

# National Electric Power Regulatory Authority

## Registrar Office

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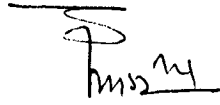
No. NEPRA/R/DL/LAG-275/1894

February 13, 2015

Subject: **Generation Licence No. SGC/109/2015**  
**Licence Application No. LAG-275**  
**Mirpurkhas Sugar Mills Limited (MIRKSML)**

Enclosed please find herewith Determination of the Authority in the matter of Generation Licence Application of MIRKSML along with Generation Licence No. SGC/109/2015 annexed to this determination granted by the National Electric Power Regulatory Authority to MIRKSML for its 8.50 MW Baggase based Generation Facility located at Umerkot Road, Taluka Hussain Bux Mari, District Mirpurkhas, Sindh, pursuant to Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997), for information, please.

Enclosure: As above

  
(Syed Safeer Hussain) 13.02.15  
Registrar

Director (Licensing)  
Mr. Zainuallah Khatak (for updating the database)  
Mr. Rizwan Piracha (to retain the original licence)  
Master File [w.r.t. ATC/CM # 767 dated 12.02.2015]

### Information:

1. Chairman
2. V. Chairman / Member (Licensing)
3. Member (Tariff)
4. Member (Consumer Affairs)
5. Member (M & E)

### Distribution:

6. Senior Advisor (Tariff)-I
7. Senior Advisor (Technical)
8. Director (Finance)
9. Director (Media)
10. Deputy Director (IT)

(Please place it on the NEPRA Website)



# National Electric Power Regulatory Authority

## Islamic Republic of Pakistan

**Registrar**

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

No. NEPRA/R/DL/LAG-275/1888-93

February 13, 2015

Syed Muhammad Ali Khan  
Group Director Operations  
Mirpurkhas Sugar Mills Limited  
Modern Motors House, Beaumont Road,  
Karachi-75530

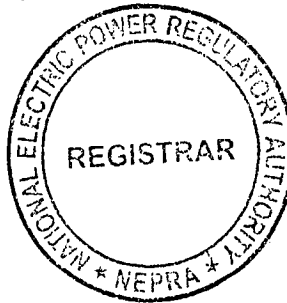
**Subject: Generation Licence No. SGC/109/2015  
Licence Application No. LAG-275  
Mirpurkhas Sugar Mills Limited (MIRKSML)**

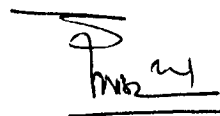
**Reference: Your letter No. nil, dated August 06, 2014.**

Enclosed please find herewith Determination of the Authority in the matter of Generation Licence Application of MIRKSML along with Generation Licence No. SGC/109/2015 annexed to this determination granted by the National Electric Power Regulatory Authority to MIRKSML for its 8.50 MW Baggase based Generation Facility located at Umerkot Road, Taluka Hussain Bux Mari, District Mirpurkhas, 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  
(SGC/109/2015)**



  
13.02.15  
(Syed Safeer Hussain)

Copy to:

1. Chief Executive Officer, Alternative Energy Development Board, 2<sup>nd</sup> Floor, OPF Building, G-5/2, 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 (HESCO), WAPDA Water Wing Complex, Hussainabad, Hyderabad
5. Director General, Sindh Environmental Protection Agency, Plot No. ST 2/1, Sector 23, Korangi Industrial Area, Karachi

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

**Determination of the Authority**  
**in the Matter of Application of Mirpurkhas Sugar Mills Limited**  
**for the Grant of Generation Licence**

**February 11, 2015**  
**Case No. LAG-275**

**(A). Background**

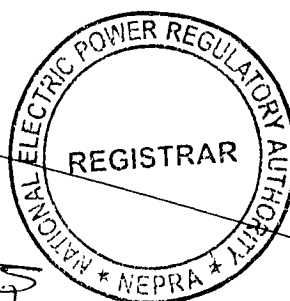
(i). Mirpurkhas Sugar Mills Limited (MIRKSML) informed that it is Maintaining and Operating an 8.25 MW Captive Power Plant (CPP), as part of its sugar mill operating on Bagasse, located near the city of Mirpurkhas, District Mirpurkhas, in the Province of Sindh.

(ii). MIRKSML offered Host DISCO of its Area for supplying surplus electric power from its CPP. According to the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the NEPRA Act), MIRKSML is required having Generation Licence.

**(B). Filing of Application & Admission**

(i). MIRKSML in accordance with Section-15 of the NEPRA Act, filed an application on August 08, 2014 requesting for the grant of a Generation Licence. During the preliminary scrutiny of the application, it was found that the submitted application was deficient in terms of NEPRA Licensing (Application & Modification Procedure) Regulations, 1999 (the Regulations).

(ii). Accordingly, MIRKSML was directed for submitting the missing information/documents as stipulated in the Regulations. MIRKSML, finally completed the submission of the required documentation/information through its correspondence of September 12, 2014.



(iii). After the completion of the required information, the Authority admitted the application for the consideration of the grant of Generation Licence on October 16, 2014 in terms of Regulation-7 of the Regulations. Pursuant to Regulation-8 of the Regulations, a Notice of Admission (NoA) consisting of the brief of the Prospectus and other salient features of the application was published in daily newspapers of October 22, 2014, seeking comments from interested/affected parties and general public.

(iv). Apart from the NoA in the press, separate notices were also sent to experts, Government Ministries and Representative Organizations etc. through letters dated October 22, 2014 inviting their views and comments in the matter.

