

SCHEDULE I

(Regulation 3(1))

luckyelectricpower.com

FORM OF APPLICATION

In Triplicate

Ref. No. LEPCL/CEO/660-009

The Registrar National Electric Power Regulatory Authority NEPRA Tower, Ataturk Avenue (East), G-5/1, Islamabad Dated 20th February 2015

Subject: Application for a Grant of Generation License.

Dear Sir,

I, Intisar Ul Haq Haqqi, CEO, being the duly authorized representative of Lucky Electric Power Company Limited] by virtue of BOARD RESOLUTION/POWER OF ATTORNEY DATED 2ND February-2015, hereby apply to the National Electric Power Regulatory Authority for the grant of a [GENERATION LICENSE to the Lucky Electric Power Company Limited pursuant to Section [15] of the regulations for generation of electric power act 1997.

I, certify that the documents In support attached with this application are prepared and submitted in conformity with provision of National Electric Power Regulatory Authority Licensing [Application and modification procedure] Regulations, 1999, and undertake to ablde by the terms and provisions of the above-said regulations. I further undertake and confirm that the information provided in the attached documents-In-support is true and correct to the best of my knowledge and belief.



A [Bank Draft/Pay Order in sum of Rupees 683,680/-, being the non-refundable license 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.

We thank you in advance for your kind consideration and look forward to your early approval and favorable response.

Signature:_____

Name:-Intisar Ul Haq Haqqi,

Designation:- Chief Executive Officer



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<u>Annexure I</u>

EXTRACTS OF RESOLUTION BY CIRCULATION PASSED BY THE BOARD OF DIRECTORS OF LUCKY ELECTRIC POWER COMPANY LIMITED.

"RESOLVED that an Application for Acceptance of Upfront-Tariff issued vide NEPRA's " Decision of the Authority regarding Reconsideration Request filed by the Government of Pakistan in the matter of Upfront Tariff for Coal Power Projects' bearing No. NEPRA/TRF-UTC/2013/7195-7197 dated 26 June, 2014, as modified/ supplemented/ clarified through NEPRA's " Decision of the Authority in the matter of Review Petition filed by the Fazal-e-Akbar & Company on behalf of Asad Umer (Member National Assembly) under NEPRA (Review Procedure) Regulations 2009 with respect to the Upfront Tariff of Coal dated 26.06.2014" bearing No. NEPRA/TRF-UTC/2013/15271-15273 dated 21 November, 2014 (collectively the "Upfront Tariff") be filed by and on behalf of the Company with the National Electric Power Regulatory Authority ("NEPRA") and to procure the grant by NEPRA of the Upfront Tariff for the Company's proposed 660 MW gross ISO imported coal-fired power plant (with integrated self –use jetty) at Port Qasim, Karachi, Pakistan (the 'Project")

RESOLVED FURTHER that each of Mr. Intisar ul Haq Haqqi, CEO, Mohammad Ali Tabba, Company Director, Mohmmad Sohail Tabba, Company Director, Naeem Kasbati, Company Secretary are hereby authorized acting singly to prepare and file the necessary documentation, pay the necessary filing fees, pay the necessary license fee, appear before NEPRA as needed, provide any information required by NEPRA in respect of the Project, and do all acts and things necessary for the processing, completion and finalization of the aforementioned Application for Generation License and acceptance of Upfront Tariff.

RESOLVED FURTHER that (i) Chief Executive and the Company Secretary may sign and certify copies of this Resolution to be true copies of the original; and (ii) receive/collect the original generation license and related documents, from "NEPRA"

Certified to be a true copy of the original

٥Öli Naeem Kasbati Company Secretary,

Lucky Electric Power Company Limited

Date: 20th February 2015



6-A, A. Aziz Hashim Tabba Street, Muhammad Ali Housing Society, Karachi - 75350, Pakistan UAN +92 21 111 786 555 | FAX +92 21 3453 4203





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THE COMPANIES ORDINANCE, 1984

(COMPANY LIMITED BY SHARES) Memorandum of Association

of

LUCKY ELECTRIC POWER COMPANY LIMITED

- I. The name of the Company is "LUCKY ELECTRIC POWER COMPANY LIMITED".
- II. The Registered Office of the Company will be situated in the Province of Sindh.
- III. The objects for which the Company is established are all or any of the following:-
- 1. To carry on all or any of the businesses of generating, purchasing, importing, transforming, converting, distributing, supplying, exporting and dealing in electricity and all other forms of energy and products or services associated therewith and of promoting the conservation and efficient use of electricity and to perform all other acts which are necessary or incidental to the business of electricity generation, transmission, distribution and supply.

To locate, establish, construct, equip, operate, use, manage and maintain thermal power plants and coal fired power plants, power grid station, transforming, switching, conversion, and transmission facilities, grid stations, cables, overhead lines, sub-stations, switching stations, tunnels, cable bridges, link boxes, heat pumps, plant and equipment for combined heat and power schemes, offices, computer centres, shops, dispensing machines for prepayment cards and other devices, showrooms, depots, factories, workshops, plants, printing facilities, warehouses and other storage facilities.

3. To carry on all or any of the businesses of wholesalers, retailers, traders, importers, exporters, suppliers, distributors, designers, developers, manufacturers, installer, filters, testers, repairers, maintainers, contractors, constructors, operators, users, inspectors, reconditioners, improvers, alterers, protectors, removers, hirers, replacers, importers and exporters of and dealers in, electrical appliances, systems, products and services used for energy conservation, equipment, machinery, materials and installations, including but not limited to cables, wires, meters, pylons, tracks, rails, pipelines and any other

plant, apparatus equipment, systems and things incidental to the efficient generation, procurement, transformation, supply and distribution of electricity.

4. To ascertain the tariff for bulk supply that will secure recovery of operating costs, interest charges and depreciation of assets, redemption at due time of loans other than those covered by depreciation, expansion projects, payment of taxes, and reasonable return on investment, to quote the tariff to bulk purchasers of electrical power, and to prefer petition to the appropriate authority for approval of the schedule of tariff and of adjustments or increases in its bulk supply tariff, where desirable or necessary.

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- 5. For the purposes of achieving the above objects, the company is authorized:-
 - (a) to purchase/import raw materials and allied items required in connection thereto in any manner the company may think fit;
 - (b) to do and perform all other acts and things as are incidental or conducive to the attainment of the objects of the company;
 - (c) to import coal, shredded and cut tyres, cane husk or any other raw material allowable under the laws of Pakistan, to use the same as energy resource or power generation resource or to sell such raw material to its customer.

d) to own, establish or have and maintain shops, branches and agencies all over Pakistan or elsewhere for sale and distribution of cables, wires, meters, pylons, tracks, rails, pipelines and any other plant, apparatus equipment, systems and things incidental to the efficient generation, procurement, transformation, supply and distribution of electricity;

- (e) to make known and give publicity to the business and products of the company by such means as the company may think fit;
- (f) to purchase, acquire, protect, renew, improve, use and sell, whether in Pakistan or elsewhere any patent, right, invention, license, protection or concession which may appear advantageous or useful to the company for running the business;

- (g) to pay all costs, charges and expenses, if any, incidental to the promotion, formation, registration and establishment of the company;
- (h) to borrow and arrange the repayment of money from banks/financial institutions or any lawful sources whether in Pakistan or elsewhere and in such manner as the company may think fit, including the issue of debentures, preference shares, bonds, perpetual or otherwise charged upon the whole or any part of the company's property or assets, whether present or future, and to purchase, redeem or payoff such securities;
- to purchase, hold and get redeemed shares, debentures, bonds of any business, company, financial institution or any Government institutions;
- (j) to guarantee the performance of contracts, agreements, obligations or discharge of any debt of the company or on behalf of any company or person in relation to the payment of any financial facility including but not limited to loans, advances, letters of credit or other obligations through creation of any or all types of mortgages, charges, pledges, hypothecations, on execution of the usual banking documents or instruments or otherwise encumbrance on any or all of the movable and immovable properties of the company, either present or future or both and issuance of any other securities or sureties by any other means in favour of banks, Non-Banking Finance Companies (NBFCs) or any financial institutions and to borrow money for purpose of the company on such terms and conditions as may be considered proper.
- 6. Hereby, undertaken that the Company shall not engage in banking business or any business of investment company or non-banking finance company or insurance or leasing or business of managing agency or in any unlawful business and that nothing contained in the object clauses shall be so construed to entitle it to engage in such business directly or indirectly and the Company shall not launch multi-level marketing (MLM), Pyramid and Ponzi schemes.
- IV. The liability of the members is limited.

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V. The authorized capital of the company is Rs.1,000,000,000/-(Rupees one billion only) divided into 100,000,000 ordinary shares of Rs.10/each with power to enhance, reduce or consolidate the share capital and to divide the shares of the company into different classes and kinds subject to the provisions of the Companies Ordinance, 1984.

< >M 28/1/15

Signature Numbers of shares **Residential address** Occupation Nationality Father's name / taken by each National Identity Name and surname in full Husband's name in subscriber Card No./ (Present & former) in full Passport No. full (in block letter 53 – A. Adamjee Industrialist S/o. (Late) Abdul Aziz Pakistani 42301-3534123-9 (One) Muhammad Yunus Nagar, Johar Tabba Road, Karachi. Tabba 1 17/1/A, Johar Industrialist Pakistani S/o. (Late) Abdul 42201-6464247-3 (One) Muhammad Ali Tabba Road, Muhammad Razzak Tabba Ali Housing Society, Karachi. 53 - A, Adamjee Industrialist Pakistani S/o. Muhammad 42000-0568372-5 (One) Muhammad Sohail Nagar, Johar Road, Yunus Tabba Karachi. Tabba 17/1/A, Johar 1 Housewife Pakistani W/o, Muhammad Ali Rulethe 42201-0620919-4 (One) Mrs. Zulekha Tabba Road, Muhammad Maskatiya Maskatiya Ali Housing Society, Karachi. 7-Park Avenue. 99,996 (Ninety CUIN# University Town, Public Pakistani N/A Nine Thousand Lucky Holdings Limited 0081027 Peshawar, Khyber unlisted Co Nine Hundred Pakhtunkhwa Ninety Six only) 17/1/A, Johar Road, Authorized Muhammad Ali Representative Rakistani (Late) Abdul Razzak 42201-6464247-3 Housing Society, Khi. Muhammad Ali Tabba Tabba 100.000 (One Hundred Thousand) Jaiz consuí Faiz Mahmood Khan Durrani Witness to above Signature : Dated this ____ day of June, 2014 (Pakistani) Advocate High Court - CNIC No. 42401-9165908-5/ S&B Durrani Law Associates, A-17/II, Durrani House

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6th Street, Bath Island, Clifton, Karachi.

We, the several persons whose names and addresses are subscribed, are desirous of being formed into a company, in pursuance of this Memorandum of Association, and we respectively agree to take the number of shares in the capital of the company set opposite our respective names:

PUBLIC COMPANY LIMITED BY SHARES INCORPORATED UNDER THE COMPANIES ORDINANCE, 1984



ARTICLES OF ASSOCIATION

OF

LUCKY ELECTRIC POWER COMPANY LIMITED

PRELIMINARY

1. Company to be governed by the Articles & Table 'A' not to apply.

The Regulations contained in Table 'A' in the First Schedule to the Companies Ordinance, 1984 shall not apply to the Company except to the extent and as hereinafter, expressly incorporated. In case of any conflict between the provisions referred to and the provisions herein contained and the incorporated Regulations of Table 'A', the provisions herein contained shall prevail.

