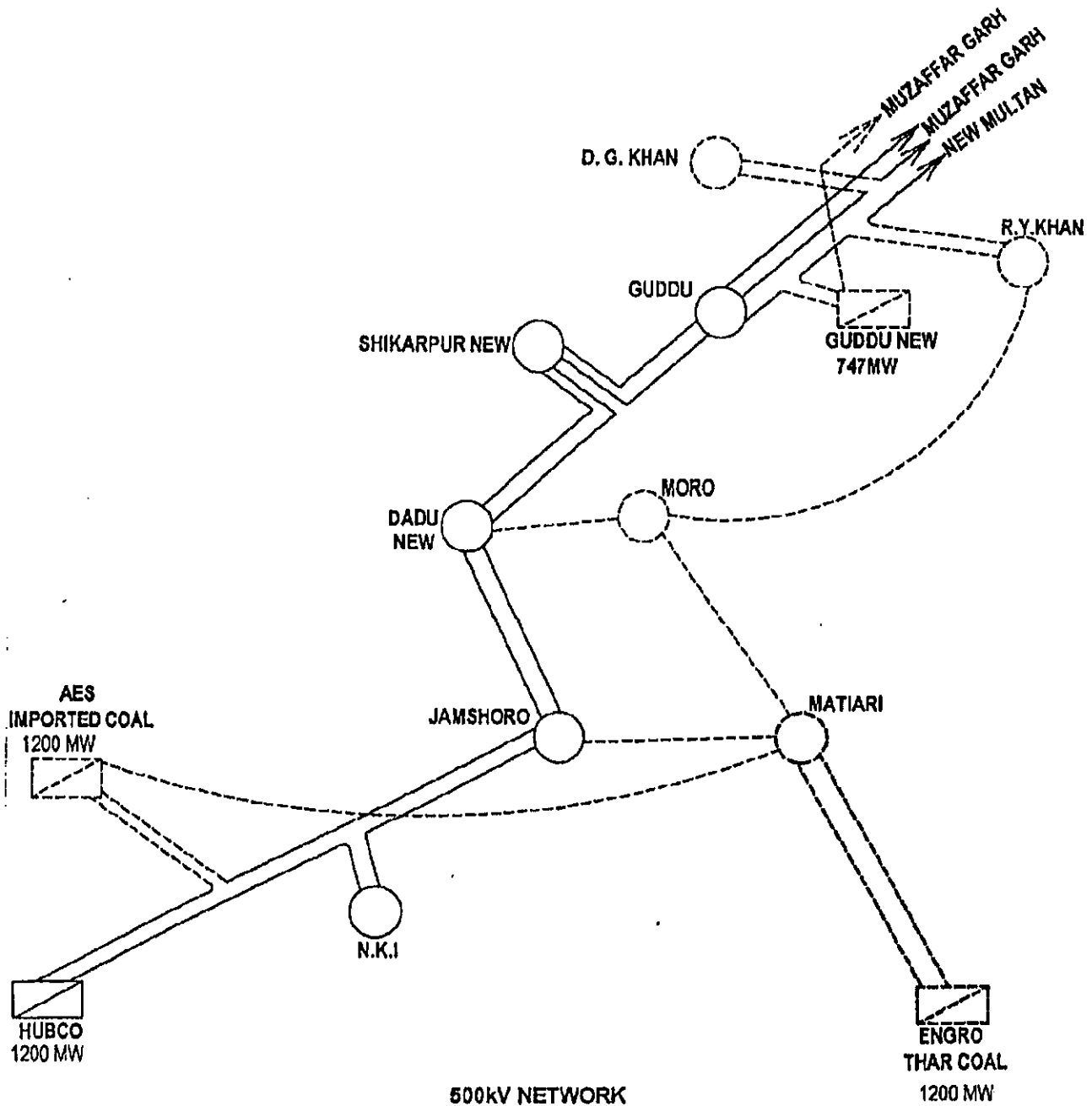
The electric power from the Coal based generation facility of Engro Powergen Thar (Pvt.) Limited (EPGTPL)/the Licensee will be will be dispersed to the National Grid.

(2). The Interconnection Facilities (IF)/Transmission Arrangements (TA) for supplying to National Grid from the above mentioned generation facility shall be at 500 kV level. The dispersal/interconnection arrangement for supplying to National Grid will be consisting of 500 KV Double Circuit Transmission Line measuring about 250 Kilometer connecting the generation facility with 500 KV Matiari Grid Station.

