National Electric Power Regulatory Authority
Islamic Republic of Pakistan

Registrar

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No. NEPRA/R/DL/LAG-292/ 9004-9010

June 10, 2015

Mr. Liu Youliang
Chief Executive Officer
Huaneng Shandong Ruyi (Pakistan) Energy (Pvt.) Limited
10-B, Saint Mary Park, Gulberg-III, Lahore

Subject: **Generation Licence No. IGSPL/60/2015**
Licence Application No. LAG-292
Huaneng Shandong Ruyi (Pakistan) Energy (Pvt.) Limited

Reference: Your letter No. NEPRA-1, dated March 09, 2015.

Enclosed please find herewith Determination of the Authority in the matter of Generation Licence Application of Huaneng Shandong Ruyi (Pakistan) Energy (Pvt.) Limited (HSRPEPL) along with Generation Licence No. IGSPL/60/2015 annexed to this determination granted by the National Electric Power Regulatory Authority to HSRPEPL for its 1320.00 MW imported coal based thermal generation facility located at Qadirabad Sahiwal, Punjab, 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 (IGSPL/60/2015)**

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY REGISTRAR

10.06.15

(Syed Safeer Hussain)

Copy to:

1) Managing Director, Private Power & Infrastructure Board, 50-Nazimduddin Road, F-7/4, Islamabad
2) Managing Director, Punjab Power Development Board (PPDB), Central Design Building, Irrigation Secretariat, Old Anarkali, Lahore
3) Chief Executive Officer, NTDC, 414-WAPDA House, Lahore
4) Chief Executive Officer, CPPA-G, 6th Floor, Shaheed-e-Millat Secretariat, Jinnah Avenue, Blue Area, Islamabad
5) Chief Executive Officer, Lahore Electric Supply Company, 22-A, Queens Road, Lahore
6) Director General, Environmental Protection Department, National Hockey Stadium, Ferozepur Road, Lahore

National Electric Power Regulatory Authority (NEPRA)

Determination of the Authority in the Matter of Application of Huaneng Shandong Ruyi (Pakistan) Energy (Private) Limited for the Grant of Generation Licence

June 09, 2015
Case No. LAG-292

(A). Background

(i). The Electric Power Sector of the country is experiencing a Supply-Demand gap. In order to bridge the said deficit, all efforts are being made to set up generation facilities using cheaper resources. The efforts include projects by the Federal as well as Provincial Governments.

(ii). Govt. of Punjab (GoPb) through Punjab Power Development Board (PPDB) issued a Letter of Intent (LoI) to Huaneng Shandong Ruyi a group of People Republic of China (P.R. China) for setting up a 2 x 660.00 MW Coal based Power Project at Qadirabad, District Sahiwal, in the Province of Punjab. The said LoI was issued in terms of the provisions of the Punjab Power Generation Policy-2006 subsequently Revised in 2009(The Punjab Power Policy). According to the terms and conditions of the said LoI, the sponsors were required to carry out a detailed Feasibility Study (FS) for the project including detailed design of the Generation Facility/Thermal Power Plant, load flow and stability studies, design of interconnection/transmission lines, details pertaining to infrastructure, project cost, financing, financing terms, tariff calculations and assumptions of financial calculations (including economic/financial analysis) and the study for Environmental Impact Assessment (EIA). The sponsors completed the FS of the Project and submitted the same for the approval of PPDB. The appointed Panel of Experts (PoEs) of PPDB approved the FS and directed the sponsors to approach the Authority for the grant of Generation Licence and acceptance of Up-Front Tariff for Imported Coal Projects.

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(iii). In order to implement the project, the sponsors of the project incorporated a Special Purpose Vehicle (SPV) in Pakistan under the Companies Ordinance 1984. The SPV was named as Huaneng Shandong Ruyi (Pakistan) Energy (Private) Limited (HSRPEPL).

(B). Filing of Generation Licence Application

(i). In accordance with Section-15 of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the NEPRA Act), HSRPEPL submitted an application on March 10, 2015 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"). The Registrar observed that the application lacked some of required information/documentation. Accordingly, HSRPEPL was directed for submitting the missing information/documentation. HSRPEPL completed the missing information/documentation on March 11, 2015. The Authority considered the matter in its Regulatory Meeting (RM-15-253), held on April 01, 2015 and found the form and content of the application in substantial compliance with Regulation-3 of the Regulations. Accordingly, the Authority admitted the application for consideration of the grant of the Generation Licence as stipulated in Regulation-7 of the Regulations. The Authority approved the advertisement [containing (a). the prospectus; (b). a notice to the general public about the admission of the application of HSRPEPL], inviting the general public for submitting their comments in the matter as stipulated in Regulation-8 of the Regulations. The Authority also approved the list of relevant stakeholders for sending the notice of admission and for providing their comments for the assistance the Authority in the consideration of the above mentioned application of HSRPEPL. Accordingly, the advertisement was published in one Urdu (the Daily

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Jang) and one English (The Daily Dawn) National Newspaper on April 04 & 07, 2015.

(iii). Apart from the above, separate letters were also sent to Government Ministries, their Attached Departments, Representative Organizations and Individual Experts etc. on April 08, 2015. The said stakeholders were directed to submit their views/comments for the assistance of the Authority.