INTERPRETATION

- 2. In the interpretation of these Articles, words importing the singular shall include the plural, and vice versa and words importing the masculine gender shall include feminine gender and words importing persons shall also include corporate bodies.
 - **Articles** The 'Articles' means these Articles as originally framed or as from time to time altered in accordance with law.
 - **Board** The 'Board' means Board of Directors for the time being of the Company.
 - **Commissio** The 'Commission' means Securities and Exchange Commission of Pakistan.
 - **Chief Executive** The 'Chief Executive' means an individual who subject to the control and directions of the directors, is entrusted with the whole, or substantially the whole, of the powers of management of the affairs of the company and includes a director or any other person occupying the position of a chief executive, by whatever name called, and whether under a contract of service or otherwise.
 - **Company** The name of the Company is **"LUCKY ELECTRIC POWER COMPANY LIMITED**".

Directors The 'Director' means the Director for the time being of the company.

Dividend The 'Dividend' includes bonus shares.

- **Document** 'Document' includes summon, notice, requisition, order, other legal process, voucher and register.
- Member The 'Member' means a person whose name is for the time being entered in the Register of Members by virtue of his being a subscriber to the Memorandum and Articles of Association of the Company or of his holding by allotment or otherwise any share, scrip or other security which gives him a voting right in the Company.
- Month 'Month' means the calendar month according to the English Calendar.
- Office 'The Office' means the Registered Office for the time being of the Company.
- Ordinance 'The Ordinance' means the Companies Ordinance, 1984.
- **Proxy** 'Proxy' includes Attorney duly constituted under a Power of Attorney.

Register 'The Register' means the Register of Members to be kept in pursuance to Section 147 of the Ordinance.

Registrar 'The Registrar' means the Registrar of Companies having jurisdiction on the Company.

Redeemable Capital' includes finance obtained on the basis of Participation Terms Certificate (PTC), Musharika Certificate, Term Finance Certificate (TFC) or any other security or obligation not based on interest, other than an ordinary share of a company representing an instrument or a certificate of specified denomination, called the face value or nominal value evidencing investment of the holder in the capital of the company on terms and conditions of the agreement for the issue of such instrument or certificate or such other certificate or instrument as the Federal Government may, by notification in the official Gazette, specify for the purpose.

- Section 'Section' means Section of the Ordinance.
- Seal 'The Seal' means the common seal of the Company.
- Security 'Security' means any share, script, debenture, Participation Term Certificate, Modaraba Certificate, Musharika Certificate, Term Finance Certificate, bond, pre-organisation certificate or such other instrument as the Federal Government may, by notification in the official Gazette, specify for the purpose.
- Writing 'In Writing' and written include printing, lithography and other modes of representing or reproducing words in a visible form.

Expression Words and phrases used herein but not defined shall be assigned the same meaning as given to them in the Ordinance.

BUSINESS

3. Object

The business of the company shall include the several objects expressed in Clause III of the Memorandum of Association or any of them.

4. Commencement

The directors shall have regard to the restrictions on the commencement of business imposed by Section 146, if and so far as, those restrictions are binding upon the company.

SHARES

5. Share Capital

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The authorised capital of the company is Rs.1,000,000,000/- (Rupees one billion only) divided into one hundred million (100,000,000) Ordinary shares of Rs.10/-each with the rights, privileges and conditions attaching thereto as are provided by the regulations of the Company for the time being, with powers to increase, reduce, sub-divide, consolidate or reorganise the capital of the Company and to divide the shares in the capital of the Company for the time being into several classes in accordance with the provisions of the Companies Ordinance, 1984 and to attach thereto respectively such special rights, privileges or conditions as may be determined by or in accordance with the regulations of the Company, provided however, that rights, as between various classes of ordinary shares, if any, as to profits, votes and other benefits shall be strictly proportionate to the paid up value of the shares.

Allotment of Shares under the control of the Directors

Subject to the provisions of these Articles and to the provisions of Section 86, the shares shall be under the control of the directors who may allot or otherwise dispose of the same to such persons, on such terms and conditions, and either at premium or at par and at such times, as the directors think fit and with full power to give to any person the right to call for the allotment of any shares either at par or at premium for such time and for such consideration as the directors think fit.

7. Issuance of shares at discount

With the prior approval of the shareholders in a General Meeting of the Company and with the sanction of the Securities and Exchange Commission of Pakistan and upon otherwise complying with the provisions of section 84 of the Ordinance, it shall be lawful for the Directors to issue shares in the capital of the Company at discount.

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8. Variation of shareholders rights

If at any time the share capital is divided into different classes of shares, the rights attached to any class (unless otherwise provided by the terms of issue of the shares of that class) may subject to the provisions of Section 108 be varied with the consent in writing of the holders of three fourths of the issued shares of that class, or with the sanction of a special resolution passed at a separate general meeting of the holders of the shares of the shares of the class. To every such separate general meeting, the provisions of these regulations relating to general meeting shall mutatis mutandis apply, but so that the necessary quorum shall be three persons at least holding or representing by proxy and having twenty five percent of the issued shares of that class.

9. Allotment and Minimum Subscription

The Directors shall in making the allotments duly observe the provisions of Section 68 to 73 as may be applicable to the Company. The minimum subscription upon which the Directors may proceed to allotment as defined in Section 68 is fixed at Rs.100,000/-.

10. Trust not recognized

Save as herein otherwise provided, the company shall be entitled to treat the registered holder of any share as the absolute owner thereof and accordingly shall not, except as ordered by a court of competent jurisdiction or as by statute required, be bound to recognise any equitable, contingent, future, partial or other claim to or interest in such share on the part of any other persons.

Company and Corporate Body may hold shares

Shares may be registered in the name of any limited company or other corporate body. Unless the directors otherwise consent in any case, not more than four operators shall be registered joint-holders of any share.

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Issue of shares to banks and financial institution

As provided in Section 87, the directors may issue ordinary shares, or grant option to convert into ordinary shares, the outstanding balance of any loans, advances or credits or other non-interest bearing securities and obligations outstanding or having a term of not less than three years in the manner provided in any contract with any schedule bank or a financial institution to the extent of twenty percent of such balance.

13. Issue of Redeemable Capital

The directors may issue to banks or financial institutions either severally, jointly or through a syndicate, Redeemable Capital in consideration of any funds, moneys, accommodations received or to be received by the company whether in cash or in specie or against promise, guarantee, undertaking or indemnity issued to or in favour or benefit of the company.

14. Offer for Subscription

No share shall be offered for subscription except upon the term that the amount payable on application shall be the full amount of the nominal value of the share.

CERTIFICATE

15. Certificate

Every person whose name is entered as a member in the register of members shall, without payment, be entitled to receive, within two months after allotment or within forty-five days of the application or registration of transfer, a certificate under the seal specifying the share or shares held by him and the amount paid up thereon.

16. Joint holder

In respect of a share or shares held jointly by several persons, the company shall not be bound to issue more than one certificate and delivery of a certificate for a share to one of the several joint holders shall be sufficient delivery to all.

17. Duplicate Certificate

If a share certificate is defaced, lost or destroyed, it may be renewed on payment of such test, if any, not exceeding one rupee, and on such terms, if any, as to evidence and indemnity and payment of expenses incurred by the company in investigating fittle, as the directors think fit. Within forty-five days of the application directors shall issue certificate to the applicant.

18. Prohibition on Purchase of its own Shares

Except to the extent and in the manner allowed by Section 95, no part of the funds of the company shall be employed in the purchase of, or in loans upon the security of, the company's shares.

TRANSFER OF SHARES

19. Registration of Transfer

The directors shall not refuse to transfer any fully paid shares unless the transfer deed is defective or invalid. The directors may also suspend the registration of transfers during ten days immediately preceding a general meeting or prior to the determination of entitlement or rights of the shareholders by giving seven days previous notice in the manner provided in the Ordinance. The directors may decline to recognise any instrument of transfer unless :

 a fee not exceeding two rupees as may be determined by the directors is paid to the company in respect thereof; and

b) the duly stamped instrument of transfer is accompanied by the certificate of the shares to which it relates, and such other evidence as the directors may reasonably require to show the right of the transferor to make the transfer.

If the directors refuse to register a transfer of shares, they shall within forty five days after the date on which the transfer deed was lodged with the company send to the transferee and the transferor notice of the refusal indicating the defect or invalidity to the transferee, who shall after removal of such defect or invalidity be entitled to relodge the transfer deed with the company.

20. Execution of Transfer

The instrument of transfer of any share in the company shall be executed both by the transferor and the transferee, and the transferor shall be deemed to remain holder of the share until the name of the transferee is entered in the register of members in respect thereof. No transfer shall be made to an infant or person of unsound mind.

21. Form of Transfer

Shares in the company shall be transferred in any usual or common form which the directors shall approve.

TRANSMISSION OF SHARES

Shares of Daceased

The executors, administrators, heirs or nominees, as the case may be, of a deceased sple holder of share shall be the only persons recognised by the company as having any title to the share. In the case of a share registered in the name of two or more holders, the survivor or survivors, or the executors or administrators of the survivor or survivors shall be the only persons recognised by the company as having any title to the share.

23. Nomination by Members

A member / shareholder may deposit with the company a nomination conferring on one or more persons the right to acquire the interest in the shares therein specified in the event of his death. Provisions of Section 80 will apply in case of all such nominations.

24. Entitlement of Shares

Any person becoming entitled to a share in consequence of the death or bankruptcy or insolvency of a member shall, upon such evidence being produced as may from time to time be required by the directors, have the right, either to be registered as a member in respect of the share or, instead of being registered himself, to make such transfer of the share as the deceased or insolvent person could have made; but the

directors shall, in either case, have the same right to decline or suspend registration as they would have had in the case of transfer of the share by the deceased or insolvent person before the death or insolvency.

25. Entitlement of Dividend

A person becoming entitled to a share by reason of the death or bankruptcy or insolvency of the holder shall be entitled to the same dividends and other advantages to which he would be entitled if he was the registered holder of the share, except that he shall not, before being registered as a member in respect of the share, be entitled in respect of it to exercise any right conferred by membership in relation to meetings of the company.

ALTERATION AND FURTHER ISSUE OF CAPITAL

26. Increase in Share Capital

The company may, from time to time, by special resolution increase the share capital by such sum, to be divided into shares of such amount, as the resolution shall prescribe. The new shares shall be subject to the same provisions with reference to transfer, transmission and otherwise as the shares in the original share capital.

27. Consolidation, Division, Sub-division and Cancellation of Shares

The company may by special resolution :

a) Consolutate and divide its share capital into shares of larger amount than its existing shares

b) Sub-divide its existing shares or any of them into shares of smaller amount than its fixed by the memorandum of association, subject nevertheless to the provisions of clause (d) of sub-section (1) of Section 92;

Change Company and Change Current

c) Cancel any shares which, at the date of the passing of the resolution, have not been taken or agreed to be taken by any person.