(3). Any change in the above mentioned IF/TA for dispersal of electric power as agreed by the Licensee and the Power Purchaser shall be communicated to the Authority in due course of time.



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## Detail of Generation Facility/ Power Plant

### (A). General Information

|        |                                |  |
|--------|--------------------------------|--|
| (i).   | Name of Company/<br>Licensee   | Engro Powergen Thar (Pvt.) Limited   |
| (ii).  | Registered<br>/Business Office | 4 <sup>th</sup> Floor, Harbor Front Building Marine Drive,<br>Block 4, Clifton Karachi,      |
| (iii). | Plant Location                 | 5.0 KM from Thar Block II, Thar Coalfields,<br>District Tharparker, in the Province of Sindh |
| (iv).  | Type of<br>Generation Facility | Mine Mouth Lignite fired power generation<br>facility  |

### (B). Plant Configuration

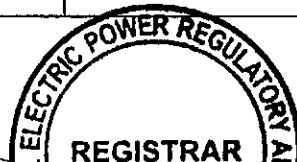
|        |  |   |  |
|--------|--|---|--|
| (i).   | Plant Size<br>Installed Capacity                         | 660.00 MW   |  |
| (ii).  | Type of<br>Technology                                    | Conventional Boiler (Subcritical parameters) and<br>Steam Turbine Thermal Generation Facility |  |
| (iii). | Number of<br>Units/Size (MW)                             | 2 x 330.00 MW   |  |
| (iv).  | Unit<br>Make/Model/Type<br>& Year of<br>Manufacture Etc. | Boiler  | Circulating Fluidized Bed<br>(CFB) Boiler , with subcritical<br>steam parameters   |
|        |  | Steam turbine   | N330-16.67/538/538<br>Sub Critical ,Two Cylinder,<br>Tandem compound , double<br>exhaust ,one reheat ,<br>condensing turbine |



|       |  |              |   |
|-------|--|--------------|---|
|       |  | Generator    | 330 MW, an inner-cooled generator with rotor and stator core cooled by hydrogen, and stator winding cooled by water, horizontal shaft, cylindrical rotor, 20 KV, 50Hz, 3-phase. |
| (v).  | COD of the Generation Facility (Expected)                | May 01, 2018 |   |
| (vi). | Expected Useful Life of the Generation Facility from COD | 30 years     |   |

(c). **Fuel/Raw Material Details**

|        |   |  |                                     |               |
|--------|---|--|-------------------------------------|---------------|
| (i).   | Primary Fuel  | Unit-1   | Unit-2                              |               |
|        |   | Lignite from Thar Block II   | Lignite from Thar Block II          |               |
| (ii).  | Alternative Fuel  | Unit-1   | Unit-2                              |               |
|        |   | Imported Indonesian Coal   | Imported Indonesian Coal            |               |
| (iii). | Start-Up Fuel   | Unit-1   | Unit-2                              |               |
|        |   | HSD  | HSD                                 |               |
| (iv).  | Fuel Source for each of the above (i.e. Imported/ Indigenous) | The main fuel source is indigenous, produced from Thar Block-II lignite mine, owned & operated by Sindh Engro Coal Mining Company Limited (SECMCL) |                                     |               |
| (v).   | Fuel Supplier for each of the above                           | Primary Fuel   | Alternative Fuel                    | Start-Up Fuel |
|        |   | SECMC / Thar Block II lignite mine   | Imported from Indonesian Coal mines | PSO           |
| (vi).  | Supply Arrangement for  | Primary Fuel   | Alternative Fuel                    | Start-Up Fuel |



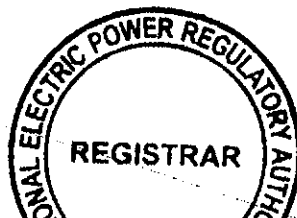
|         |   |   |   |                                      |
|---------|---|---|---|--------------------------------------|
|         | each of the above                                 | 3,800,000 Metric Tons per Annum via trucks from adjacent mine | Required capacity to be supplied via trucks from Karachi port | Approx. 175 m <sup>3</sup> per Annum |
| (vii).  | No of Storage Bunkers/Tanks/ Open Yard            | Primary Fuel  | Alternative Fuel  | Start-Up Fuel                        |
|         |   | Two Open stockyards (One at Power Plant , One near mine)      | Power Plant stockyard will be used                            | Two oil tanks                        |
| (viii). | Storage Capacity of each Bunkers/Tanks/ Open Yard | Primary Fuel  | Alternative Fuel  | Start-Up Fuel                        |
|         |   | Approx. 180,000 Tons  | Approx. 180,000 Tons  | 500 m <sup>3</sup>                   |
| (ix).   | Gross Storage                                     | Primary Fuel  | Alternative Fuel  | Start-Up Fuel                        |
|         |   | Approx. 360,000 Tons  | Approx. 360,000 Tons  | 1000m <sup>3</sup>                   |