(C). Comments of Stakeholders

(i). In reply to the above, the Authority received comments from seven (07) stakeholders. These included The Federation of Pakistan Chambers of Commerce & Industry (TFoPCoC&I), Pakistan Mineral Development Corporation (Pvt.) Limited (PMDCPL), Punjab Mineral Development Corporation Limited (PbMDC), Mr. Anwar Kamal of Anwar Kamal Law Associates (AKLA), Directorate General of Mines and Minerals Balochsitan (DGM&MB), Ministry of Petroleum and Natural Resources (MoP&NR) and Ministry of Water and Power (MoW&P). The salient points of the comments offered by the above stakeholders are summarized in the following paragraphs: -

(a). TFoPCoC&I stated that in view of the shortage of energy in the country all applications for the power projects may be processed expeditiously;

(b). PMDCPL supported the proposal of HSRPEPL for the consideration of grant of Generation Licence but emphasized the need of utilizing indigenous coal;

(c). PbMDC expressed no objection to the request of HSRPEPL for the grant of Generation Licence.

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(d). AKLA submitted that in its opinion that the location of the Generation Facility/Coal Power Plant is not suitable all due to the reason that its fuel is Imported Coal which will require in-land transportation from Karachi to Sahiwal. Due to the said, there will certainly be increase in the cost of electricity produced from the Generation Facility/Coal Power Plant. ALKA stated that the transportation of electricity from the South to mid-country will be more feasible then to transport the Coal. In consideration of the said and issues of environmental degradation AKLA opposed the grant of Generation Licence to HSRPEPL. Further, AKLA suggested that a Public Hearing may be conducted preferably near Sahiwal to get views of people living there.

(e). DGM&MB appreciated the interest of HSRPEPL for setting the Imported Coal based project at Sahiwal. Further, it stated that there are a number of coal fields in the Province of Balochistan and coal from these fields is used mostly for brick kilns. DGM&MB suggested that efforts should be made to utilize the indigenous coal available in the country;

(f). MoP&NR expressed that the sponsors of the project intends to install an imported coal based project which will not require any allocation of Natural Gas. In view of the said, the Ministry has no objection to grant of Generation Licence to HSRPEPL; and

(g). MoW&P stated that for the project will be utilizing imported coal which will be transported to the site from the port of Karachi. The sponsors should elaborate the mode of transportation of coal to site as a huge heavy quantity of the same will be required on daily basis. MoW&P stated that with the said observation, the Authority may process the request of

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HSRPEPL as per NEPRA Act and policy guidelines of the Government in the matter.

(ii). The Authority considered the above comments of the stakeholders and found that AKLA has vehemently opposed the grant of Generation Licence to HSRPEPL. Whereas, stakeholders like PMDCPL, DGM&MB and MoW&P had also made certain observations while supporting the grant of Generation Licence to HSRPEPL. In view of the said, the Authority considered it appropriate seeking perspective of the sponsors on the observations of AKLA, PMDCPL, DGM&MB and MoW&P.

(iii). In its rejoinder to the comments of AKLA, it was stated that the stakeholders were required to submit their comments within in a period of fourteen (14) days of the date of Publication of the Notice of Admission (i.e. maximum by April 21, 2015) whereas, AKLA submitted its comments after the expiry of the stipulated deadline therefore, the same needs not to be considered and may be rejected out rightly. HSRPEPL stated that notwithstanding its observations it is submitting its rejoinder for the assistance of the Authority. It was stated that AKLA has opposed the grant of Generation Licence on account of (a). higher transportation and setting up of the transportation infrastructure costs and the correspondingly increase in the price of electricity; and (b). potential for environmental degradation. HSRPEPL submitted that The Government of Punjab (GoPb) invited proposals through an Expression of Interest published in various newspaper on January 25, 2014 for the purposes of setting up an Imported Coal based Generation Facility/Coal Power Plant to be located at Sahiwal, in the Province of Punjab. Subsequently through a competitive bidding process the sponsors were awarded the LoI to set up the Project. The sponsors complied with the requirements of LoI and conducted the FS including Environmental Impact Assessment (EIA) Study. PPDB approved the FS and Environment Protection Agency of Govt. of Punjab (EPAGoPb) granted a No Object Certificate ("NOC") for the Project. HSRPEPL stressed that the Project is being set up on a site which had been pre-selected by the GoPb and it has obtained all necessary approvals from

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the relevant authorities required under the laws in Pakistan. HSRPEPL submitted that the Project is a fast-track project under the China Pakistan Economic Corridor and has very stringent timelines for its implementation to come into operation at the end of 2017. Therefore, the Authority is requested to disregard the comments of ALKA in the interest of time and issue the Generation Licence at the earliest without conducting a public hearing.

(iv). On the observations of PMDCPL and DoMGoB for utilizing the indigenous coal, HSRPEPL stated that PPDB had issued the LoI on the basis of Imported Coal therefore, no provision of indigenous coal has been made. Regarding the comments of MoW&P, it was submitted that Ministry of Railway (MoR) has confirmed that it will transport the required coal imported for the project from Port of Karachi to Site for which MoR also issued a Letter of Comfort.

(v). The Authority considered the submissions of HSRPEPL and considered it appropriate to process the application for the consideration of the grant of Generation Licence as stipulated in the Regulations and NEPRA Licensing (Generation) Rules, 2000 (the Rules).

(D). Analysis of the Authority

(i). The key features of the application under consideration are that HSRPEPL is planning setting up New Generation Facility/Coal Power Plant at Sahiwal, in the Province of Punjab. The fuel for the Generation Facility/Coal Power Plant will be imported coal which will be brought to the Port of Karachi using ships and then the same will be transported using Rail Track of Pakistan Railway. In this regard, HSRPEPL has approached the Authority for the grant of Licence for its above mentioned Generation Facility/Coal Power Plant.