28. Offer for new shares

Subject to the provisions of Section 86 all new shares shall, before issue be offered to such persons as at the date of the offer are entitled to receive notices from the company of general meetings in proportion, as nearly as the circumstances admit, to the amount of the existing shares to which they are entitled. The offer shall be made by notice specifying the number of shares offered, and limiting a time within which the offer, if not accepted will be deemed to be declined, and after the expiration of that time, or on the receipt of an intimation from the person to whom the offer is made that he declines to accept the shares offered, the directors may dispose of the same in such manner as they think most beneficial to the company. The directors may likewise so dispose of any new shares which (by reason of the ratio which the

new shares bear to shares held by persons entitled to an offer of new shares) cannot, in the opinion of the directors, be conveniently offered under the regulation.

29. Reduction of Capital

The company may, by special resolution, reduce its share capital in any manner and with, and subject to, any incident authorised and consent required by Sections 96 to 106 provided the reduction so made shall not disturb the requirement of minimum paid up capital.

30. Surrender of Shares

Subject to the provisions of the Ordinance, the directors may accept from any member the surrender of all or any of his shares on such terms as shall be agreed.

GENERAL MEETING

31. Statutory Meeting

Subject to provisions of Section 157 the Statutory General Meeting of the company shall be held within a period of not less than three months and not more than six months from the date of entitlement of commencement of business.

32. Annual General Meeting

A general meeting, to be called annual general meeting, shall be held as may be determined by the directors, in accordance with the provisions of Section 158, within eighteen months from the date of incorporation of the company and thereafter once atleast in every calendar year within a period of four months following the close of its financial year and not more than fifteen months after the holding of its last preceding annual general meeting.

Extra ordinary General Meeting

All general meetings of a company other than the statutory meeting or an annual general meeting mentioned in Sections 157 and 158 respectively shall be called Extraordinary General Meetings.

34. Calling of an Extra ordinary General Meeting

The directors may, whenever they think fit, call an extraordinary general meeting. Extraordinary general meeting shall also be called on such requisition, or in default, may be called by such requisitionists, as is provided by Section 159. If at any time there are not within Pakistan sufficient directors capable of acting to form a quorum, any director of the company may call an extraordinary general meeting in the same manner as nearly as possible as that in which meetings may be called by the directors.

NOTICE AND PROCEEDINGS OF GENERAL MEETING

35. Notice

Twenty-one days notice at the least (exclusive of the day on which the notice is served or deemed to be served, but inclusive of the day for which notice is given) specifying the place, the day and the hour of meeting and, in case of special business, the general nature of that business, shall be given in manner provided by the Ordinance for the general meeting, to such persons as are, under the Ordinance or the regulations of the company, entitled to receive such notices from the company but the accidental omission to give notice to, or the non-receipt of notice by, any member shall not invalidate the proceedings at any general meeting. In case of extraordinary general meeting, a shorter notice may be given with the consent of Registrar as provided in Section 159 and for passing a special resolution, meeting may be convened on a shorter notice with the consent of all the members as provided in Section 2(1)(36).

36. Special Business

All business shall be deemed special that is transacted at an extraordinary general meeting, and also all that is transacted at an annual general meeting with the exception of declaring a dividend, the consideration of the accounts, balance sheet and the reports of the directors and auditors, the election of directors, the appointment of, and the fixing of the remuneration of the auditors.

37. Quorum

No business shall be transacted at any general meeting unless a quorum of members is present at that time when the meeting proceeds to business; save as nerein otherwise provided, members having twenty five percent of the voting power present in person or through proxy and two members personally present shall be a guorum.

Adjourned Meeting

Within half an hour from the time appointed for the meeting a quorum is not present, the meeting, if called upon the requisition of members, shall be dissolved; in any other case, it shall stand adjourned to the same day in the next week at the same time and place, and, if at the adjourned meeting a quorum is not present within half an hour from the time appointed for the meeting, the members present, being not less than two, shall be a quorum.

39. Chairman

The chairman of the board of directors, if any, shall preside as chairman at every general meeting of the company, but if there is no such chairman or if at any meeting he is not present within fifteen minutes after the time appointed for the meeting or is unwilling to act as chairman, any one of the directors present may be elected to be chairman, and if none of the directors is present, or willing to act as chairman, the members present shall choose one of their number to be chairman.

40. Power to Adjourn General Meeting

The chairman may, with the consent of any meeting at which a quorum is present (and shall if so directed by the meeting), adjourn the meeting from time to time; but no business shall be transacted at any adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place. When a meeting is adjourned for ten days or more, notice of the adjourned meeting shall be given as in the case of an original meeting save as aforesaid, it shall not be necessary to give any notice of an adjournment or of the business to be transacted at an adjourned meeting.

41. Adoption of Resolution

At any general meeting a resolution put to the vote of the meeting shall be decided on a show of hands unless a poll is (before or on the declaration of the result of the show of hands) demanded. Unless a poll is so demanded, a declaration by the chairman that a resolution has, on a show of hands, been carried, or carried unanimously, or by a particular majority, or lost, and an entry to that effect in the book of the proceedings of the company shall be conclusive evidence of the fact, without proof of the number or proportion of the votes recorded in favour of, or against, that resolution.

42. Demand for Poll

A poll may be demanded only in accordance with the provisions of Section 167.

43. Manner and Time of Taking Poll

Section 168 and the result of the poll shall be taken in accordance with manner laid down in Section 168 and the result of the poll shall be deemed to be the resolution of the craneeting at which the poll was demanded. A poll demanded on the election of chairman or on a question of adjournment shall be taken at once.

Casting Vote

the same of an equality of votes, whether on a show of hands or on a poll, the meeting, at which the show of hands takes place, or at which the poll is demanded, shall have and exercise a second or casting vote.

VOTES OF MEMBERS

45. Right to Vote

Subject to any rights or restrictions for the time being attached to any class or classes of shares, on a show of hands every member present in person shall have one vote except for election of directors in which case the provisions of Section 178 shall apply. On a poll every member shall have voting rights as laid down in Section

160.

46. Vote may be given either personally or by proxy and voting by Corporation Representative

Where a corporation or company is a member of the Company, a person duly appointed by resolution of directors to represent such corporation at a meeting of the Company in accordance with the provisions of Section 162 shall not be deemed to be as instrument of proxy or power of attorney and the production at the meeting of a copy of such resolution certified as being a true copy by a Director of such corporation or by the Chief Executive thereof (if any) shall on production at the meeting be accepted by the Company as sufficient evidence of the validity of his appointment.

47. Vote of Joint-holders

In case of joint-holders, the vote of the senior who tenders a vote, whether in person or by proxy, shall be accepted to the exclusion of the votes of the other joint-holders; and for this purpose seniority shall be determined by the order in which the names stand in the register of members.

48. Vote by member of unsound mind

A member of unsound mind, or in respect of whom an order has been made by any court having jurisdiction in lunacy, may vote, whether on show of hands or on a poll, by his committee or other legal guardian, and any such committee or guardian may,

on a poll, vote by proxy.

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in proxy to be in writing

The instrument appointing a proxy shall be in writing under the hand of the appointor or of his attorney duly authorised in writing. A proxy must be a member.

0. Deposit of instrument of Proxy

The instrument appointing a proxy and the power-of-attorney or other authority (if any) under which it is signed, or a notarially certified copy of that power or authority, shall be deposited at the registered office of the company not less than forty-eight hours before the time for holding the meeting at which the person named in the instrument proposes to vote and in default, the instrument of proxy shall not be treated as valid.

51. Form of Proxy

An instrument appointing a proxy may be in any usual or common form or as near thereto which the directors shall approve.

52. Validity of Proxy

A vote given in accordance with the terms of an instrument of proxy shall be valid notwithstanding the previous death or insanity of the principal or revocation of the proxy or of the authority under which the proxy was executed, or the transfer of the share in respect of which the proxy is given, provided that no intimation in writing of such death, insanity, revocation or transfer as aforesaid shall have been received by the company at the office before the commencement of the meeting or adjourned meeting at which the proxy is used.

DIRECTORS

53. Directors

The subscribers to the Memorandum of Association shall be the first directors of the Company namely :

- 1. Mr. Muhammad Yunus Tabba
- 2. Mr. Muhammad Ali Tabba
- 3. Mr. Muhammad Sohail Tabba
- 4. Mrs. Zulekha Tabba Maskatiya

54. Number of Directors

Subject to the provisions of Section 178(I) of the Ordinance, the Company may from time to time in annual general meeting increase or decrease the number of directors. However, such number shall not in any case be less than three.

hi Nominated Directors

The sompany may have directors nominated by the company's creditors or other special interest by virtue of contractual agreements.

Alternate Director

A director who is about to leave or is absent from Pakistan may with the approval of the directors appoint any person to be an alternate director during his absence from the country provided such absence shall not be less than for a period of three months and such appointment shall have effect and such appointee whilst he holds office as an alternate director, shall be entitled to notice of the meeting of the directors and to attend and vote thereat accordingly but shall ipso facto vacate office when his appointor returns to the country or vacates office as director, if the company in General Meeting removes the appointee from office and any appointment and removal under the clause shall be affected by notice in writing under the hand of director making the same.

57. Remuneration of Director

The remuneration of a director for performing extra services, including holding of the

office of Chairman, and the remuneration to be paid to any director for attending the meeting of the directors or a committee of directors shall from time to time be determined by the Board of Directors in accordance with the law.

58. Qualification of Directors

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Save as provided in Section 187, no person shall be appointed as a Director unless he is a member of the Company. A Director shall not require any share qualification, so long as is holding only subscribers' share.. After the first issue of shares the qualification of a Director shall be holding of at least one(1) share in the Company in his own name. In case of Directors representing interest holding shares of the requisite value, no qualification shall be required.

POWER AND DUTIES OF DIRECTORS

59. Management of Business

The business of the company shall be managed by the directors, who may pay all expenses incurred in promoting and registering the company and may exercise all such powers of the company as are not, by the Ordinance or any statutory modification thereof for the time being in force, or by these regulations, required to be exercised by the company in general meeting, subject nevertheless to the provisions of the Ordinance or to any of these regulations, and such regulations, being not inconsistent with the aforesaid provisions, as may be prescribed by the company in general meeting shall invalidate any prior act of the directors which would have been valid if these regulations had not been made.

60 Power to appoint Attorney

Retistration Retristration The directors may from time to time by power of attorney under the Company's Seal, appoint any person or persons to be the attorney(s) of Company for such purposes and with such powers, authorities and discretions (not exceeding those vested in or exercisable by the directors under these presents) and for such period and subject to such conditions as the directors may from time to time think fit. Any such attorney(s) may, if authorised by the directors, delegate all or any of the powers attorney (s) may.

61. Duties of Directors

The directors shall duly comply with the provisions of the Ordinance or any statutory modification thereof for the time being in force, and in particular with the provisions in regard to the registration of the particulars of mortgages and charges affecting the property of the company or created by it, to the keeping of a register of the directors, and to the sending to the registrar of an annual list of members, and a summary of particulars relating thereto and notice of any consolidation or increase of share capital, or sub-division of shares, and copies of special resolutions and copy of the register of directors and notifications of any changes therein.