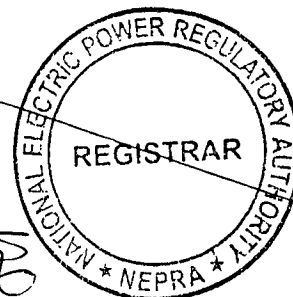
**(C). Comments of Stakeholders**

(i). In reply to the above, the Authority received comments from six (06) stakeholders. These included Hyderabad Electric Supply Company Limited (HESCO), Central Power Purchasing Agency (CPPA) of National Transmission and Despatch Company Limited (NTDC), Alternative Energy Development Board (AEDB), Ministry of Petroleum and Natural Resources (MoP&NR), Energy Department Govt. of Sindh (EDGoS) and Ministry of Water and Power (MoW&P).

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

(a). HESCO submitted that MIRKSML has offered it sale of surplus power to the tune of 7.00 MW. The offered power would be dispersed through 11 KV Feeder(s). MIRKSML has assured supplying power using Bagasse as fuel on seasonal basis. HESCO has no reservation to the grant of Generation Licence to MIRKSML;

(b). CPPA remarked that as HESCO will be the power purchaser, it has no comments to offer in the matter;

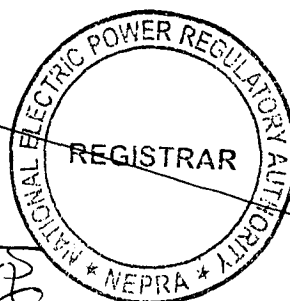


- (c). AEDB stated that MIRKSML has not acquired Letter of Intent (LoI) from it. Therefore, MIRKSML may be asked to approach AEDB for issuance of LoI as per Policy for Development of Renewable Energy for Power Generation 2006 (the RE Policy) and framework for Power Co-generation 2013;
- (d). MoP&NR remarked that MIRKSML intends to install Bagasse Fired Thermal Power Station and, as such, no gas is required for utilization in this Project. Therefore, this Ministry has no objections/comments for the grant of Generation Licence to MIRKSML;
- (e). EDGoS supported the grant of Generation Licence to MIRKSML;
- (f). MoW&P commented that the Authority may process the application of MIRKSML as per provisions of the NEPRA Act, relevant rules and regulations.

(iii). The Authority examined the above comments of the stakeholders and found same in favor of the grant of Generation Licence except the observations of AEDB that MIRKSML should have LoI from it. In view of the said, the Authority decided seeking perspective of MIRKSML directing it for submitting suitable rejoinder in this regard.

(iv). In reply to the above, MIRKSML submitted that the requirement for LoI is for new projects. MIRKSML clarified that its current case pertains to a request for the grant of Generation Licence for its existing CPP. There is no such requirement to have LoI for such CPP.

(v). In view of the supportive comments of the stakeholders and the above clarification of MIRKSML, the Authority considered it appropriate to proceed further in the matter for the grant of Generation Licence to MIRKSML in



terms of the Regulations and NEPRA Licensing (Generation) Rules, 2000 (the Rules), for the consideration of Generation Licence.

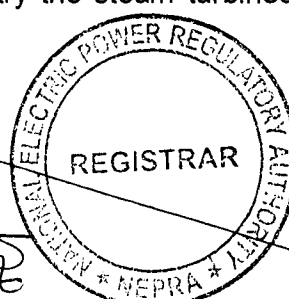
**(D). Grant of Generation Licence**

(i). The Authority considers that availability of sufficient electricity at affordable prices with a reasonable mix of Hydel, Thermal and other Renewable Energy (RE) is imperative for the sustainable economic development of the country. The country is currently facing severe shortage of electricity thus hampering the economic activities.

(ii). The Authority is well aware of the fact that installation of new power plants requires a considerable lead time. Therefore, the Authority considers it appropriate that in the short term period, the dormant capacity available with various Industrial Units (including Textile, Chemical and Sugar Mills) is brought into the National Grid. In the present case, MIRKSML has offered to sell upto 03.00 MW Bagasse based surplus electric power from its CPP to HESCO.

(iii). The Authority considers the above offer of MIRKSML reasonable as significant amount of low cost RE will be available to HESCO in the shortest possible time during the period of low hydel generation. Further, being located close to the cities of Mirpurkhas, Tando Adam and Shahdadpur and its surrounding areas, the proposed arrangement will also help HESCO in mitigating the shortfall of electricity, enabling it supplying electric power to its consumers.

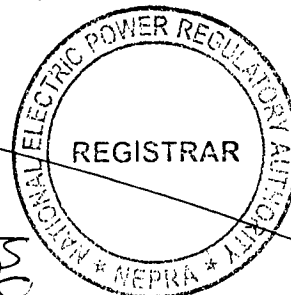
(iv). According to Rule-5(1) of the Rules, except where an applicant for a Generation Licence consents to a shorter term, the term of a Generation Licence shall commensurate with the maximum expected useful life of the units comprised in a generation facility. The Generation Facility of MIRKSML consists of four (04) Steam Turbines. The latest unit of the said Generation Facility of MIRKSML was commissioned in 1998. MIRKSML estimated the useful life of this unit to be fifty three (53) years from its operation. In this regard, it is clarified that the normal operating life of a Steam Turbine is taken as 30-35 years based on round the year operation. However, in sugar industry the steam turbines are operated upto a



maximum of 4-5 months in a year during the crushing season. In view of the said, the Authority considers that a Steam Turbine installed in a sugar industry may have a useful life of more than fifty (50) years, if maintained properly. However, MIRKSML has consented to a shorter term of thirty (30) Years. Therefore, the Authority sets the term of the Generation Licence to thirty (30) years from the date of its issuance.