(D). **Emission Values**

|        |                                       | Primary Fuel   | Alternative Fuel | Start-Up Fuel |
|--------|---------------------------------------|--|------------------|---------------|
| (i).   | SO <sub>x</sub> (mg/Nm <sup>3</sup> ) | <850   | <850             | <850          |
| (ii).  | NO <sub>x</sub> (mg/Nm <sup>3</sup> ) | <510   | <510             | <510          |
| (iii). | CO <sub>2</sub> %                     | CO <sub>2</sub> + O <sub>2</sub> :<br>18.77 % (volume basis of flue gas) | N/A              | -             |

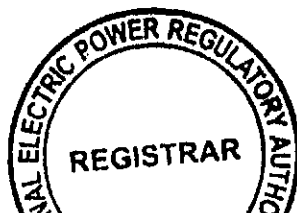
(E). **Cooling System**

|      |                            |   |
|------|----------------------------|---|
| (i). | Cooling Water Source/Cycle | Left Bank Outfall Drainage-LBOD Water under Scheme of GoS as primary source and well water from mine (backup source)/Cycle:- Close Cycle cooling system |
|------|----------------------------|---|



(F). **Plant Characteristics**

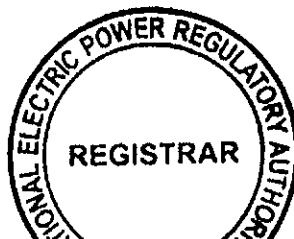
|        |   |  |
|--------|---|--|
| (i).   | Generation Voltage  | 20 KV (Transmission Voltage 500 kV)  |
| (ii).  | Frequency   | 50Hz   |
| (iii). | Power Factor  | 0.8 (lagging) /0.95(leading)   |
| (iv).  | Automatic Generation Control (AGC) (MW control is the general practice) | Yes  |
| (v).   | Ramping Rate (MW/min)   | 0.5~1% rated load (1.65~3.3MW/Minute). This figure is indicative and will be confirmed after engineering design of the plant.                                      |
| (vi).  | Time required to Synchronize to Grid (Hrs.)                             | 8 hours for cold start (this time is considering steam turbine cold start). This figure is indicative and will be confirmed after engineering design of the plant. |





## **SCHEDULE-II**

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



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## **SCHEDULE-II**

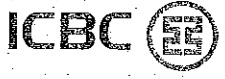
|      |   |           |
|------|---|-----------|
| (1). | Total Gross Installed Capacity of the Generation Facility                       | 660.00 MW |
| (2). | De-rated Capacity of Generation Facility at Reference Site Conditions           | 660.00 MW |
| (3). | Auxiliary Consumption of the Generation Facility                                | 059.40 MW |
| (4). | Total Installed Net Capacity of Generation Facility at Reference Site Condition | 600.60 MW |

### **Note**

All the above figures are indicative as provided by the Licensee. The Net Capacity available to Power Purchaser for dispatch will be determined through procedure(s) contained in the Power Purchase Agreement or any other applicable document(s).



Account Payee Only



ICBC Karachi Branch (0100)

P.O. No. C0000015376

Stationery/Ref No: 00013481

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY  
Pay to: A/C ENCRD POWERGEN THAR PVT LTD NTN 4333019-3 or Order