(ii). The Authority has examined the entire case in details including the information provided by HSRPEPL with the Generation Licence application which included LoI, the FS, the Interconnection and Dispersal Arrangement Studies, the

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comments of the stakeholders, the rejoinders/submissions of HSRPEPL and other related documents including the NEPRA Act, relevant Rules and Regulations.

(iii). In this regard, the Authority has observed that stakeholders have raised concerns for (a). Selection of the site of the Project; (b). Availability of the Rail Infrastructure for Transportation of Coal from Port of Karachi to project Site Sahiwal (c). Impact of the Transportation of the Imported Coal to Site on the Generation Tariff (d). Environmental Degradation due to the Project. The findings of the Authority on the said observations are explained/elaborated in the subsequent paragraphs.

(iv). Selection of the site of the Project; The Authority is of the considered opinion that selection of the Site of a Generation Facility/Coal Power Plant is a complicated process. The selection of the site requires a number of factors including (a). Availability of suitable piece of land; (b). Power evacuation infrastructure; (c). Water availability and waste water disposal; (d). Closeness to the load center; (e). Nearness to existing infrastructure like services, railway, roads, educational and medical facilities etc.; and (f). Suitability of ash disposal. In this regard the Authority has observed that setting up a 1320 MW coal based Generation Facility/Coal Power Plant requires approximately 400-500 acres of land. In case of setting up the Generation Facility/Coal Power Plant at Sahiwal the GoPb has already allocated the required land. The proposed Site is very close to the load center and the Interconnection and Transmission Arrangement will involve very low expenditure in this regd. It is pertinent to mention that according to the Interconnection and Dispersal Study carried out by NTDC, the proposed Generation Facility/Coal Power Plant can be conveniently connected to the National Grid by Making an In & Out of the proposed 500 KV S/C Sahiwal (Yousafwala)-Lahore South S/C Transmission Line at the Project. The proposed Project will be requiring 20,340,000 cubic meter water for carrying out its operations. At the proposed site the required water is very easily available as the Lower Bari Doab (LBDC) canal is running at a distance of 600 meters from the site of the project. Apart from the above, the site of the project is ideally located where

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existing infrastructure required during the construction period is already available and can also be augmented with minimum cost, if required. The site of the Sahiwal Project is situated in the Central part of the Punjab. The site is located at a suitable distance from the approximately fifteen (15) Cement Manufacturing facilities which are already importing coal. The disposal of coal ash will be very easy as these cement manufacturers may utilize the ash produced from the Sahiwal Project. In view of the above, the Authority considers that site of the Project has been selected carefully and meet with the basic requirements for setting up such a Generation Facility/Coal Power Plant.

(v). Availability of the Rail Infrastructure for Transportation of Coal from Port of Karachi to project Site Sahiwal: According to information submitted by HSRPEPL, the rail track from Karachi Port to Yousafwala railway station in Sahiwal is a double line track, with a total length of about 1100km.The designed through capacity of this rail track is 90 pairs/day whereas the current volume is only 40 pairs/day and there is still a surplus capacity of 50 pairs/day. Currently, Pakistan Railways is making invitation for bid for the reconstruction project of section rail lines of the railway from Karachi Port to Yousafwala railway station of Sahiwal and according to the plan, the reconstruction will be started at the end of this year. The rail track after reconstruction/rehabilitation will be able to meet the coal transportation demand of 6-7 pairs/day of the Generation Facility/Coal Power Plant power plant. In this regard, MoR has issued a commitment letter for transportation of Imported Coal to the plant. The Authority considers that MoR will be taking necessary steps and will arrange the required logistics for transporting the imported Coal from the Port of Karachi to Site of the Project at Sahiwal. The Authority relies and honors the commitment of MoR/Pakistan Railway to transport the required quantity of Imported Coal from the Port of Karachi to the Site of the Project in accordance with the terms and conditions mutually agreed. However, in case of failure of the parties (i.e. MoR/Pakistan Railway and HSRPEPL) to fulfill their respective obligations, the Authority will not pass the financial impact/damages etc. to the end consumers.

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(vi). Impact of the Transportation of the Imported Coal to Site on the Generation Tariff of the Generation Facility/Coal Power Plant; The Authority in Determination No. NEPRA/TRF-308/HSRPEL-2015/4385-4387, Dated March 31, 2015 has granted HSRPEPL an Up-Front Tariff with a levelized Tariff of Rs. 8.1176/kWh. However, the said Tariff does not contain the Transportation cost from Port of Karachi to Site of the Project at Sahiwal. According to the information available with the Authority the sponsors of the project have initialed an Inland Coal Transportation Agreement with Pakistan Railway. According to said draft agreement, Pakistan Railway has demanded a transportation cost of Rs. 3100/tons for the site of the Project at Sahiwal. This translates into a Rs. 1.07/kwh due to transportation of imported coal from the Port of Karachi to project site. In this regard, the Authority has also made a comparison of the coal project with a Residual Fuel Oil (RFO) Project. The Authority has concluded that if a RFO based Project is set up at Sahiwal, its transportation will result in a cost of Rs. 0.89/kwh. However, the Total Unit Cost of the Generation Facility/Coal Power Plant for imported coal will be more favorable as compared to RFO based Generation Facility/Power Plant.

(vii). Environmental Degradation due to the Project; The Authority has considered the submissions of HSRPEPL which has provided a No Objection Certificate (NOC) from Environment Protection Agency, Govt. of Punjab (EPADGoPb). The NOC stipulates that the project will not result in any environmental degradation.

(viii). In light of the explanation give above, the Authority is of the considered view that issues arising out of the comments of the stakeholders on the application of HSRPEPL for the grant of Generation Licence stands resolved. Therefore, the Authority considers that HSRPEPL qualifies for the grant of Generation Licence in terms of the NEPRA Act, the Regulations and the Rules.