(v). Regarding the Tariff, it is hereby clarified that under Section-7(3)(a) of the NEPRA Act, the determining of tariff, rate and charges etc. is the sole responsibility of the Authority. In terms of Section-31 of the NEPRA Act read with relevant provisions of the NEPRA (Tariff Standards and Procedure) Rules, 1998, a Generation Company may file a Tariff petition for determination of its Generation Tariff. Further, in terms of Section-32 of the NEPRA Act read with relevant provisions of the NEPRA Interim Power Procurement (Procedures and Standards) Regulations, 2005, a Generation Company may approach a Transmission or Distribution company for filing a Power Acquisition Request (PAR) and for negotiating a Power Acquisition Contract (PAC). In this particular case, MIRKSML has confirmed that after the grant of Generation Licence it will be approaching HESCO for filing a PAR with the Authority. Further, a PAC will be negotiated with and filed with the Authority for its approval. In view of the said, the Authority directs MIRKSML to approach HESCO for filing a PAR. The Authority directs MIRKSML to charge only such tariff from the Power Purchaser which has been determined, approved or specified by the Authority as stipulated in Rule-6 of the Rules.

(vi). The Generation Facility of MIRKSML for which Licence has been sought, is a Conventional Steam Turbine Power Plant mainly using Bagasse as fuel to be burned in low pressure boiler. Bagasse is a RE source which is considered as clean fuel. However, the operation of the CPP and the sugar mill may cause some other type of pollutions including Soil Pollution, Water Pollution and Noise Pollutions etc. The Authority has considered these aspects and has made MIRKSML obligatory to comply with the required rules and regulation on environment. Further, the Authority instructs MIRKSML for submitting the

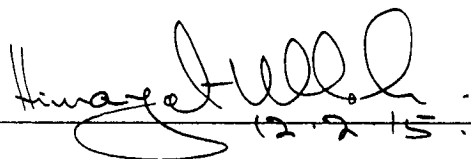


required No Objection Certificate from Environmental Protection Agency of Govt. of Sindh (EPA, Sindh) in due course of time. In this Regard, the Authority directs MIRKSML for submitting the proof of filing of the Initial Environmental Examination-IEE or Environmental Impact Assessment-EIA with EPA, Sindh within thirty (30) days of issuance of this Determination. Further, the Authority directs MIRKSML to submit a quarterly report confirming that the operation of its CPP is compliant with required Environmental Standards of the EPA, Sindh.

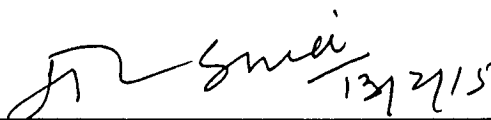
(vii). In view of the above, the Authority hereby decides to approve the grant of Generation Licence to MIRKSML on the terms and conditions set out in the Generation Licence annexed to this determination. The grant of Generation Licence will be subject to the provisions contained in the NEPRA Act, relevant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

**Authority**

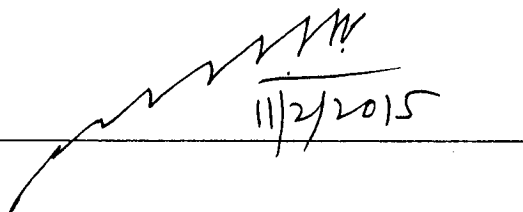
Himayat Ullah Khan  
Member

  
12.2.15

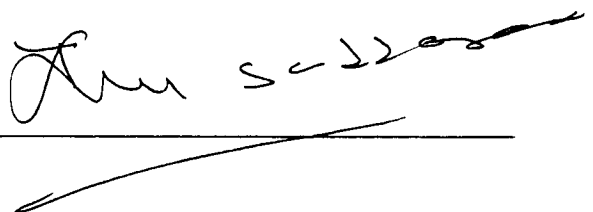
Maj. (R) Haroon Rashid  
Member

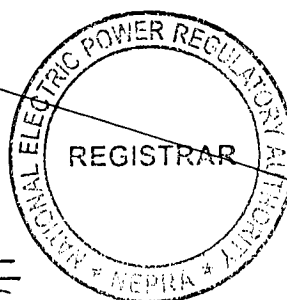
  
13/2/15


Habibullah Khilji  
Member/Vice Chairman

  
11/2/2015

Brig. (R) Tariq Saddozai  
Chairman





  
13.02.15



**National Electric Power Regulatory Authority  
(NEPRA)  
Islamabad – Pakistan**

**GENERATION LICENCE**

**No. SGC/109/2015**

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:

**MIRPURKHAS SUGAR MILLS LIMITED**

Incorporated under the Companies Act 1913  
Certificate of Incorporation No. KAR. No. 1617 of 1963-1964  
dated May 27, 1964

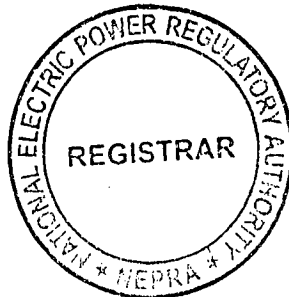
for its Bagasse Based Generation Facility Located at Umerkot Road, Taluka  
Hussain Bux Mari, District Mirpurkhas  
in the Province of Sindh

(Installed Capacity: 8.50 MW Gross Total)

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

Given under my hand this 13<sup>th</sup> day of February Two Thousand & Fifteen and expires on 12<sup>th</sup> day of February Two Thousand & Forty Five.

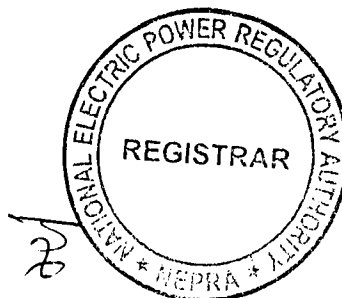
  
\_\_\_\_\_  
Registrar



**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). "Carbon Credits" mean the amount of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases not produced as a result of generation of electric power by the generation facility of the Licensee and other environmental air quality credits and related emissions reduction credits or benefits (economic or otherwise) related to the generation of electric power by the generation facility, which are available or can be obtained in relation to the generation facility;
- (e). "CPPA" means "the Central Power Purchasing Agency of NTDC" or any other entity created for the like purpose;
- (f). "Energy Purchase Agreement" means the energy purchase agreement 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;