Rupees EIGHT HUNDRED THIRTY SIX THOUSAND FIVE HUNDRED TWENTY ONLY

2 8 0 4 1 9

PKR 836,520.00

PAYABLE AT ANY BRANCH IN PAKISTAN

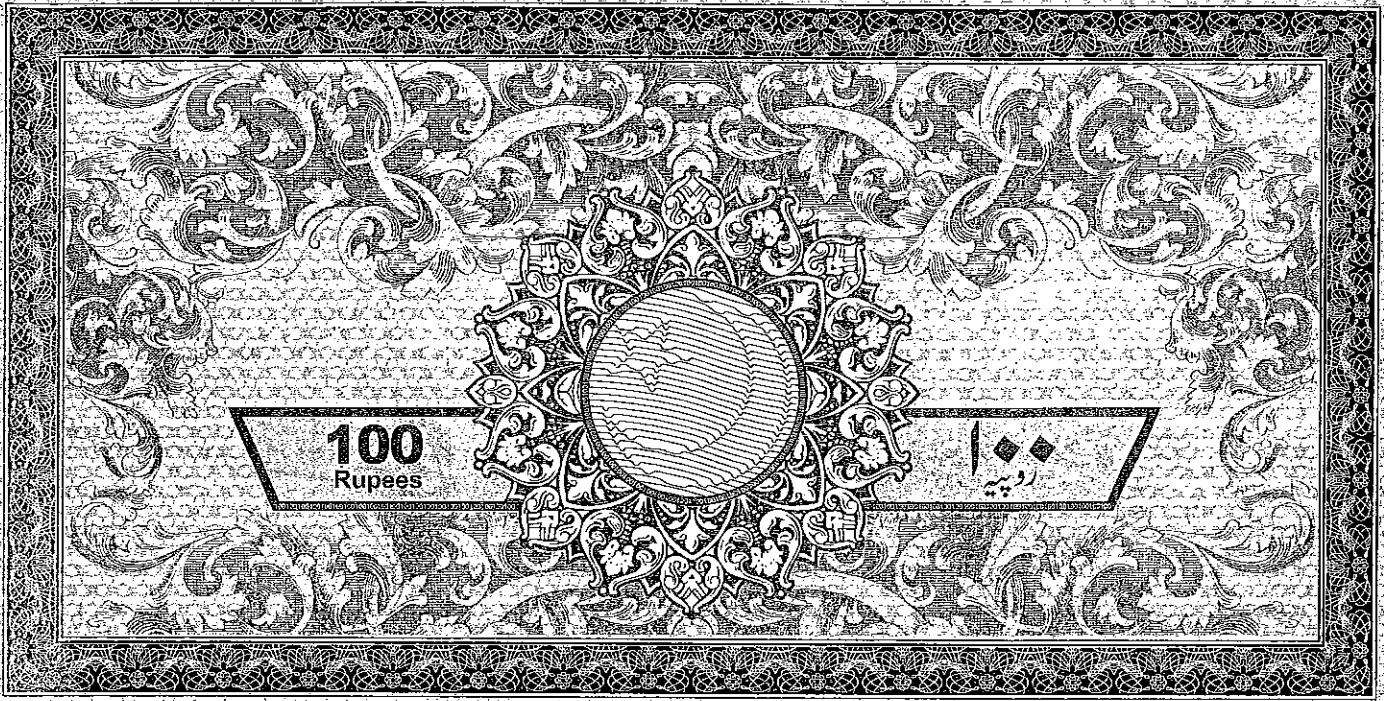
Please do not write below this line.

Signature  
PA/Attorney No

Signature  
PA/Attorney No

0001348108801001

020



MUHAMMAD SAUD STAMP VENDOR  
License No 119, H.No. 17/28-477 Juna Garh  
Baldia Town  
Karachi West

17 4 MAR 2019

(RUPEES ONE HUNDRED ONLY)

ISSUED TO WITH ATTACHED  
THROUGH WITH SERIAL  
PURPOSE  
VALUE RS  
STAMP VENDOR'S SIGNATURE  
(Not Use For Free Will & Divorced)  
Vendor Not Responsible For Fake Documents