62. Power to Borrow

Subject to the provisions of Section 196, the directors may from time to time at their discretion borrow such sum or sums as they may think fit for the purpose of the company including from any banks and Financial Institutions and secure the payment or repayment of such sum or sums in such manner and upon such terms and conditions as they think fit by mortgage or charge upon the whole or any part of the property present and future or any such other way as the directors may think expedient. The company may raise and secure payment of any sum by issue of Redeemable Capital. The Redeemable Capital may be issued at a discount, premium or otherwise with special privilege as to redemption, conversion into shares with voting rights and their subsequent reconversion into Redeemable Capital.

63. Mortgages and Charges

The directors shall cause a proper register to be kept in accordance with Section 135 of all mortgages and charges specifically affecting the property of the company and shall duly comply with the requirements of Sections 121, 122 and 129 in regard to registration of mortgages and charges and shall also duly comply with the requirements of Section 130 as to keeping a copy of every instrument creating any mortgage or charge and the requirements of Section 132 as to giving intimation of the payment or satisfaction of any charge or mortgage created.

64. Disclosure of interest by Directors

Every director or his relative who is in any way, whether directly or indirectly, concerned or interested in any contract or arrangement entered into, or to be entered into, by or on behalf of the company shall disclose the nature of his concern or interest at a meeting of the directors, as required by Section 214.

Begistra Minutes to be made

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the directors shall cause minutes to be made in books provided for the purpose:

of all appointments of officers made by the directors;

of the names of the directors present at each meeting of the directors and of any committee of the directors;

c) of all resolutions and proceedings at all meetings of the company and of the directors and of committees of directors;

and every director present at any meeting of directors or committee of directors shall sign his name in a book to be kept for that purpose. A copy of the minutes of the board of directors shall be furnished to every director within fourteen days of the date of meeting.

DISQUALIFICATION OF DIRECTORS

66. Ineligibility

No person shall become director of the Company if he suffers from any of the disabilities or disqualifications mentioned in Section 187 and if already a director, shall cease to hold such office from the date he so becomes disqualified or disabled: Provided, however, that no director shall vacate his office by reason only of his being a member of any company which has entered into contracts with, or done any work for the company of which he is a director, but such director shall not vote in respect of any such contract or work, and if he does so vote, his vote shall not be counted.

PROCEEDINGS OF DIRECTORS

67. Meetings of Directors

The directors may meet together for the despatch of business, adjourn and otherwise regulate their meetings, as they think fit. The quorum for a meeting of directors shall not be less than one-third of their number or two, whichever is greater. Questions arising at any meeting shall be decided by a majority of votes. In case of an equality of votes, the Chairman shall have and exercise a second or casting vote. A director may, and the secretary on the requisition of a director shall, at any time, summon a meeting of directors. It shall not be necessary to give notice of a meeting of directors to any director for the time being absent from Pakistan.

68. Minimum number of meetings

The directors shall meet at least once in each quarter of a year as required by Section 193(2).

69. Delegation of Power to Committees

The directors may delegate any of their powers not required to be exercised in their meeting to committees consisting of such member or members of their body as they think fit; any committee so formed shall, in the exercise of the powers so delegated, conform to any restrictions that may be imposed on them by the directors.

Chairman

The directors may elect a chairman of their meeting and determine the period for which he is to hold office; but, if no such chairman is elected, or if at any meeting the chairman is not present within fifteen minutes after the time appointed for holding the same or is unwilling to act as chairman, the directors present may choose one of their number to be chairman of the meeting.

71. Chairman of Committee meetings

A committee may elect a chairman of its meetings, but, if no such chairman is elected, or if at any meeting the chairman is not present within fifteen minutes after the time appointed for holding the same or is unwilling to act as chairman, the

members present may choose one of their number to be chairman of the meeting.

72. Proceedings of Committee Members

A committee may meet and adjourn as it thinks proper. Questions arising at any meeting shall be determined by a majority of votes of the members present. In case of an equality of votes, the chairman shall have and exercise a second or casting vote.

73. Validity of Director's Acts

All acts done by any meeting of the directors or of a committee of directors, or by any person acting as a director, shall notwithstanding that it be afterwards discovered that there was some defect in the appointment of any such directors or persons acting as aforesaid, or that they or any of them were disqualified, be as valid as if every such person had been duly appointed and was qualified to be a director.

74. Resolution in Writing

A resolution in writing signed by all the directors or affirmed by them through telex or telegram shall be as valid and effectual as if it had been passed at a meeting of directors duly convened and held.

ELECTION AND REMOVAL OF DIRECTORS

75. Period of Office

The First Directors of the company shall retire from their offices at the first Annual Registreneral Meeting of the Company, and directors shall be elected in their place in Kara accordance with Section 178 for a term of three years, unless they resign earlier, become disqualified for being directors or otherwise cease to hold office.

Election

The directors shall comply with the provisions of Sections 178, 183 and 184 relating to election of directors and matters ancillary thereto.

77. Eligibility

76.

A retiring director shall be eligible for re-election.

78. Casual Vacancy

Any casual vacancy occurring on the board of directors may be filled up by the directors, but the person so chosen shall be subject to retirement at the same time as if he had become a director on the day on which the director in whose place he is chosen was last elected as director.

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79. Mode of Election

The number of directors determined by the Board shall be elected to hold office by the members in general meeting in the following manner:

- A member shall have such number of votes as is equal to the product of the number of voting shares or securities held by him and the number of directors to be elected;
- A member may give all his votes to a single candidate or divide them between more than one of the candidates in such manner as he may choose;
- c) The candidate who gets the highest number of votes shall be declared elected as director and then the candidate who gets the next highest number of votes shall be so declared and so on until the total number of directors to be elected has been so elected.

80. Removal

The Company may by resolution in general meeting remove a director appointed under Section 176 or Section 180 or elected in the manner provided for in Section 178.

Responsed if the number of votes cast against it is equal to, or exceeds :



the minimum number of votes that were cast for the election of a director at the immediately preceding election of directors, if the resolution relates to removal of a director elected in the manner provided in sub-section (5) of Section 178; or

the total number of votes for the time being computed in the manner laid down in sub-section (5) of Section 178 divided by the number of directors for the time being, if the resolution relates to removal of a director appointed under Section 176 or Section 180.

81. Vacation of Office

A director shall ipso facto cease to hold office if :

- a) he becomes ineligible to be appointed a director on any one or more of the grounds enumerated in Section 187.
- b) he absents himself from three consecutive meetings of directors or from all the meetings of the directors for a continuous period of three months, whichever is the longer, without leave of absence from the directors;

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- c) he or any firm of which he is a partner or any private company of which he is a director :
 - without the sanction of the company in general meeting accepts or holds any office of profit under the company other than that of Chief Executive or legal or technical adviser or a banker; or
 - ii) accepts a loan or guarantee from the company in contravention of Section 195.

CHIEF EXECUTIVE

82. First Appointment

The directors of the company as from a date not later than the fifteenth day after the date of its incorporation appoint any individual to be the chief executive, of the Company.

83. Form of Office

The chief executive appointed as aforesaid shall, unless he earlier resigns or otherwise ceases to hold offices, hold upto the first annual general meeting of the company or, if a shorter period is fixed by the directors at the time of his appointment, for such period.

84. Remuneration

The remuneration of the Chief Executive shall be fixed by the directors from time to

5. Power of Chief Executive

The Chief Executive of the Company shall, subject to the provisions of Section 196 of the Ordinance, have such powers of financial, administrative and operational nature that are delegated by the Board of Directors.

86. Subsequent Appointment and Term of Office

Within fourteen days from the date of election of directors under Section 178 or the office of the chief executive falling vacant, as the case may be, the directors of a company shall appoint any person, including an elected director, to be the chief executive, but such appointment shall not be for a period exceeding three years from the date of appointment.

87. Eligibility for Reappointment

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On the expiry of his term of office under Section 198 or 199, a chief executive shall be eligible for reappointment.

Continuation of office until appointment of Successor 88.

The chief executive retiring under Section 198 or 199 shall continue to perform his functions until his successor is appointed unless non-appointment of his successor is due to any fault on his part or his office is expressly terminated.

Terms and Conditions 89.

The terms and conditions of appointment of a chief executive shall be determined by the directors.

Deemed to be Director 90.

The chief executive shall, if he is not already a director of the company, be deemed to be its director and be entitled to all the rights and privileges, and subject to all the liabilities, of that office.

Ineligibility 91.

No person who is ineligible to become a director of a company under Section 187 shall be appointed or continue as chief executive of the company.

92. Removal

93.

The directors of a company by resolution passed by not less than three fourths of the total number of directors for the time being, or the company by a special resolution, may remove a chief executive before the expiration of his term of office notwithstanding anything contained in these articles or in any agreement between the company and such chief executive. He AUC

SEAL

Common Seal

The directors shall provide a common seal of the company which shall not be affixed to any instrument except by the authority of resolution of the board of directors or by committee of directors authorised in that behalf by the directors, and two directors or one director and the secretary of the company shall sign every instrument to which the common seal is affixed.

Office Seal 94.

The directors may provide for the use in any territory, district or place not situated in Pakistan, of an official seal which shall be facsimile of the common seal of the

company, with addition on its face of the name of every territory, district or place where it is to be used. The provisions of Section 213 shall apply to the use of such official seal.

DIVIDENDS AND RESERVES

95. Declaration of Dividend

The company in a general meeting may declare dividends but no dividend shall exceed the amount recommended by the directors.

96. Interim Dividend

The directors may from time to time pay to the members such interim dividends as appear to the directors to be justified by the profits of the company.

97. Dividend out of Profits only

No dividends shall be paid otherwise than out of profits of the year or any other undistributed profits.

98. No Dividend out of Capital Profit

No dividend shall be declared or paid out of profits made from sale or disposal of any immovable property or assets of a capital nature comprised in the undertaking except after such profits are set off or adjusted against losses arising from the sale of any such immovable property or assets of capital nature.

99. Dividend in Proportion to Amount paid

Subject to the rights of persons (if any) entitled to shares with special rights as to dividends, all dividends shall be declared and paid according to the amounts paid on the shares, but if and so long as nothing is paid upon any of the shares in the company, dividends may be declared and paid according to the amounts of the shares. No amount paid on a share in advance of calls shall be treated for the pulposes of this regulation as paid on the share.

Dividend in Specie

Any general meeting declaring a dividend may resolve that such dividends be paid wholly or in part by the distribution of specific assets and in particular, of paid up shares or debentures either of the company or in any one or more such ways.

101. Transfer to Reserve

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The directors may, before recommending any dividend, set aside out of the profits of the company such sums as they think proper as a reserve or reserves which shall, at the discretion of the directors, be applicable for meeting contingencies, or for equalising dividends, or for any other purpose to which the profits of the company may be properly applied, and pending such application may, at the like discretion,

either be employed in the business of company or be invested in such investments (other than shares of the company) as the directors, may, subject to the provisions of the Ordinance, from time to time think fit.

102. Retention of Profit

The directors may carry forward any profit which they may think prudent not to distribute, without setting them aside as a reserve.