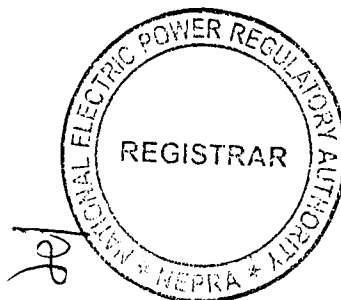


- (g). "HESCO" means "Hyderabad Electric Supply Company Limited and its successors or permitted assigns;
- (h). "Licensee" means Mirpurkhas Sugar Mills Limited and its successors or permitted assigns;
- (i). "NTDC" means "the National Transmission and Despatch Company Limited and its successors or permitted assigns";
- (j). "Policy" means "the Policy for Development of Renewable Energy for Power Generation, 2006 of Government of Pakistan" as amended from time to time;
- (k). "Power Purchaser" means NTDC (through CPPA) on behalf of XW-DISCOs or any XW-DISCO which purchases electricity from the Licensee, pursuant to an Energy Purchase Agreement for procurement of electricity;
- (l). "Rules" mean the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000; and
- (m). "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 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.

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

4.1 This Licence is granted for a term of thirty (30) years from the date of its issuance.

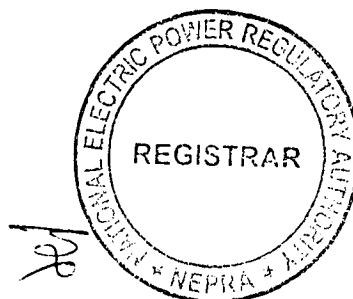
4.2 Unless suspended or revoked earlier, the Licensee may apply for renewal of this Licence under the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 (as amended or replaced from time to time), within ninety days (90) days prior to the expiry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

**Article-5**  
**Annual Licence Fee**

After the grant of the Generation Licence, the Licensee shall pay to the Authority annual licence fee, in the amount, 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**

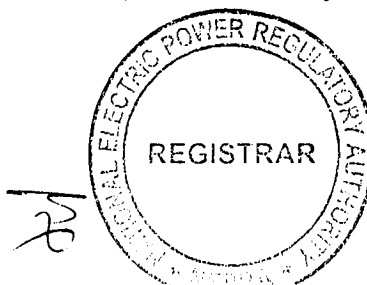
For the purpose of sub-rule (1) of Rule-19 of the Rules, copies of records and data shall be retained in standard and electronic form and all such records and data shall, subject to just claims of confidentiality, be accessible by authorized officers of the Authority.

**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 & Safety Standards**

The Licensee shall comply with the environmental and safety standards as may be prescribed by the relevant competent authority from time to time.



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

The Licensee shall deliver power to the Power Purchaser at the outgoing bus bar of its generation facility at 11 KV voltage. The up-gradation (step up) of generation voltage up to 11 KV will be the responsibility of the Licensee.

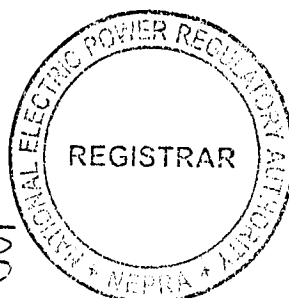
**Article-12**  
**Provision of Information**

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.

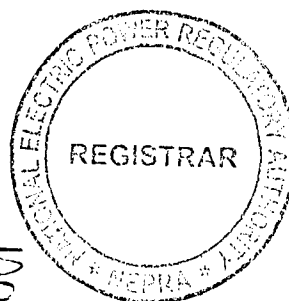
**Article-13**  
**Carbon Credits**

The Licensee shall process and obtain emissions/Carbon Credits expeditiously and credit the proceeds to the Power Purchaser as per the Policy.