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(E). Grant of Generation Licence

(i). Electricity is a fundamental element for the economic growth. The electricity consumption per capita has a strong correlation to the Social Development Indices (Human Development Index-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 electric power generation resources including Coal (Imported/Indigenous), 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 towards 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 Council of Common Interests (CCI) approved the Power Policy 2013 which envisages

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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 HSRPEPL is consistent with the provisions of Power Policy 2013.

(iv). The Authority has examined the details submitted by the sponsors about the of the proposed Generation Facility/Coal Power Plant of HSRPEPL with reference to its location, the type of technology being deployed, interconnection arrangements for dispersal of electric power and other specific details. The Project will be located at Chak No. 75/5-R near Qadirabad, District Sahiwal, in the Province of Punjab. The site is about 15km northeast to city of Sahiwal with coordinates of Latitude 30°43'10"North, Longitude 73°14'30"East. GoPb has set aside approximately 1000 acres of land for the development of the project. GoPb has acquired the part of private land as per assessment made by Price Assessment Committee (PAC) constituted for this purpose. The Company, on instructions of Energy Department of GoPb had already deposited an amount of US$ 2.379 million with PPDB as an advance for the cost of land.

(v). The Authority has observed that the proposed Generation Facility/Coal Power Plant will be consisting of two (02) units of 660MW. Each unit will have a Super Critical Boiler, Steam Turbine and Generator. The boiler will be fueled by imported Sub-Bituminous Coal (from Australia, Indonesia or South Africa) which will be transported by ship and will be unloaded at the dock to be constructed at site of Port Qasim Karachi for which two new pile type jetties of 75,000 tons of load has been planned. The Authority considers that the Supercritical Technology is very mature with many units in operation worldwide for many years with good track records. HSRPEPL has confirmed that the selected main parameters of the Steam Turbine and Boiler (571°C and 25.50MPa) of the Generation Facility/Coal Power Plant are at the high end of the supercritical class. Further, HSRPEPL has confirmed that the Gross Efficiency of the proposed Generation Facility/Coal Power Plant will be more than 41% (i.e. 42.03%) whereas the Net Efficiency of same will be greater than 38.00% and will result in less

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emission per unit of electricity generated. The Authority considers that the high efficiency of the proposed Generation Facility/Coal Power Plant and the low cost of fuel (i.e. Imported Coal) will generate the lowest cost power and will provide an economically feasible solution to relieve power shortages in the country.

(vi). The Authority is satisfied that the proposed Power Purchaser (i.e. CPPA-G/NTDC) has endorsed the site and parameters of the project. NTDC has confirmed about carrying out the required studies pertaining to the dispersal of electric power from the proposed Generation Facility/Coal Power Plant. Further, NTDC has confirmed that the electric power from the Imported Coal based Generation Facility/Coal Power Plant of HSRPEPL will be evacuated through a 500 kV D/C Quad-Bundled Transmission Line (approximately 0.5 km long on ACSR Drake conductor, by Making an In-Out at Sahiwal (Yousafwala)-Lahore South S/C transmission line at the Project.

(vii). 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/Coal Power Plant of HSRPEPL will be consisting of two (02) Steam Turbine Units each of 660.00 MW. According to the International benchmarks available, the useful life of a Steam Turbine is normally taken at least thirty (30) years from its Commercial Operation Date (COD). Further, HSRPEPL has also confirmed that it will be negotiating a Power Purchase Agreement (PPA) with Power Purchaser having a term of thirty (30) years. In view of the said, the Authority hereby fixes the term of the proposed Generation Licence of HSRPEPL to be thirty (30) years from its COD.

(viii). Regarding the Tariff of Generation Company (i.e. HSRPEPL) that it will charge the Power Purchaser, the Authority through its Determination No. NEPRA/TRF-308/HSRPEL-2015/4385-4387, dated March 31, 2015 has granted HSRPEPL an Up-front Tariff for its Project. The Authority directs HSRPEPL to follow the terms and conditions of the granted Up-Front Tariff in letter and spirit

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and charge only such tariff which has been determined, approved or specified by the Authority as stipulated in Article-6 of its proposed Generation Licence.

(ix). The proposed Generation Facility/Coal Power Plant of HSRPEPL, for which Generation Licence has been sought, is based on Imported Coal. The Coal based Generation Facilities may be harmful to environment because of emission of Green House Gases (GHG) and production of ash and other effluents. In this regard, HSRPEPL confirmed that proposed Generation Facility/Coal Power Plant would have Air Emission Control Equipment [including an Electro Static Precipitator (ESP)]. Further, a Flue Gas Desulfurization (FGD) system would also be installed to lower GHG emissions. Also Selective Catalytic Reduction system (SCR) would be installed to ensure that NO_x 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 would be disposed at the ash pond, 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 the 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 a cofferdam will be built around ash yard. Drainage channel will be set at cofferdam foot to prevent it from rainwater washing. In order to prevent fly ash and bottom ash from polluting underground water after being wetted by rainwater, anti-seepage geo-membrane will be laid on bottom of ash yard and inner slope of cofferdam, forming a basin-shaped anti-seepage system, which can isolate fly ash and bottom ash from contacting outside world. In short, HSRPEPL has assured compliance of the Environment Standards and has also provided the NOC from Environmental Protection Agency Govt. of Punjab (EPAGoPb). However, to ensure that the Generation Facility/Coal Power Coal conforms to the

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environment during the term of the Generation Licence, a separate article has been included along with other terms and conditions that the Licensee will comply with relevant environmental standards. Further, the Authority also directs HSRPEPL to submit a Bi-Annual report confirming that operation of its proposed Generation Facility/Coal Power Plant is compliant with required Environmental Standards prescribed by EPAGoPb.