103. Capitalisation of Reserve

Any General Meeting may resolve that moneys, investments or other assets forming part of the Company standing to the credit of the Reserve Fund or in the hands of the Company and available for dividend or representing premiums received on the issue of shares and standing to the credit of the shares premium accounts be capitalised and distributed amongst such of the shareholders as would be entitled to receive the same if distributed by way of dividend and in the same proportions on the footing that they become entitled thereto as capital and that all or any part of such capitalised funds be applied on behalf of such shareholder in paying up in full any unissued shares of the Company which shall be distributed accordingly and that such distribution or payment shall be accepted by such shareholders in full satisfaction of their interest in the said capitalised sum.

104. Dividend to Registered holders only

Dividend shall be paid only to registered holders of such shares or to his banker or to his order to a financial institution nominated by the shareholder.

105. Effect of Transfer

A transfer of shares shall not pass the right to any dividend declared thereon before the registration of the transfer.

106 Retention in certain cases

The Directors may retain the dividends payable upon shares in respect of which any person is under the transmission clause entitled to become a member or which any person under that clause is entitled to transfer until such person becomes a member in respect thereof or shall duly transfer the same.

Dividend to joint holders

Any one of the several persons who are registered as the joint holders of any share may give effectual receipt for all dividends and payments on account of dividends in respect of such share.

108. Mode of Payment

Unless otherwise directed any dividend may be paid by cheque or warrant sent

through the post to the registered address of the member entitled, or in the case of joint holders to the registered address of that one whose name stands first on the register in respect of the joint holding and every cheque or warrant so sent shall be made payable to the order of the person to whom it is sent.

109. Unclaimed dividend

All dividends unclaimed for one year after having been declared may be invested or otherwise made use of by the directors for the benefit of the Company until claimed.

110. Time of Payment

The dividends shall be paid within the period laid down in Section 251.

BOOKS AND ACCOUNTS

111. Books of Account

The directors shall cause to be kept proper books of account as required under Section 230.

112. Place where Books of Account kept

The books of account shall be kept at the registered office of the company or at such other place as the directors shall think fit and shall be open to inspection by the directors during business hours.

113. Inspection by Members

The directors shall from time to time determine whether and to what extent and at what time and place and under what conditions or regulations the accounts and books or papers of the company or any of them shall be open to the inspection of members not being directors, and no member (not being a director) shall have any right of inspecting any account and book or papers of the company except as conferred by law or authorised by the directors or by the company in general meeting.

14 Annual Accounts

The directors shall as required by Sections 233 and 236 cause to be prepared and to be laid before the company in general meeting such profit and loss accounts or income and expenditure accounts and balance sheets duly audited and reports as are referred to in those sections.

Presentation of Annual Accounts before Annual General Meeting

A balance sheet, profit and loss account, income and expenditure account and other reports referred to in clause 113 above shall be made out in every year and laid before the company in the annual general meeting made upto a date not more than four months before such meeting. The balance sheet and profit and loss account or

income and expenditure account shall be accompanied by a report of the auditors of the company and the report of directors.

116. When Accounts Settled

Every account of the company when audited and approved by a general meeting shall be conclusive except as regards any errors discovered therein within three months next after the approval thereof. Whenever any such error is discovered within that period, the account shall forthwith be corrected and thenceforth shall be conclusive.

117. Copies to be sent to Members

A copy of the balance sheet and profit and loss account or income and expenditure account and reports of directors and auditors shall, atleast twenty one days preceding the meeting, be sent to the persons entitled to receive notices of general meeting in the manner in which notices are to be given hereunder.

118. Compliance with the Ordinance

The directors shall in all respect comply with the provisions of Sections 230 to 236.

AUDIT

119. Audit

Auditors shall be appointed and their duties regulated in accordance with Sections 252 to 255.

NOTICES

120. Mode of Service of Notice

A notice may be given by the company to any member either personally or by sending it by post to him to his registered address or (if he has no registered address in Pakistan) to the address, if any within Pakistan supplied by him to the company for the giving of notices to him. Where a notice is sent by post, service of the notice shall be deemed to be effected by properly addressing, prepaying and posting a letter containing the notice and, unless the contrary is proved, to have been effected at the time at which the letter would be delivered in the ordinary course of post.

1. Notice by Newspaper

If a member has no registered address in Pakistan, and has not supplied to the company an address within Pakistan for the giving of notices to him, the Company shall comply with the requirements of section 50(3) of the Ordinance.

122. Notice to joint holders

ALP WORK

A notice may be given by the company to the joint-holders of a share by giving the notice to the joint-holder named first in the register in respect of the share.

123. Notice to person entitled to transmission

A notice may be given by the company to the persons entitled to a share in consequence of the death or insolvency of a member by sending it through post in a prepaid letter addressed to them by name, or by the title of representatives of the deceased, or assignee of the insolvent or by any like description, at the address (if any) in Pakistan supplied for the purpose by the person claiming to be so entitled, or (until such an address has been so supplied) by giving the notice in any manner in which the same might have been given if the death or insolvency had not occurred.

124. Notice of General Meeting

Notice of every general meeting shall be given in same manner hereinbefore authorised to:

- a) every member of the company except those members who, having no registered address within Pakistan, have supplied to the company an address within Pakistan for the giving of notices to them, and also to
- b) every person entitled to a share in consequence of the death or insolvency of a member, who but for his death or insolvency would be entitled to receive notice of the meeting, and
- c) to the auditors of the company for the time being.

SECRECY

125. Secrecy

Every Director, Chief Executive, Secretary, Auditor, Trustee, Member of Committee, Officer, Servant, Agent, Accountant or other person employed in the business of the Company shall, if so required by the directors before entering upon his duties, sign a declaration pledging himself to observe a strict secrecy respecting all transactions of the company with the customers and the state of accounts with individuals and in matters relating thereto and shall by such declaration pledge himself not to reveal any of the matters which may come to his knowledge in the discharge of his duties except when required to do so by the directors or by any meeting or by a court of law of by the person to whom such matters relate and except so far as may be necessary in order to comply with any of the provisions in these presents.

26han Member's Access to Company Premises

No member or other person (not being a director) shall be entitled to enter the property of the company or examine the company's premises or properties without the permission of a director, subject to Article 125 to require discovery of or any information respecting any detail of the Company's trading or any matter which is or

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may be in the nature of a trade secret, mystery of trade or secret process or of any matter whatsoever which may relate to the conduct of the business of the company and which in the opinion of the directors will be inexpedient in the interest of the members of the company, to communicate.

WINDING UP

127. Division of Assets in Specie

If the company is wound up, the liquidator may, with the sanction of a special resolution of the company and any other sanction required by the Ordinance, divide amongst the members, in specie or kind, the whole or any part of the assets of the company, whether they consist of property of the same kind or not.

128. Valuation by Liquidator

For the purpose aforesaid, the liquidator may set such value as he deems fair upon any property to be divided as aforesaid and may determine how such division shall be carried out as between the members or different classes of members.

129. Assets in Trust

The liquidator may, with the like sanction, vest the whole or any part of such assets in trustees upon such trusts for the benefit of the contributories as the liquidator, with the like sanction, thinks fit, but so that no member shall be compelled to accept any shares or other securities whereon there is any liability.

INDEMNITY

130. Director's and other's right to Indemnify

Every officer or agent for the time being of the company may be indemnified out of the assets of the company against any liability incurred by him in defending any proceedings, whether civil or criminal, arising out of his dealings in relation to the affairs of the company, except those brought by the company against him, in which judgment is given in his favour or in which he is acquitted, or in connection with any application under Section 488 in which relief is granted to him by the Court.

ARBITRATION

Differences to be referred to Arbitrator(s)

Whenever any difference arises between the company on the one hand and any of the members, their executors, administrators or assigns on the other hand, touching the true intent or construction, or the incident or consequences of these Articles or of the statutes, or touching anything there or thereafter done, executed, omitted or suffered in pursuance of these Articles or of the statutes or touching any breach or alleged breach of these Articles, or any claim on account of any such breach or alleged breach, or otherwise relating to the premises, or to these Articles or to any

statute affecting the company or to any of the affairs of the Company, every such difference shall, as a condition precedent to any other action at law be referred in conformity with the Arbitration Act, 1940, or any statutory modification thereof and any rules made thereunder, to the decision of an arbitrator to be appointed by the parties in difference or if they cannot agree upon a single arbitrator to the decision of two arbitrators of whom one shall be appointed by each of the parties in difference, or in the event of the two arbitrators not agreeing, then of an umpire to be appointed by the two arbitrators, in writing, before proceeding on the reference, and such decision shall be final and binding on the parties.





We, the several persons whose names and addresses are subseribed, are desired of being formed into a company, in pursuance of these Articles of Association, and we respectively agree to take the number of shares in the capital of the company set opposite our respective names:

Name and surname	National Identity	Father's name	Nationality	Occupation	Residential address	Numbers of shares	Signatura
(Present & former) in	Card No./	Husband's name		SI	in full	taken by each	Signature
full (in block letter	Passport No.	in full		15		subscriber	
Muhammad Yunus	42301-3534123-9	S/o. (Late) Abdul 👘	Pakistani	Industrialist	53 – A, Adamjee	1	J /
Tabba		Aziz Tabba	1011 01 P3N3		Nagar, Johar Road, Karachi	(One)	
Muhammad Ali Tabba	42201-6464247-3	S/o. (Late) Abdul	Pakistani	Industrialist	17/1/A, Johar Road,	1	
		Razzak Tabba			Muhammad Ali	(One)	DA.
					Housing Society,		
					Karachi.		
Muhammad Sohail	42000-0568372-5	S/o. Muhammad	Pakistani	Industrialist	53 – A, Adamjee	1	
T ab ba		Yunus Tabba			Nagar, Johar Road,	(One)	
					Karachi.		
Mrs. Zulekha Tabba	42201-0620919-4	W/o. Muhammad	Pakistani	Housewife	17/1/A, Johar Road,	1	
Maskatiya		Ali Maskatiya			Muhammad Ali	(One)	12 Pakl
					Housing Society,		Juline
					Karachi.	(
	CUIN #				7-Park Avenue,		×
Lucky Holdings Limited	0081027	N/A	Pakistani	Public	University Town,	99,996 (Ninety Nine	
				unlisted Co	Peshawar, Khyber	Thousand Nine	•
Authorized					Pakhtunkhwa	Hundred Ninety Six	nU
Representative					17/1/A Johns Dood	only)	
Muhammad Ali Tabba	42201-6464247-3	(Late) Abdul	Pakistani	Industrialist	Muhammad Ali		
1		Razzak Tabba			Housing Society Khi		
					Trousing Society, MI	100.000	
	1	A		1		(One nundred mousand)	L \

Dated this _____ day of June, 2014

Witness to above Signature :

Faiz Mahmood Khan Durrani

(Pakistani) CNIC No. 42401-9165908-5 Advocate High Court, S&B Durrani Law Associates A-17/II, Durrani House, 6th Street, Bath Island, Clifton, Karachi.