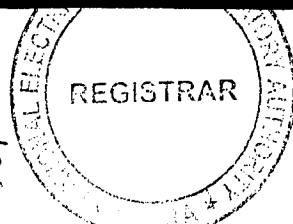


## **SCHEDULE-I**

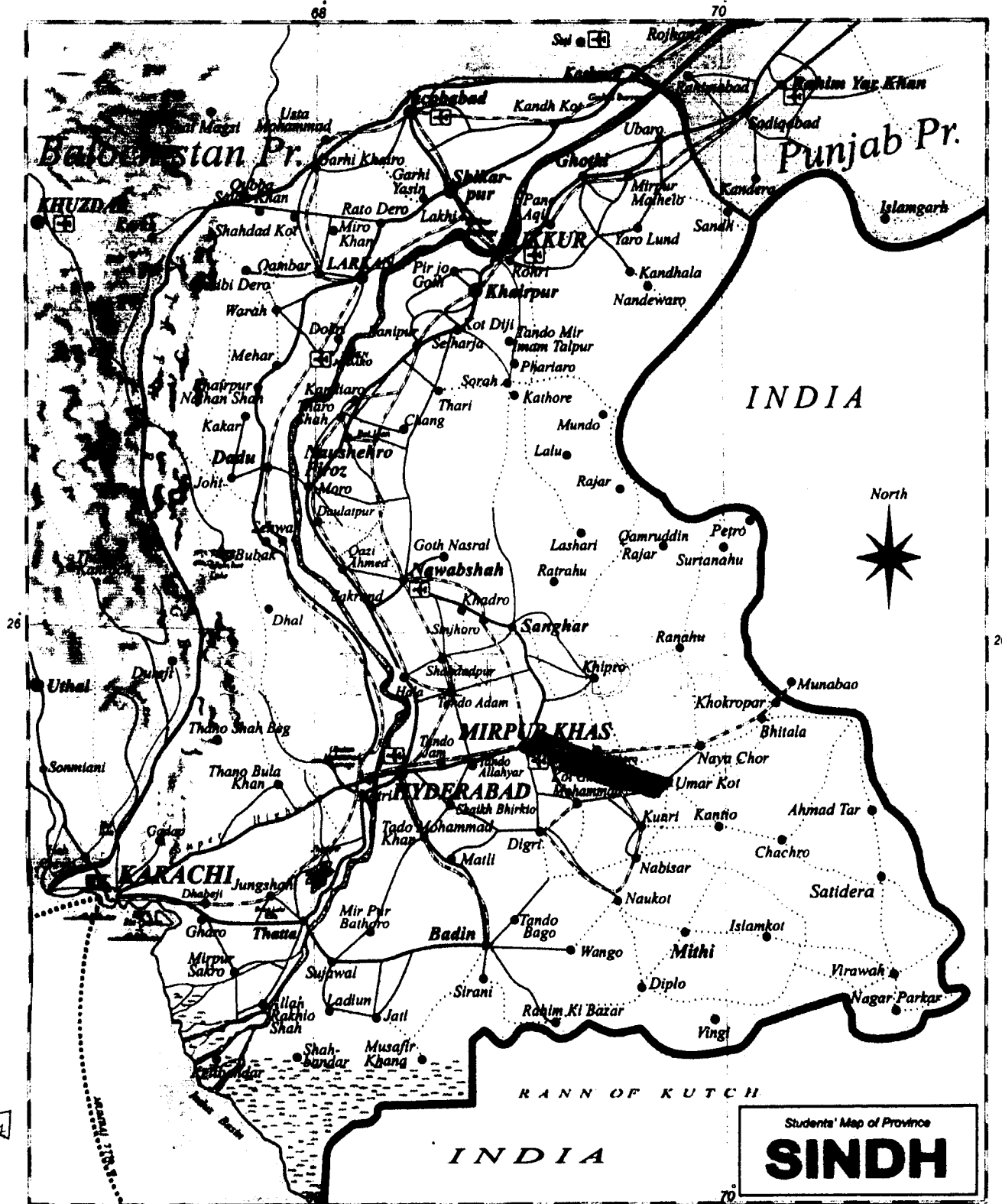
The Location, Size (i.e. Capacity in MW), Type of Technology, Interconnection Arrangements, Technical Limits, Technical/Functional Specifications and other details specific to the Generation Facilities of the Licensee are described in this Schedule.



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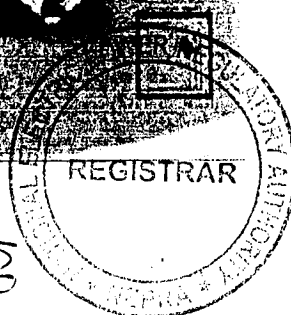
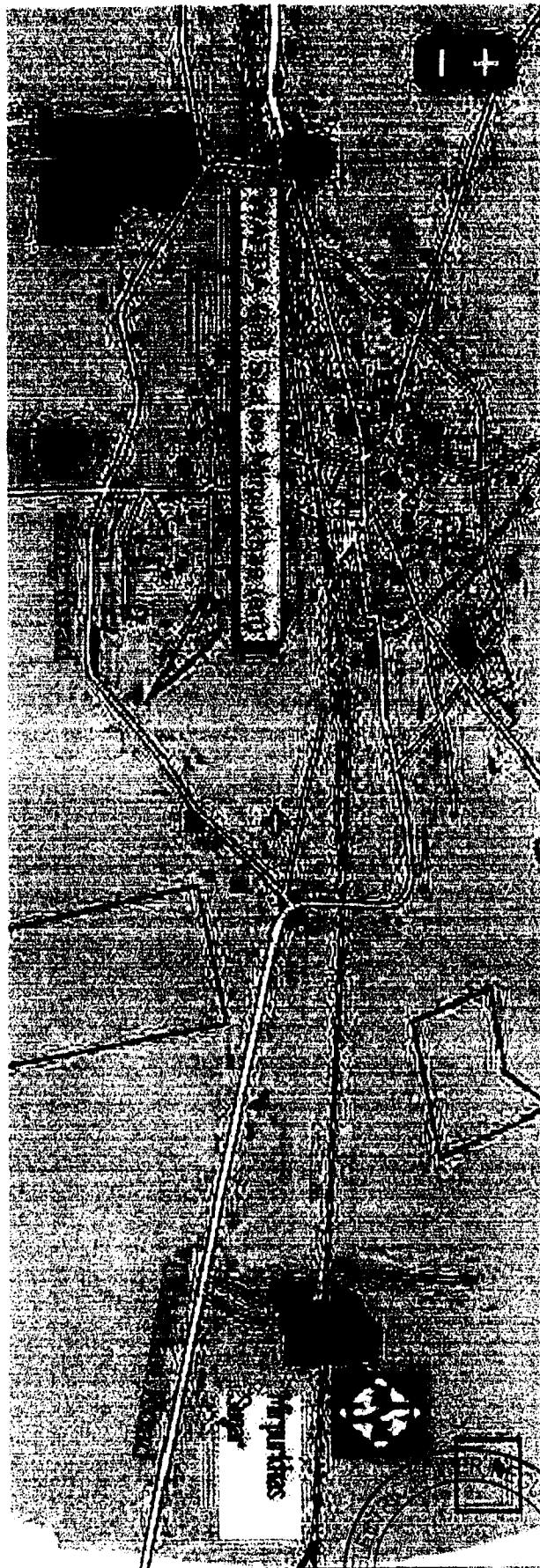