(x). In view of the above, the Authority hereby decides to approve the grant of Generation Licence to HSRPEPL 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

Syed Masood-ul-Hassan Naqvi
(Member)

Himayat Ullah Khan
(Member)

10.6.15

Khawaja Muhammad Naeem
(Member)

Maj. (R) Haroon Rashid
(Member)/(Vice Chairman)

10/6/15

Brig. (R) Tariq Saddozai
(Chairman)

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National Electric Power Regulatory Authority
(NEPRA)
Islamabad – Pakistan

GENERATION LICENCE

No. IGSPL/60/2015

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:

HUANENG SHANDONG RUYI (PAKISTAN) ENERGY (PRIVATE) LIMITED

Incorporated under the Companies Ordinance, 1984
Under Corporate Universal Identification No. 0088524, Dated May 28, 2014

for its Imported Coal Based Generation Facility/Thermal Power Plant Located at Qadirabad Sahiwal, in the Province of Punjab

(Installed Capacity: 1320.00 MW Gross)

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

Given under my hand on this 10th day of June Two Thousand & Fifteen and expires on 30th day of December Two Thousand & Forty Seven.

Registrar

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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-G" means "the Central Power Purchasing Agency (Guarantee) Limited 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). "IEC" means International Electrotechnical Commission or any other entity created for the like purpose and its successors or permitted assigns;

(h). "IEEE" means the Institute of Electrical and Electronics Engineers and its successors or permitted assigns;

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(i). "LESCO" means "Lahore Electric Supply Company Limited and its successors or permitted assigns;

(j). "Licensee" means "Huaneng Shandong Ruyi (Pakistan) Energy (Private) Limited" and its successors or permitted assigns;

(k). "MEPCO" means "Multan Electric Power Company Limited and its successors or permitted assigns;

(l). "NTDC" means National Transmission and Despatch Company Limited and its successors or permitted assigns;

(m). "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;

(n). "Power Purchaser" means the CPPA-G purchasing power on behalf of XW-DISCOs;

(o). "Regulation" means "the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999" as amended or replaced from time to time;

(p). "Rules" mean "the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000";

(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.

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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 to 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 apply for renewal of the Licence within ninety (90) days prior to the expiry of the term of the Licence, as stipulated in the Regulations.

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.

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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.

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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 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 Interconnection voltage level 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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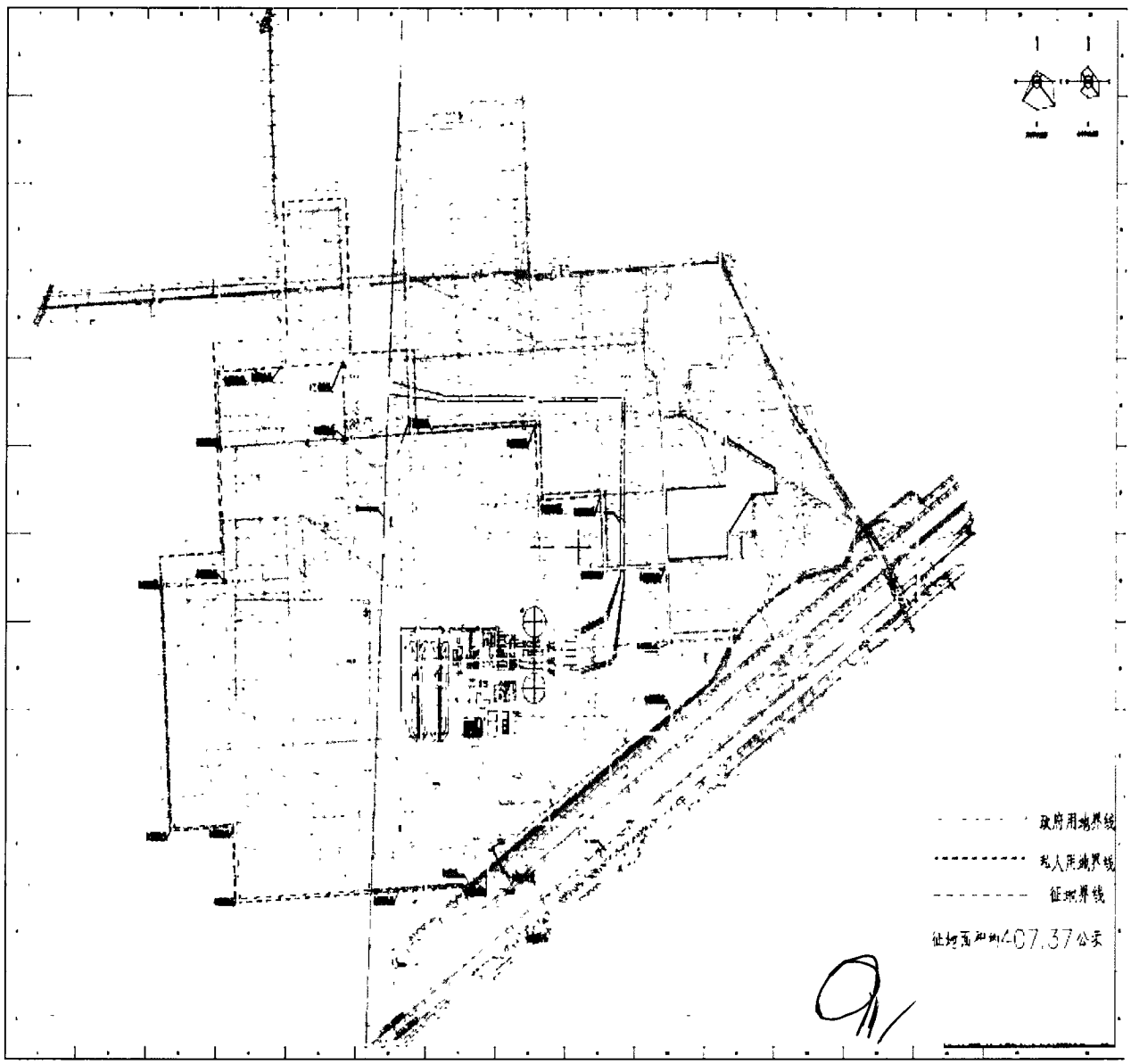