Muhammad Waris Khan Ajmeri Advocate

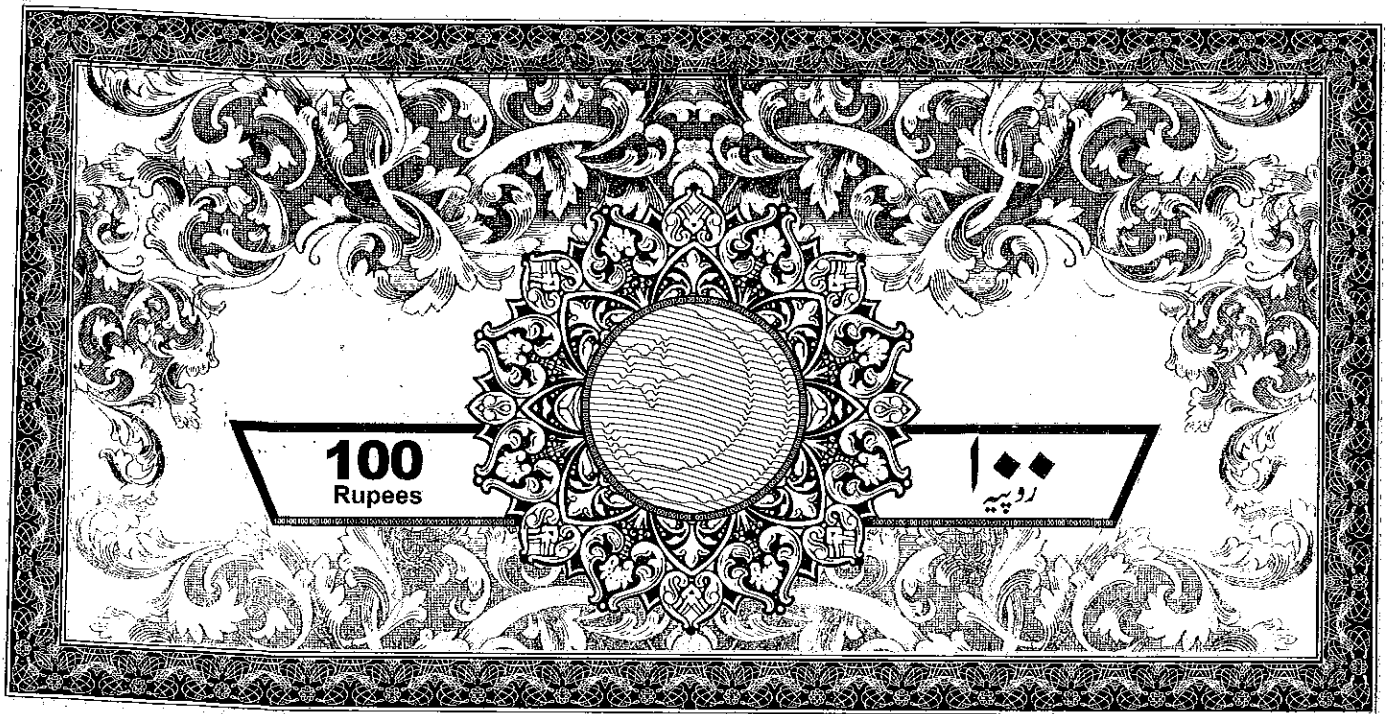
(No) 15113, High Court Karachi.

**AFFIDAVIT**

I, Ahsan Zafar Syed, CHIEF EXECUTIVE OFFICER of Engro Powergen Thar (Pvt.) Limited, having its registered office located at 16<sup>th</sup> Floor, The Harbour Front Building, HC-3, Marine Drive, Block 4, Clifton, Karachi (hereinafter referred to as the "Company"), do hereby solemnly affirm and declare on oath as under:

1. That I am a duly authorized Chief Executive Officer of the Company and I am well conversant with the affairs of the Company.
2. That I confirm, record, assure and declare to you that the contents of the accompanying Application for modification of Generation License No. IGSPL/ 49/2015 for 660.00 MW indigenous coal based thermal generation facility located at 5.0 KM from Thar Block-II of Thar Coalfields, District Tharparker, Sindh, including all supporting documents are true and correct to the best of my knowledge and belief, and nothing material or relevant thereto has been concealed or withheld therefrom.

*Syed*



**MUHAMMAD SAJJID STAMP VENDOR**  
 License No 119, H.No. 17/28-477 Juna Garh  
 Baldia Town  
 Karachi West

14 MAR 2019

(RUPEES ONE HUNDRED ONLY)

ISSUED TO WITH ASSIGNED VALUE  
 THROUGH WITH ADDRESS  
 PURPOSE  
 VALUE RS.  
 STAMP VENDOR'S SIGNATURE  
 (Not Use For Free Will & Divorced  
 Vendor Not Responsible For Fake Documents)

Muhammad Haris Khan Ajmani Advocate

L No 15113, High Court Karachi

AFFIDAVIT

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*(Signature)*