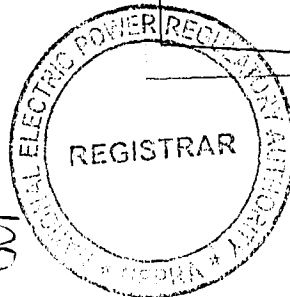
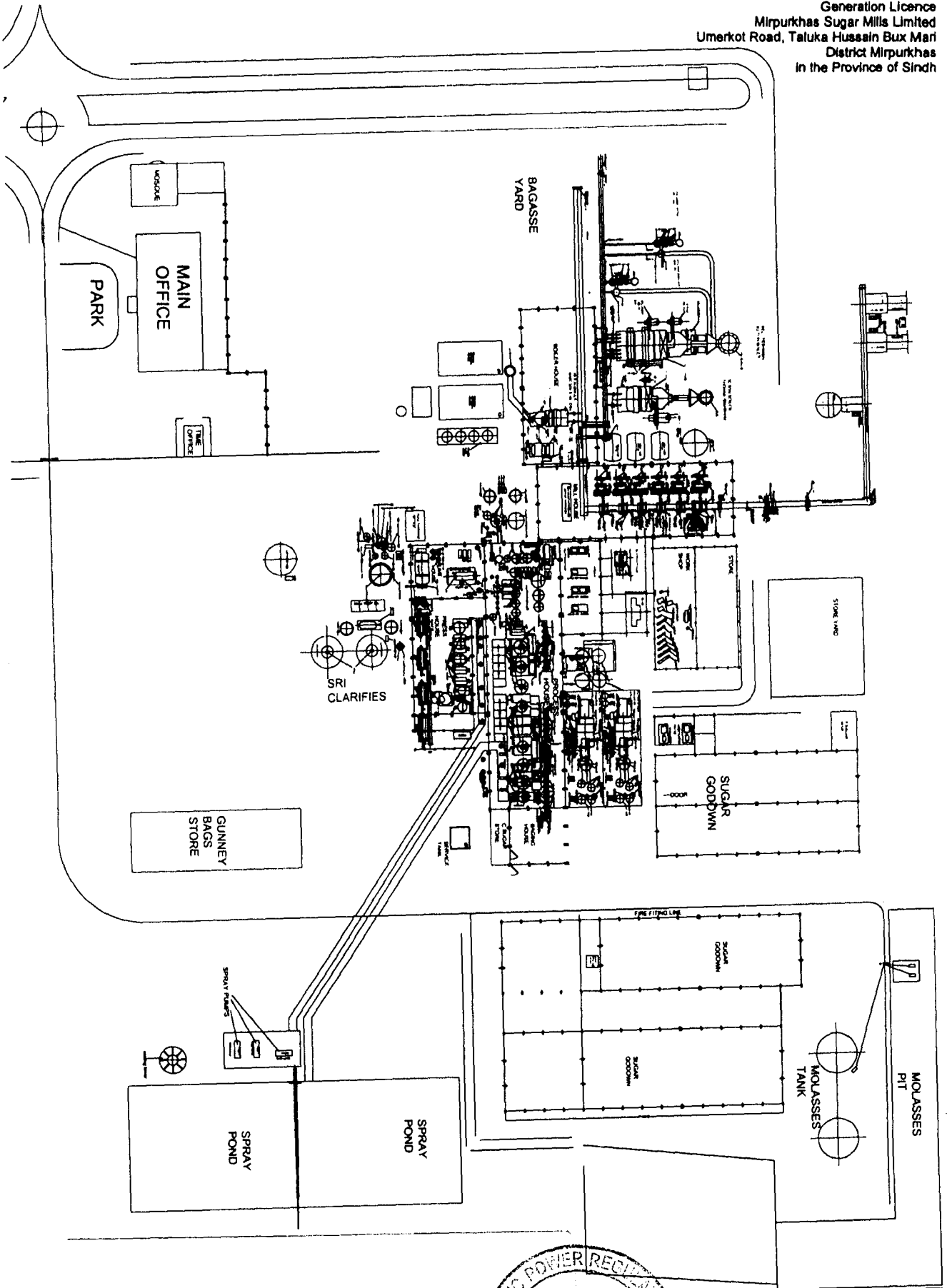




International Boundary	Railway	Mountain
Provincial Boundary	Highway	Sea Port
Provincial Headquarters	Main Road	Canal
Important City	Track	Lake
Town or Village	Sea Road	Airport