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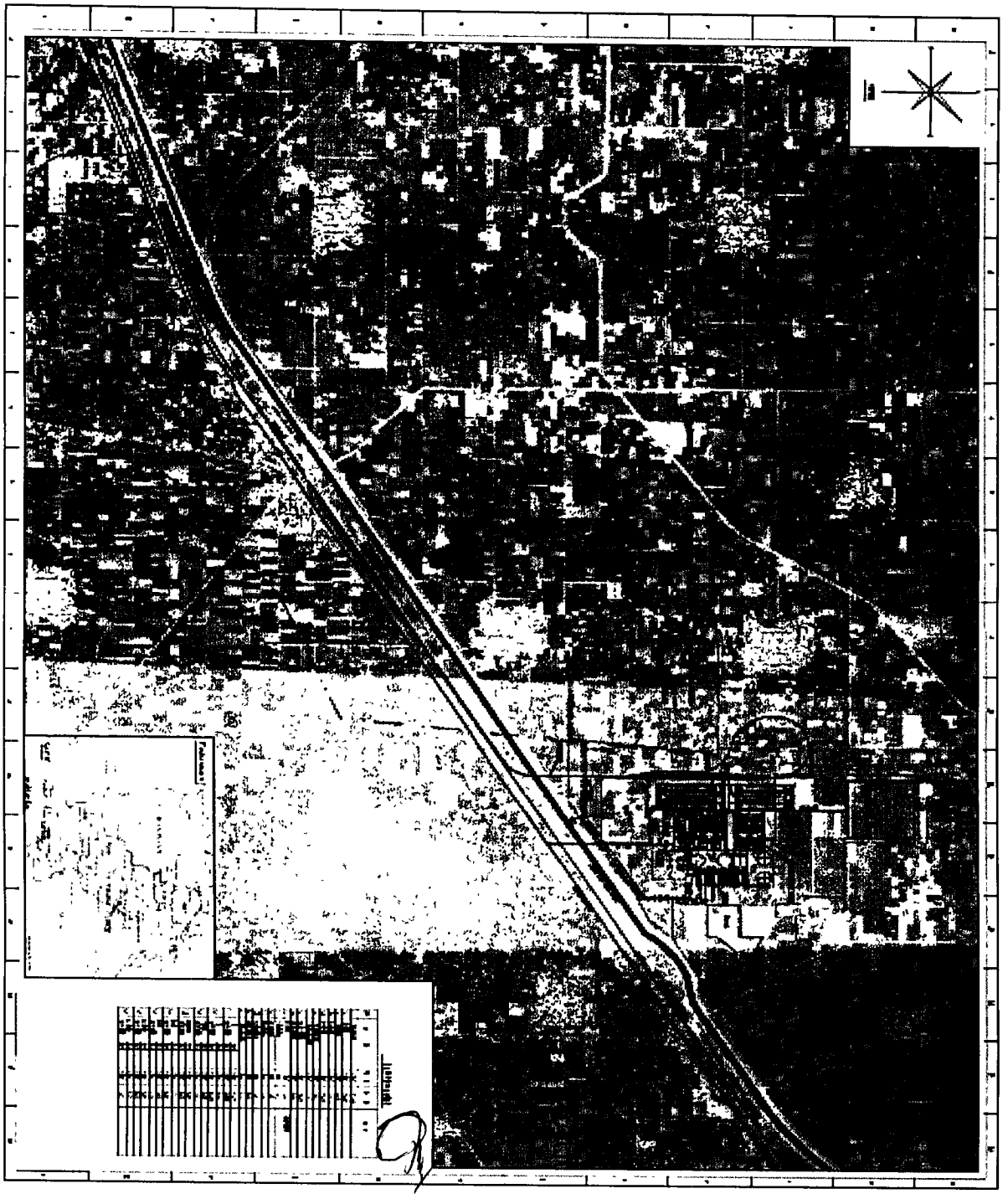