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	<u>FORM - 21</u>					
THE CO	MPANIES ORDINANCE, 1984 [Section 142]					
NOTICE OF SITUATION OF RI	EGISTERED OFFICE OR ANY CHANGE WILLION					
Please complete in typescript or in bold	block capitals.					
1. Incorporation Number						
2. Name of the Company LUCKY	ELECTRIC POWER COMPANY LIMITED					
3. Fee paid Rs.1500/- Nam	e & Branch of the Bank MCB Sh-e-Faisal Cor.Br. Khi					
4. Receipt No. <u>M-2014-055596-07</u>	Day Month Year Date 0 3 0 6 2 0 1 4 (Bank challan to be attached in original)					
 The situation of registered office of the company was changed from (state previous address) 	Not Applicable					
6. The registered office of the Company is now situated at	6-A Muhammad Ali Housing Society, A. Aziz Hashim Tabba Street, Karachi-75350 (State full address with identifiable number / name of the premises or building and street, road and locality besides the name of the town and postal area, where applicable).					
6.1 Telephone Nos.	021-111 - 786 - 555					
6.2. Fax No, if any	021 3453 4302					
6.3. E-mail address	Farooq.ladha@lucky-cement.com					
	Day Month Year					
7. With effect from (date)						
 Signatures of Director / Chief Executive/ Secretary 						
9. Name of Signatory	MUHAMMAD AL TABBA					
10. Designation	Director					
11. NIC No. of Signatory	42201-6464247-3					
12. Date	Day Month Year 0 3 0 6 2 0 1 4					
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Present Name in Full	NIC No or passport No. in case of Foreign National	Father's/ Husband's Name	Usual residential address	Designation	Nationality**	Business Occupation*** (if any)	Date of present appointment or change	Mode of appointment / change / any other Remarks
(a)	(b)	(C)	(d)	(e)	(f)	(1)	(h)	(i)
Mrs. Zulekha Tabba Maskatiya	42201-0620919-4	W/o. Muhammad Ali Maskatiya	17/1/A Johar Road, Muhammad Ali Housing Society, Karachi	Director	Pakistani	Housewife	Since Incorporation	N/A
6.2 Ceasing of office/Re	tirement/Resignatio	n:			1			
6.3 Any other change in	particulars relating	to columns (a) to (a) ab		l	1		1	
		(-/ (3)			Ι	1		[
7. Name of Signatory	MUHAMMAD) ALI TABBA			8. Designation	DIRECTOR		
9. Signatures of Chief Executive/ Secretary	×	llo h	<u>م</u>			10. Date 0	Day Month	Year
		Securities & C	karachi Karachi					
		(1)3 ¹ 80	Commission 6.14					

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			THE C	OMPANIES		CE, 1984			
PARTICULARS O	F DIRECTORS AN	D OFFICERS, INCL	UDING THE CHI	EF EXECUTI	VE, MANAGIN	NG AGENT, SE	CRETARY, CHIE	F ACCOUNTANT.	AUDITORS AND
lease complete in tur	coorint on in hold hi		LEGAL ADVIS	ER, OR OF A	NY CHANGE	THEREIN			.1
CUIN (Incorporation	Number)	ack capitals.							2386
	(unibely]				70 senanus
Name of the Compa	iny	LUCKY E	LECTRIC POWE	R COMPANY L	IMITED			· · · · · · · · · · · · · · · · · · ·	THE S OF OF PONT
Fee Paid (Rs.)	1 5 0	0 Name & Brand	ch of the Bank	MCB Ba	nk Limited, Sh	nahrah-e-Faisal	Corporate Branc	n, Karachi.	miser 2014
Receipt No.	M- 2014-055536	Day Date	Month 0	Year (0 6	2	0 1	4	KAN WAT
Mode of payme idicate) Particulars*:	nt Cash	L	k	[<u> </u>	l		
esent Name in Full	NIC No or passport No. in case of Foreign National	Father's/ Husband's Name	Usual reside	intial address	Designation	Nationality**	Business Occupation*** (if any)	Date of present appointment or change	Mode of appointment / change / any othe Remarks
(a) 1 New appointment/o	(b)	(c)		(d)	(e)	(f)	(g)	(h)	(i)
RECTORS:							· · · · · · · · · · · · · · · · · · ·		
hammad Yunus Tabba	42301-3534123-9	(Late) Abdul Aziz Tabbi	a 53-A Adamjee Johar Road, Ki	: Nagar, arachi	Director	Pakistani	Industrialist	Since Incorporation	N/A
hammad Ali Tabha	42201-6464247-3	(Late) Abdul Razzak T	301111 Daphananod Society Rance	ohar Road, Ali Housing chi	Director	Pakistani	Industrialist	Since Incorporation	N/A
		Muhammad Manus Ta	A Adam	e Nagar, Johar	Director	Pakistani	Industrialist	Since Incorporation	N/A
hammad Sohail Tabba	42000-0568372-5		and Karaci	H	1				
hammad Sohail Tabba	42000-0568372-5	ReCommissi	Ad Krachi Ad Arachi)		I	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	A	Contd

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FORM	A - ANNUAL RETURN OF CO	NPANY HAVING SHARE CAPIT	AL				
1 Registration No	0631182						
2. Name of the Company	LUCKY CEMENT LIMITED]				
3 Form A made upto	17/10/2014]					
4 Date of AGM (Day/Mosth/Year)	17/10/2014) I					
5 Registered Office Address	PETU DISTT LAKKI MAR	PART · A					
6. Email Address	feroog ladhe@lucky-ceme	it com			1) · ·	1.	Ċ,
7 Office Tel No	111-788-555]		l an	i. Ka		
Office Fax No	021-34534302				PANY RECH	Sec.1	
9 Nature of Business	CEMENT			(Errow.	NO: NO: CARL	FICE
19 Authorized Share Capital				\sim $\langle \rangle$	پربېرون . د نه موقس دنشادر	WAR	/
Type of Shares	No. of Shares	Amount	Face V	atua 🔪	سیس کار	ر سم <u>پنی ر</u> ج ^ن ه	
Ordinary Shares		5,000,000,000 00					
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11. Paid up Ghare Capita							
Type of Shares	No of Shares	Amount	Issue F	ትice			
Ordinary Shares		3,233.750,000.00					
			<u>ii</u>		· .		
 Amount of indebtedness on the date upto which form A is need in respect of all Morigages/Charges 	29 274,001 667 00						
13. Particulars of the helding comp	sany						
Name							
Registration No.		N Shares Held	ļ				
14. Chief Executive					-1		
Name	MUHAMMAD ALI TABBA	NIC	422016464247	•			
Address	17/1/A JOHAR ROAD M	UHAMMAD ALI HOUSING SOCI	ETY, KARACH	1	2		
			F	Next Page	1		



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15. Chief Accountant			
Name	MUHAMMAD FAISAL	NIC	4220179988881
Address	PLOT # 192, STREET 15, BEHAR MUSLIM	COOPERAT	TVE HOUSING SOCIETY, SHARFAE
16. Secretary			a town ments in approximation of
Nanie	FANNAZ	NIC	4230108566327
Address	103 AL MUSTAFA HOMES 360 SHAHANI S	STREET GA	RDEN EAST KARACH
17. Legal Advisor			
Name	MUSTAFA LAKHANI		
Address	501 - TRADE TOWER ABDULLAH HAROO	IN ROAD, KI	ARACHI
18, Auditors	a an		
Name	ERNST AND YOUNG FORD RHODES SIDA	x '	
Address	PROGRESSIVE PLAZA BEAUMONT ROAD	KARACHI	- 76530

19. List of Directors on the date of Form-A

Name of Carector	Address	Nationality	4	IIC (Passp	ort No. If Foreigner)
JAWED YUNUS TABBA	56/57-A, ADAMJEE NAGAR, JOHAR I	Pakistan	4	22012111	1047
MUHAMMAD ABID GANATHA	C-15 BLOCK - B GULSHAN-E-JAMA	Pakistan		122015355	1927
WOHAMMAD AL TABBA	1771/A JOHAR ROAD, MUHAMMAD -	Pakistan	4	22016464	2473
	53 A ADAMJEE NAGAR JOHAR RO.	Pakistan	4	20000568	3725
WUHAMMAD YUNUS TABBA	53-A ADAMJEE NAGAR, JOHAR RO,	Pakistan	4	23013534	1239
RAHILA ALEEM	HOUSE NO 106, STREET NO 4, KHA	Pakistan	4	230197439	022
TARIO IOBAL KHAN	HOUSE # 69, STREET # 6 KHAYAB/	Pakistan	· · · ·	11011856	5691
ZULEKHA TABBA MASKATIYA	17/1/A JOHAR ROAD, MUHAMMAD,	Pakistan	4	220106209	1194
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tame of Director	Address	Nationality	NIC (Passport No. If Foreigne	r)
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Form A, Page 1

Page 4 of 6

20. List of members & debenture holders on the date upto which this Form A is made						
Folio	Name of Members/Debenture Holders	Address	Nationality	No of Shares	NIC (Passport No. if Foreigner)	
1	Soft popy of member list is attache	A total of 4620 shareholders	Pakistan	323375000	9995999999999	
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PART-B

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Form A, Page 1

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Na.	Name of Transferor (Members) Name of Transferee	Number of Shares Transferred	Date of Registration
1	Soft copy of transfer list is attached	A total of 209 transfers is attached	396484	02/10/2014
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22. i cer	rtily that this return and the accomp	anying statements stats the facts correctly and co	mpletely as on the date uplo v	which this Form-A
Date (D	D/MM/YYYY)	20/11/2014		
Signatur	re	FAYYAZ		
Designa	tion			
			Prestored Parent	New Dates
		A Marco Comme		
	Certifica	to be Inte Copy		
	Assistant Re	gistrar of Companies		
	Securities & Excha	nge Commission of Pakistan		
	- CR	U, Pesnawar 24-12-1017		



July 8, 2014 Ref: BOCEXPCT14036

To: Lucky Cement Limited

Dear Sirs,

Re: Interest Letter for financing 660MW Power Plant Project

We refer to the captioned project which your esteemed company is now discussing with some Chinese Companies.

We are pleased to express our interest in considering providing you an Export Credit Facility insured by Sinosure, which is the Export Credit Agency of China, to assist the EPC contract to be entered between your good company and the Chinese Company.

Bank of China Limited is well experienced to arrange such kind of transaction and has dedicated Export Credit team available to this transaction.

Please note that this letter is not an offer of financing, which remains subject to Sinosure and Bank of China's internal credit committees' approvals.

If you need any further explanation or information, please do not hesitate to contact the following persons in charge of your file.

Mr. Zhong Liang Manager Tel.:86-10-66596535 Email: zhongl_hq@mail.notes.bank-of-china.com

Mr. Fan Enhui Senior Manager Tel.:86-10-66593126 Email:faneh_hq@mail.notes.bank-of-china.com

Yours faithfully

Name: LI Mahg Title: Deputy General Manager Corporate Banking Unit Head Office, Bank of China



Letter of Interest

July [4], 2014

TO: Private Power and Infrastructure Board [PPIB] SUBJECT: 660 MW Coal-Fire Project for Lucky Cement Limited CC: Habib Bank Limited

Dear Sirs:

We are in the interest of providing buyer credit facility for the captioned project. The aggregate loan amount should not exceed 85% of the portion originating from China of the captioned project and by no means, however, should exceed US\$ 550 million (Five Hundred Fifty Million US Dollars only).

The specific terms and conditions of this intended credit facility are to be set forth and confirmed by us after we negotiate with relevant parties and before the credit loan is officially provided.

Please also be advised that this letter is not an offer or a legally binding financing commitment. It may not be relied or enforced in any court or tribunal.