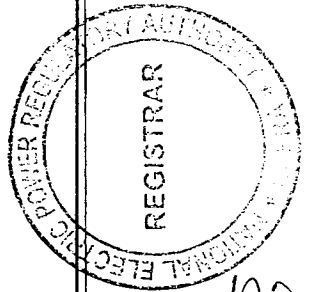
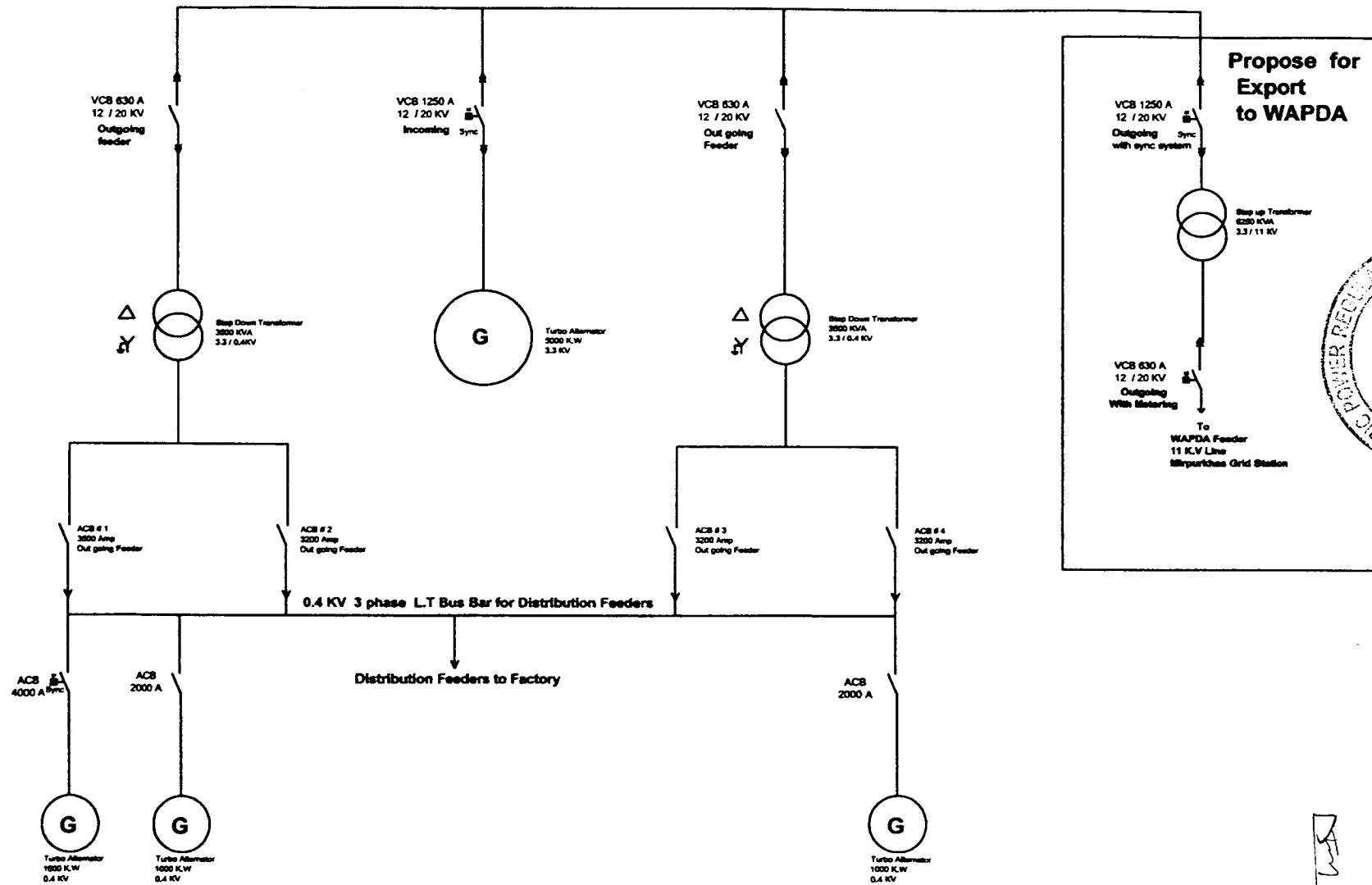
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# Mirpurkhas Sugar Mills Ltd 8.5 M.W Power House Single line Diagram

3.3 KV 3 Phase Main Bus Bar

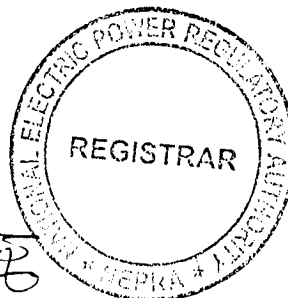


**Interconnection Arrangement/  
Transmission Facilities for Dispersal of Power from  
the Generation Facility/Power Plant**

The electric power generated by Mirpurkhas Sugar Mills Limited (MIRKSML) from its Bagasse based Thermal Power Generation Facility shall be dispersed to the Load Center of HESCO.

(2). The Interconnection/Transmission Arrangement for the above mentioned facilities will be at 11 KV voltage connecting the generation facility of MIRKSML to 132 KV Mirpurkhas Grid Station through overhead feeder(s) measuring about 12-KM in length.

(3). Any change in the above Interconnection Arrangement/Transmission Facilities as agreed by MIRKSML and HESCO shall be communicated to the Authority in due course of time.



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## Detail of Generation Facility/Power Plant

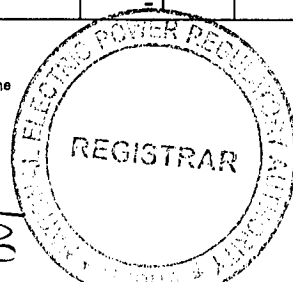
### (A). General Information

(i).	Name of the Company/ Licensee	Mirpurkhas Sugar Mills Limited.
(ii).	Registered/ Business Office	3 <sup>rd</sup> Floor, Modern Motors House, Beaumont Road, Karachi
(iii).	Plant Location	at Umerkot Road, Taluka Hussain Bux Mari, District Mirpurkhas in the Province of Sindh.
(iv).	Type of Generation Facility	Bagasse Fired Thermal Power Station.

### (B). Plant Configuration

(i).	Plant Installed Capacity	Size	8.50* MW			
(ii).	Type of Technology	Conventional (Back Pressure) Steam Turbine Based Power Plant (with Low Pressure Boiler)				
(iii).	Number of Units/Size (MW)	Steam Turbines	Unit No. -1	Unit No. -2	Unit No. -3	Unit No. -4
			1.00 MW	2.10 MW	2.10 MW	5.00 MW
		Alternators	Unit No. -1	Unit No. -2	Unit No. -3	Unit No. -4
			1.00 MW	1.00 MW	1.50 MW	5.00 MW
(iv).	Unit Make/ Model & Year of Manufacture	Steam Turbines	Unit No. -1	Unit No. -2	Unit No. -3	Unit No. -4
			Weir Allen	Nadrowski	Peter Brotherhood	Peter Brotherhood
		Alternators	Unit No. -1	Unit No. -2	Unit No. -3	Unit No. -4