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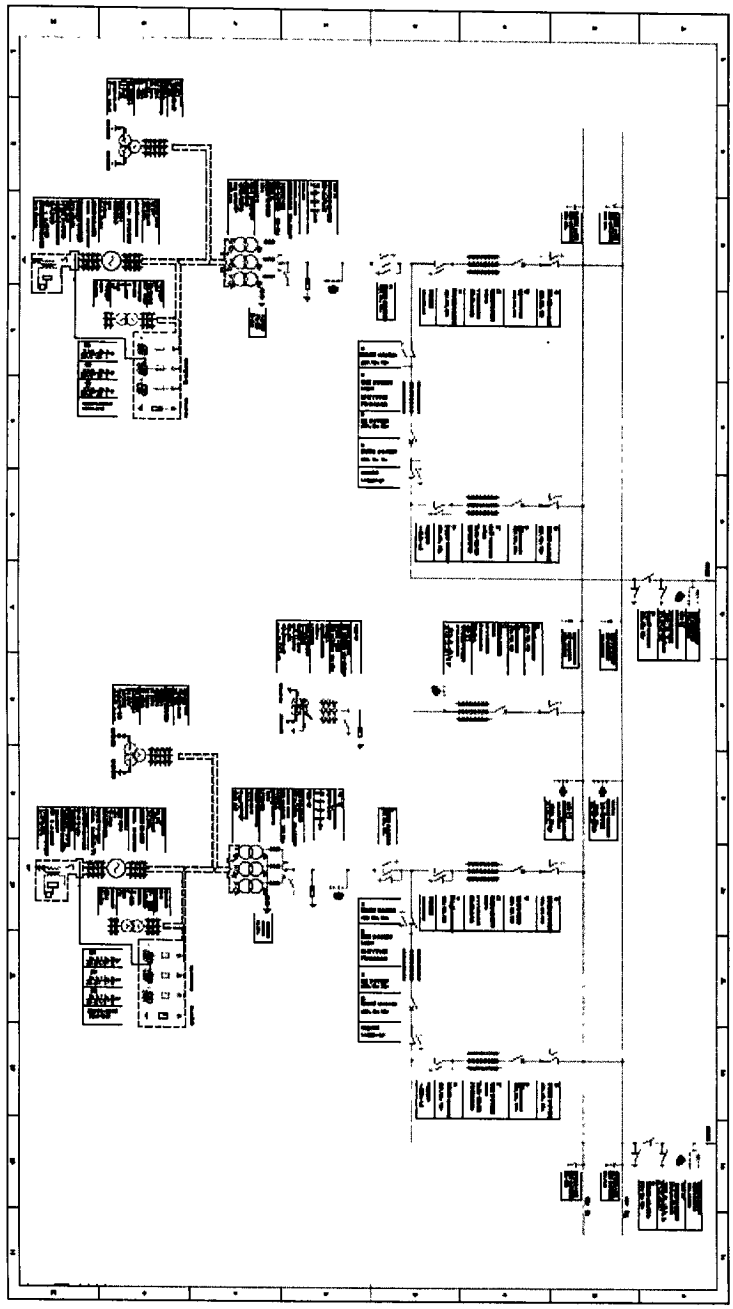

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Interconnection Facilities/ Transmission Arrangements for Dispersal of Power from the Generation Facility/Thermal Power Plant

The electric power from the Imported Coal based generation facility/thermal power plant of the Licensee / Huaneng Shandong Ruyi (Pakistan) Energy (Private) Limited 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/thermal power plant shall be at 500 kV level. The IF/TA for supplying to National Grid will be consisting of a 500 kV Double Circuit (D/C) Transmission Line measuring about 2.6 Kilometer (Quad Bundled of 400 mm^2 Conductor) connecting the generation facility with the broken points of 500 kV line between Lahore and Sahiwal Grid Station of NTDC.

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

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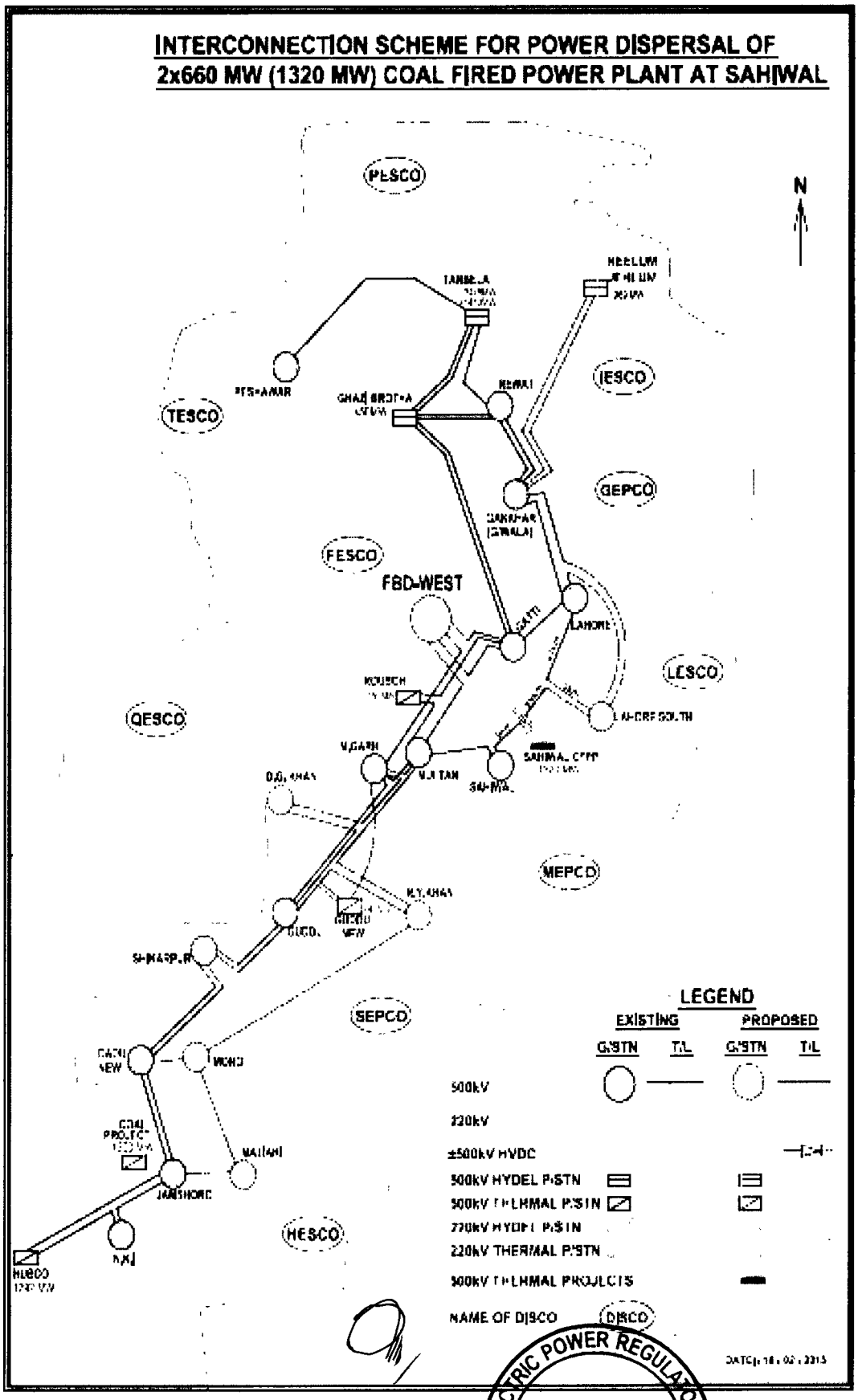