This Letter of Interest is for the sole confidential use of the persons to whom it is delivered and may not be reproduced or used for any other purpose or disclosed to any other persons without the prior written consent of ICBC and this provision is legally binding..

This Letter of Interest shall be governed by the English laws. Any dispute that is not resolved firstly on the basis of mutual consultation shall be finally settled by arbitration at the request of any Party at the Beijing Sub-commission of the China International Economic and Trade Arbitration Commission ("CIETAC").

This Letter of Interest will be valid within 6 months from the date above written.

Yours sincerely,

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Liu Jianchang Deputy General Manager of Banking Department Industrial and Commercial Bank of China Ltd.



Lucky Electrical Power Company Limited is a fully owned subsidiary of of Lucky Cement Limited and is new company. Please refer attached audited financials of Lucky Cement Limited to establish financial stability of the Company. Financial statement of Lucky Cement Company Limited has yet not been made and audited.



Concern dawar (n.



Ref. No. LEPCL/CEO/660-003

Dated:- February 20th, 2015

Τo,

The Registrar National Electric Power Regulatory Authority NEPRA Tower, Ataturk Avenue (East), G-5/1, Islamabad

Dear Sir,

This is with reference to information / documents required to be submitted with cur application for Generation License dated 20^{th} February 2015 under the NEPRA Licensing (application and Modification Procedure) Regulations, 1999. In terms of the requirements specified under Sections 3(5)(d)(iii) and 3(5)(e) of the said Regulations, we hereby submit as follows:

- 1. Lucky Electric Power Company Limited ("LEPCL") was incorporated on 13 June 2014 and as of the date of application for Generation License, is not required to prepare financial statements. LEPCL will prepare its first financial statements at the end of its first accounting period on 30 June 2015.
- 2. As of the date of application for Generation License, the assets of LEPCL are free of any charges or encumbrances.

Yours faithfully,

For and on behalf of Lucky Electric Power Company Limited

Intisar ul Haq Haqqi Chief Executive Officer



D\LEPCL\NEPRA\Nepra 660-003 (03-02-2015).doc



MARACIN

Company Profile of SEPCOIII

SEPCOIII Electric Power Construction, founded in 1985, is a wholly subsidiary of Power Construction Corporation of China. SEPCOIII is a state-owned specialized electric enterprise in People's Republic of China, owns Grade A Qualification for Electric Power Projects, Grade C Qualification for General Contracting for Housing Engineering, Grade C Qualification for General Contracting for Municipal Public Projects, Grade A Qualification for Professional Contracting for Environmental Protection Projects, Grade C Qualification for Professional Contracting for Piping Projects, Grade C Qualification for Professional Contracting for Piping Projects, Grade C Qualification for Professional Contracting for Fire Fighting Facility Installation, Grade A Qualification for Industrial Boiler Installation, Banking AAA Grade Credit, Credit Standing AAA Grade for Enterprise, Business Qualification Certificate for International EPC Projects and Labor Services, National Grade A Civil and Metallographic Laboratory, National Grade A Qualification for Archives Administration, National Outstanding Enterprise Award of the year 2000 and 2001 and won 8 times "Luban Prize"-the highest national distinction for high project quality.

SEPCOIII is one of the few China professional engineering enterprise in terms of EPCO in international electric power sector. SEPCOIII ranked 161 of Top 225 International Contractor of ENR (Engineering News-Record) in 2007, ranked 141 in 2008, ranked 95 in 2009, ranked 75 in 2010, ranked 58 in 2011, ranked 53 in 2012, ranked 54 in 2013. SEPCOIII is one of the first batch enterprises which is awarded the Credit Standing AAA Grade for International projects. At present, SEPCOIII spans his business across India, Nigeria, Jordan, Saudi Arabia, Oman, Indonesia and Singapore. Besides, SEPCOIII also builds strategic cooperation relationship with many famous companies in America, Germany, France, Japan and so on. Till now, the total overseas contract amount is over 22 billion US dollars.

SEPCOIII owns scientific management system, advanced construction technology and a large amount of powerful equipment and rich experience in power plant sector. The



Company has an experienced and highly specialized technical team with more than four thousand and five hundred core employees and has more than one hundred strategic cooperation companies. SEPCOIII possesses more than two hundred sets of large-sized construction machines such as CC2500 (500t) crawler crane. The company owns the qualification certificate of First-class EPC contractor and Business Qualification Certificate for International EPC Projects has passed the authentication of ISO9001 quality management system, ISO14001 environmental management system and OHSMS occupation health and safety management system.

SEPCOIII bases on the international EPC projects, strives to develop engineering technology, lucubrates sea water desalination solar power generation technology and the exploitation & execution of renewable energy projects, and masters the core technology of seawater treatment & low-carbon energy in field of high-tech & environmental protection.

SEPCOIII is continuously pursuing its mission of "building excellent projects, satisfying customers' wishes and promoting social development" and its core value that is "integrity, innovation, efficiency and responsibility". In pursuit of our philosophy of cooperation based on "partnerships in integrity and win-win progress", SEPCOIII sincerely welcomes partners from all over the world to work together to achieve our shared mission and goals.





KARACHI

EXPERIENCE LIST OF SEPCOIII

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	DYST CIT	Parse Plan (DPC)		
S.N.	Power Plant	Location	Capacity	Commissioning date
1.	Papalanto 8x42MW Gas Turbine Power Plant	Papalanto, Nigeria	8x42MW	2007.07
2.	Ogun 750MW Combined Cycle Power Plant	Ogun, Nigeria	750MW	2011.09
3.	Jharsuguda 4x600MW IPP Electric Power Plant	Orissa State, India	4x600MW	2011.12
4.	Jharsuguda 9x135MW CPP Electric Power Plant	Orissa State, India	9x135MW	2010.12
5.	VSLP 1x135MW CFB Power Plant	Rajasthan State, India	1x135MW	2010.08
6.	Mundra Super-Critical Electric Power Plant	Gujarat State, India	5x660MW	2011-2012
7.	Jhajjar 2x660MW Super-Critical Electric Power Plant	Haryana State, India	2x660MW	2012-2013
8.	ITPCL 2x600MW Sub-Critical Electric Power Plant	Tami Nadu State, India	2x600MW	2014.10
9.	ITPCL 4x660MW Super-Critical Electric Power Plant	Tami Nadu State, India	4x660MW	2017.02
10.	Samra 100MW Combined Cycle Plant Phase II	Northeast Amman, Jordan	100MW	2010.06
11.	Rabigh 2x660MW IPP Oil-Fired Power Plant	Rabigh, Saudi Arabia	2x660MW	2013.04
12.	Salalah 445MW +15MIGD IWPP Power Plant	Salalah, Oman	445MW+15 MIGD	2012.03
13.	Banha 750MW Combined Cycle Power Plant	Banha, Egypt	750MW	2014.03
14.	RAZ 2400MW Combined Cycle Power Plant	Ras Az Zawr, Saudi Arabia	2400MW	Under Construction
15.	Giza North 1500MW Combined Cycle Power Plant	Northwest Cairo, Egypt	1500MW	Under Construction
16.	Al-Anbar 1600 MW CCPP Power Plant	Al-Anbar Iraq	1600MW	Under Construction
17.	Jerada 350 MW Thermal Power Plant	Jerada Morocco	350 MW	Under Construction
18.	Zenica 390 MW cogeneration combined cycle gas turbine unit	Zenica, Bosnia and Herzegovina	390 MW	Under Construction



Note: Jhajjar 2x660MW Super-Critical Electric Power Plant and Salalah 445MW +15MIGD IWPP Power Plant won China Highest Quality Prize—Luban Prize. Rabigh 2x660MW IPP Oil-Fired Power Plant won China National Gold Quality Project Prize.

		n (* 1767,521)); m(s (1)(1));		
S.N.	Power Plant	Location	Capacity	Commissioning Date
1.	Zouxian 1×1000MW Ultra Supercritical Power Plant	Zoucheng, Shandong Province	1×1000MW	2007.07
2.	Lingwu 2×1000MW Phase II Ultra Supercritical and Air-cooling Power Plant	Lingwu, Ningxia	2 ×1000MW	2010.12
3.	Laizhou 2×1000MW Ultra Supercritical Power Plant	Laizhou, Shandong Province	2×1000MW	2013.12

Note: Zouxian 1×1000MW Power Plant won the highest prize in China-Luban Prize. Laizhou 2×1000MW Ultra Supercritical Power Plant won China National Gold Quality Project Priz

	Domestic (carte)	in a Roward Benn (600)		
S.N.	Power Plant	Location	Capacity	Commissioning Date
1.	Weifang 2×670MW Supercritical Power Plant Phase II	Weifang, Shandong Province	2×670MW	2007.06
2.	Rizhao 2×670MW Supercritical Power Plant Phase II	Rizhao, Shandong Province	2×670MW	2008.12
3.	Changde 1×660MW Supercritical Power Plant	Changde, Hunan Province	1×660MW	Under Construction
4.	Hequ 2×600MW Sub-critical Power Plant Phase I	Hequ, Shanxi Province	2×600MW	2004.11
5.	Hequ 2×600MW Supercritical Power Plant Phase II	Hequ, Shanxi Province	2×600MW	2011.01
6.	Changsha 2×600MW Supercritical Power Plant	Changsha, Hunan Province	2×600MW	2007.12
7.	Lingwu 2×600MW Supercritical Power Plant	Yinchuan, Ningxia Province	2×600MW	2007.06
8.	Qinzhou 2×600MW Supercritical Power Plant	Qinzhou, Guangxi Province	2×600MW	2007.11
9.	Huadian Liuan 2×600MW Extension Power Plant	Liuan, Anhui Province	2×600MW	Suspended
Note:	Weifang 2×670MW Power Plant Phase	II and Rizhao 2×670M	W Power Plan	nt Phase II won the

Bromanna Contestant Barrya (Dennis Milly NY)

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SEPCOIII Electric Power Construction CorporationAdd. : Wing A, Yijie Hongtai Plaza, 882-1, Tong'an Road, Qingdao-266 100, ChinaTel: 0086-532-80868000Fax: 0086-532-80868888Http:// www.sepco3.com



S.N.	Power Plant	Location	Capacity	Commissioning Date
1.	Weifang 2x300MW Power Plant Phase I	Weifang, Shandong Province	2x300MW	1994.10
2.	Laicheng 4x300MW Power Plant	Laiwu, Shandong Province	4x300MW	2003.05
3.	Shengli 2x300MW Power Plant	Dongying, Shandong Province	2x300MW	2004.04
4.	Pengcheng 2x300MW Power Plant	Pengcheng, Jiangsu Province	2x300MW	2004.09
5.	Maocun 2x300MW Power Plant	Maocun, Jiangsu Province	2x300MW	2006.06
6.	Songyu 2x300MW Power Plant	Songyu, Fujian Province	2x300MW	2006.07
7.	Heze 2x300MW Power Plant	Heze, Shandong Province	2x300MW	2006.08
8.	Lineng 2x300MW Power Plant	Jining, Shandong Province	2x300MW	2007.05
9.	Tengzhou 2x315MW Power Plant	Tengzhou, Shandong Province	2x315MW	2006.12
10.	Rizhao 2x350MW Power Plant	Rizhao, Shandong Province	2x350MW	2000.04
11.	Hangjin 2x330MW Power Plant	Hangjin Banner, Inner Mongolia	2x330MW	2012. 03
12.	Qaramay 2x330MW Power Plant	Qaramay, Xinjiang, China	2x330MW	2012.03
13.	Kuche 2x330MW Power Plant	Kuche, Xinjiang, China	2x330MW	2013.03
14.	Zibo 2x330MW Power Plant	Nanding, Shandong Province	2x300MW	2011.04
15.	Jincheng 2x300MW Electric Power Plant	Jincheng, Shanxi Province	2x300MW	2010.10
Note:	Weifang 2x300MW Power Plant Phase	I and Laicheng 4x300N	AW Power Pla	ant won the highest
prize	in Unina-Luban Prize. Domesia (2019)	NTHE WARDER WAS	VAV	
S.N.	Power Plant	Location	Capacity	Commissioning Date
1.	Huangdao 2x210MW Power Plant	Huangdao, Shandong Province	2x210MW	1990.11
2.	Longkou 2x200MW Power Plant Phase II	Longkou Shandong Province	2x200MW	1989.12