\* Based on the Size/Rating of the Alternator Coupled with Steam Turbine

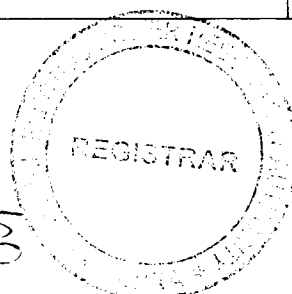


in the Province of Sind

			Mather & Platt	Mather & Platt	AEG	GEC Alsthom
(v).	Commissioning/ Commercial Operation date of each Unit of the Generation Facility	Unit No. -1	Unit No. -2	Unit No. -3	Unit No. -4	
		1965	1978	1990-91	1998	
(vi).	Expected Useful Life of the each Unit of the Generation Facility from its Commercial Operation/ Commissioning Date	Unit No. -1	Unit No. -2	Unit No. -3	Unit No. -4	
		53 Years	53 Years	53 Years	53 Years	
(vii).	Expected Remaining useful Life of each Unit of the Generation Facility (at the time of grant of Generation Licence)	Unit No. -1	Unit No. -2	Unit No. -3	Unit No. -4	
		03 Years	16 Years	29 Years	36 Years	
(viii).	Term of the Generation Licence of the Generation Facility	30 Years				

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

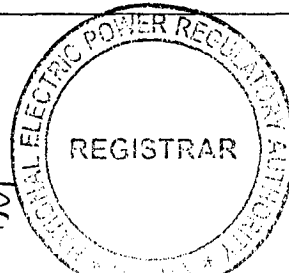
(i).	Primary Fuel	Bagasse			
(ii).	Alternate/Back- Up Fuel	Furnace Oil			
(iii).	Fuel Source (Imported/ Indigenous)	Primary Fuel		Alternate/ Back- Up Fuel	
		Indigenous		Indigenous/Imported	



(iv).	Fuel Supplier	Primary Fuel	Alternate/ Back- Up Fuel				
		Mirpurkhas Sugar Mills Limited	PSO/Shell Pakistan				
(v).	Supply Arrangement	Primary Fuel	Alternate/ Back- Up Fuel				
		Through Conveyor Belts/Loading Trucks/Tractor Trolleys etc.	Through Loading Tankers/Bowsers etc.				
(vi).	Sugarcane Crushing Capacity	7000-7500 Ton Crushing Per Day					
(vii).	Bagasse Generation Capacity	2300 Tons per day					
(viii).	Fuel Storage facilities	Primary Fuel	Alternate/ Back- Up Fuel				
		Bulk Storage	4 Tank				
(ix).	Capacity of Storage facilities	Primary Fuel	Alternate/ Back- Up Fuel				
		30,000 Tons Bulk Storage	Tank-1	Tank-2	Tank-3	Tank-4	
			63 Tons	63 Tons	77 Tons	270 Tons	
(x).	Gross Storage Capacity	Primary Fuel	Alternate/ Back- Up Fuel				
		30,000 Tons Bulk Storage	473 Tons				

**(D). Emission Values**

		Primary Fuel	Start Up Fuel
(i).	SO <sub>x</sub> (mg/Nm <sup>3</sup> )	NA	< 400mg/m <sup>3</sup>
(ii).	NO <sub>x</sub> (mg/Nm <sup>3</sup> )	0.005-0.04%	< 400mg/m <sup>3</sup>
(iii).	CO <sub>2</sub>	12-14%	12% ~ 13%
(iv).	CO (mg/Nm <sup>3</sup> )	0.05-0.3%	< 3%





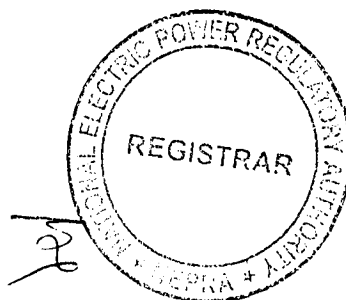
(v).	PM <sub>10</sub>	0-50mg/Nm <sup>3</sup>	0.107mg/m <sup>3</sup>
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(E). **Cooling System**

(i).	Cooling Water Source/Cycle	Condensate water, Ground Water Turbine with Cooling Tower/Canal Water/Closed Loop Cycle
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(F). **Plant Characteristics**

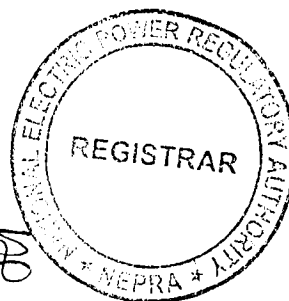
		Alternator-1	Alternator-2	Alternator-3	Alternator-4
(i).	Generation Voltage	400 Volt	400 Volt	400 Volt	3.3 Kilo Volt
(ii).	Frequency	50 Hz	50 Hz	50 Hz	50 Hz
(iii).	Power Factor	0.8 Lagging- 0.95 Leading	0.8 Lagging- 0.95 Leading	0.8 Lagging- 0.95 Leading	0.8 Lagging- 0.95 Leading
(iv).	Automatic Generation Control (AGC)	Yes	Yes	Yes	Yes
(v).	Ramping Rate	2.36 KW per second	2.36 KW per second	2.36 KW per second	2.36 KW per second
(vi).	Time required to Synchronize to Grid	4 Hours for Cold start and 30 Seconds to 180 Seconds for synchroniza- tion with Grid.	4 Hours for Cold start and 30 Seconds to 180 Seconds for synchroniz- ation with Grid.	4 Hours for Cold start and 30 Seconds to 180 Seconds for synchroniza- tion with Grid.	4 Hours for Cold start and 30 Seconds to 180 Seconds for synchroniza- tion with Grid.



*[Handwritten signature]*

## 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 (01.00 MW + 01.00 MW + 01.50 MW + 05.00 MW)	08.50 MW
(2).	De-rated Capacity of the Generation Facility at Mean Site Conditions (00.94 MW + 00.94 MW + 01.41 MW + 04.71 MW)	08.00 MW
(3).	Auxiliary Consumption of the Generation Facility (0.070 MW + 0.070 MW + 0.110 MW + 0.35 MW)	00.60 MW
(4).	Net Capacity of the of the Generation Facility at Mean Site Conditions (0.87 MW + 0.87 MW + 01.30 MW + 04.36 MW)	07.40 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 Energy Purchase Agreement or any other applicable document(s).