Detail of Generation Facility/ Power Plant

(A). General Information

(i).	Name of Company/ Licensee	Huaneng Shandong Ruyi (Pakistan) Energy (Private) Limited
(ii).	Registered/Business Office	House No.10-B, Saint Mary Park, Gulberg-II, Lahore
(iii).	Location of the Generation Facility/ Power Plant	At Qadirabad, Sahiwal, in the Province of Punjab.
(iv).	Type of Generation Facility/ Power Plant	Thermal Generation Facility

(B). Configuration of Generation Facility

(i).	Installed Capacity/Size of the Generation Facility/ Power Plant	1320.00 MW	
(ii).	Type of Technology	Conventional Thermal Power Generation Facility with Super Critical Boiler and Steam Turbine	
(iii).	Number of Units/Size (MW)	2 x 660 MW	
(iv).	Unit Make/Model/Type & Year of Manufacture Etc.	Steam turbine	N660-24.2/566/566 Super-critical, Reheat, Tandem compound three Cylinders, four (or two) flow exhausts, condensing Steam Turbine/DongFong/Shanghai/ Harbin or Equivalent
		Boiler	Supercritical thermal power unit, variable pressure operation, once-through, single intermediate reheating/ DongFong/Shanghai/Harbin or Equivalent

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(v).	COD of the Generation Facility/ Power Plant (Anticipated)	December 31, 2017
(vi).	Expected Useful Life of the Generation Facility/ Power Plant from COD	30 years

(C). Fuel/Raw Material Details

(i).	Primary Fuel	Imported Lignite/Bituminous Coal	
(ii).	Start-Up Fuel	High Speed Diesel/HSD	
(iv).	Fuel Source for each of the above (i.e. Imported/Indigenous)	Primary Fuel	Start-Up Fuel
		Lignite/Bituminous Coal from the countries surrounding India Ocean, i.e. Indonesia, South Africa or Australia, etc.	Indigenous/Imported
(v).	Fuel Supplier for each of the above	Primary Fuel	Start-Up Fuel
		Fuel supply company of Huaneng Group	Shell Pakistan/Pakistan State Oil/Any other OMC Company
(vi).	Supply Arrangement for each of the above Fuels	Primary Fuel	Start-Up Fuel
		Through Ships, Jetty and train etc.	Through Oil Tankers

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(vii).	No of Storage Bunkers/Tanks/ Open Yard	Primary Fuel	Start-Up Fuel
		One open yard	Two oil tanks
(viii).	Storage Capacity of each Bunkers/Tanks/ Open Yard	Primary Fuel	Start-Up Fuel
		About 434,000 Tons	$300m^3$
(ix).	Gross Storage	Primary Fuel	Start-Up Fuel
		About 434,000 Tons	$600m^3$

(D). Emission Values

		Primary Fuel	Start-Up Fuel
(i).	SO_x (mg/Nm^3)	<200	<200
(ii).	NO_x (mg/Nm^3)	<300	<300
(iii).	CO_2 (%)	<15	-

(E). Cooling System

(i).	Cooling Water Source/Cycle	The cooling water is from adjacent to Lower Bari Doab Canal (LBDC) south of the site. Natural draft cooling tower secondary circulation system will be adopted for cooling water system.

(F). Plant Characteristics

(i).	Generation Voltage	20-22kV
(ii).	Frequency	50Hz
(iii).	Power Factor	0.85 (lagging)/0.95(leading)

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(iv).	Automatic Generation Control (AGC) (MW control is the general practice)	AGC Unit is included in the NCS, and AGC Unit can accept command single from despatch. The command signal is converted to analog, and then the analog transmitted to the DCS via hardwire to achieve the AGC function.		
(v).	Ramping Rate (MW/min)	33 MW/min from 50% to 100% MCR	19.8 MW/min from 30% to 50% MCR	13.2 MW/min under 30% MCR
(vi).	Time required to Synchronize to Grid (Hrs.)	Cold Start	Warm Start	Hot Start
		4.25 Hours	2 Hours	0.75~1 Hour

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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/Thermal Power Plant	1320.00 MW
(2).	De-rated Capacity of Generation Facility/Thermal Power Plant at Reference Site Conditions	1320.00 MW
(3).	Auxiliary Consumption of the Generation Facility/Thermal Power Plant	0093.00 MW
(4).	Total Installed Net Capacity of Generation Facility/Power Plant at Reference Site Condition	1227.00 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).

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