KARACHI

SEPCOIII Electric Power Construction CorporationAdd. : Wing A, Yijie Hongtai Plaza, 882-1, Tong'an Road, Qingdao-266 100, ChinaTel: 0086-532-80868000Fax: 0086-532-80868888Http:// www.sepco3.com

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3.	Longkou 2x200MW Power Plant Phase III	Longkou Shandong Province	2x200MW	1996.07
4.	Yantai 3x150MW Power Plant	Yantai, Shandong Province	3x150MW	2006.09
5.	Tengzhou 2x135MW Power Plant Phase II	Tengzhou, Shandong Province	2x135MW	2003.11
6.	Nanding 2x135MW CFBPower Plant	Nanding, Shandong Province	2x135MW	2003.12
7.	Yima 2x135MW Power Plant	Yima, Henan Province	2x135MW	2004.10
8.	Chacheng 2x135MW CFB Power Plant	Chacheng, Jiangsu Province	2x135MW	2005.09
9.	Yueyang 1x135MW Power Plant	Yueyang Guangdong Province	1x135MW	2005.11
10.	Dongying 2x135MW Power Plant	Dongying, Shandong Province	2x135MW	2004.03
11.	Yunhe 2x130MW Power Plant	Jining, Shandong Province	2x130MW	2000.10
12.	Linyi 2x125MW Power Plant	Linyi, Shandong Province	2x125MW	1998.08
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S.N.	Power Plant	Location	Capacity	Commissioning Date
S.N. 1.	Power Plant Ningde 2x1000MW Nuclear Power Plant	Location Ningde, Guangdong Province	Capacity 2x1000MW	Commissioning Date Under Construction (2013.08)
S.N. 1. 2.	Power Plant Ningde 2x1000MW Nuclear Power Plant Dayawan 2 x 900MW Nuclear Power Plant	Location Ningde, Guangdong Province Dayawan, Guangdong Province	Capacity 2x1000MW 2 x 900MW	Commissioning Date Under Construction (2013.08) 1994
S.N. 1. 2. 3.	Power Plant Ningde 2x1000MW Nuclear Power Plant Dayawan 2 x 900MW Nuclear Power Plant Putian Combined Cycle Gas Turbine Power Plant(9F Class)	Location Ningde, Guangdong Province Dayawan, Guangdong Province Putian, Fujian Province	Capacity 2x1000MW 2 x 900MW 4x350MW	Commissioning Date Under Construction (2013.08) 1994 2008.12
S.N. 1. 2. 3. 4.	Power Plant Ningde 2x1000MW Nuclear Power Plant Dayawan 2 x 900MW Nuclear Power Plant Putian Combined Cycle Gas Turbine Power Plant(9F Class) Chengdao Combine Cycle Gas Turbine Power Plant	Location Ningde, Guangdong Province Dayawan, Guangdong Province Putian, Fujian Province Chengdao, Shandong Province	Capacity 2x1000MW 2 x 900MW 4x350MW 170MW	Commissioning Date Under Construction (2013.08) 1994 2008.12 2002.11
S.N. 1. 2. 3. 4. 5.	Power Plant Ningde 2x1000MW Nuclear Power Plant Dayawan 2 x 900MW Nuclear Power Plant Putian Combined Cycle Gas Turbine Power Plant(9F Class) Chengdao Combine Cycle Gas Turbine Power Plant Golmud 5MWP Solar Power Plant Phase I First Package	Location Ningde, Guangdong Province Dayawan, Guangdong Province Putian, Fujian Province Chengdao, Shandong Province Golmud City, Xin Jiang	Capacity 2x1000MW 2 x 900MW 4x350MW 170MW 5MWP	Commissioning Date Under Construction (2013.08) 1994 2008.12 2002.11 2011.05
S.N. 1. 2. 3. 4. 5. 6.	Power Plant Ningde 2x1000MW Nuclear Power Plant Dayawan 2 x 900MW Nuclear Power Plant Putian Combined Cycle Gas Turbine Power Plant(9F Class) Chengdao Combine Cycle Gas Turbine Power Plant Golmud 5MWP Solar Power Plant Phase I First Package Golmud 15MWP Phase I Second Package + 30MWP Phase II Solar Power	Location Ningde, Guangdong Province Dayawan, Guangdong Province Putian, Fujian Province Chengdao, Shandong Province Golmud City, Xin Jiang Golmud City, Xin Jiang	Capacity 2x1000MW 2 x 900MW 4x350MW 170MW 5MWP 15MWP+30 MWP	Commissioning Date Under Construction (2013.08) 1994 2008.12 2002.11 2002.11 2011.05 2011.12
S.N. 1. 2. 3. 4. 5. 6. 7.	Power Plant Ningde 2x1000MW Nuclear Power Plant Dayawan 2 x 900MW Nuclear Power Plant Putian Combined Cycle Gas Turbine Power Plant(9F Class) Chengdao Combine Cycle Gas Turbine Power Plant Golmud 5MWP Solar Power Plant Phase I First Package Golmud 15MWP Phase I Second Package + 30MWP Phase II Solar Power Mt. Tai Pumped Storage Power Plant	Location Ningde, Guangdong Province Dayawan, Guangdong Province Putian, Fujian Province Chengdao, Shandong Province Golmud City, Xin Jiang Golmud City, Xin Jiang Tai'an, Shandong Province	Capacity 2x1000MW 2 x 900MW 4x350MW 170MW 5MWP 15MWP+30 MWP 4×250000K W	Commissioning Date Under Construction (2013.08) 1994 2008.12 2002.11 2011.05 2011.12 2006
S.N. 1. 2. 3. 4. 5. 6. 7. 8.	Power PlantNingde 2x1000MW Nuclear Power PlantDayawan 2 x 900MW Nuclear PowerPlantPutian Combined Cycle Gas TurbinePower Plant(9F Class)Chengdao Combine Cycle Gas TurbinePower PlantGolmud 5MWP Solar Power PlantPhase I First PackageGolmud 15MWP Phase I SecondPackage + 30MWP Phase II Solar PowerMt. Tai Pumped Storage Power PlantXiushui Water Power Plant	Location Ningde, Guangdong Province Dayawan, Guangdong Province Putian, Fujian Province Chengdao, Shandong Province Golmud City, Xin Jiang Golmud City, Xin Jiang Tai'an, Shandong Province Xiushui, Jiangxi Province	Capacity 2x1000MW 2 x 900MW 4x350MW 170MW 5MWP 15MWP+30 MWP 4×250000K W 2×5000KW	Commissioning Date Under Construction (2013.08) 1994 2008.12 2002.11 2011.05 2011.12 2006 2005

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SEPCOIII Electric Power Construction CorporationAdd. : Wing A, Yijie Hongtai Plaza, 882-1, Tong'an Road, Qingdao-266 100, ChinaTel: 0086-532-80868000Fax: 0086-532-80868888Http:// www.sepco3.com

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10.	Changdao Wind-driven Power Plant Phase I	Changdao, Shandong Province	9x600KW	1999.09
11.	Changdao Wind-driven Power Plant Phase II	Changdao, Shandong Province	2x600KW + 2x750KW	2003.10
12.	Changdao Wind-driven Power Plant Phase III	Changdao, Shandong Province	7x600KW + 3x1500KW	2004.09
13.	Changdao Wind-driven Power Plant Phase IV	Changdao, Shandong Province	3×1300KW +7×750KW	2005
14.	Qingdao Huawei Wind-driven Power Plant	Qingdao, Shandong Provice	12×1300K W+2x250K	2003
15.	Laizhou Wind-driven Power Plant Phase I	Laizhou, Shandong Province	19×1000 KW	2008
16.	Laizhou Wind-driven Power Plant Phase II	Laizhou, Shandong Province	19×1500 KW	2008
17.	Rushan Huaneng (42MW) Wind-driven Power Plant Phase I	Rushan, Shandong Province	28×1500 KW	2010
18.	Yihetala Wind-driven Power Plant phase I	Tongliao, Inner Mongolia	50×1500 KW	2009
19.	Pingdu Xinhe Wind-driven Power Plant for Datang	Pingdu, Shandong Province	33×1500 KW	Under Construction
20.	Hanting Phase I Wind-driven Power Plant for Datang	Weifang, Shansong Province	33×1500 KW	Under Construction
21.	Penglai Phase I Wind-driven Power Plant for Datang	Penglai, Shandong Province	33×1500 KW	Under Construction
22.	Xuwen Wind-driven Power Plant for Huadian	Zhanjiang, Guangdong Province	24×2000K W+1×1500	Suspended
23.	Kenli 1×30000KW Biomass Power Generation Power Plant	Dongying, Shandong Province	1×30000 KW	2007
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S.N.	Power Plant	Location	Capacity	Commissioning Date
1.	Zaozhuang 220KV Substation	Zaozhuang, Shandong Province	220KV	2001.03
2.	Rizhao 500KV HV Substation	Rizhao, Shandong Province	500KV	2001.04
3.	Rizhao Power Plant Seawater Desulphurization Power Plant	Rizhao, Shandong Province	/	2007.06
4.	Zhanhua Oil-fired Power Plant	Zhanhua, Shandong Province	2x125MW	2001.04
5.	Xindian Oil-fired Power Plant	Xindian, Shandong Province	2x200MW	2001.12

3(5)(g)(a) Type of Technology

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This project consists of 1 x 660MW Super Critical Coal based high efficiency Low NOx Power Plant. Internationally recognized standards and statutory regulations will be followed for the plant and its equipment design, manufacturing, assembling, and testing. The general trend in recent coal-fired power plants is to build larger size units, and most of the new coal-fired units built in the last five years have been in the 600 MW to 1,000 MW size range.

The advanced technology will consist of supercritical boilers, state of the art steam turbines and air emission controls including low-NOX burners, flue gas desulfurization, particulate collection, and continuous emission monitoring.

The Project will be based on proven technologies and use advanced coal plant designs to achieve efficient operation and competitive tariff. The Project will be complete consisting of boiler, associated steam turbines, feed cycle, balance-of-plant equipment, electrical and I&C, material handling, coal receival, liquid fuel receival, coal piles, colony and other components.

Fuel Range

The boiler will be designed to burn a wide variety of bituminous imported coal from many potential sources. This is addressed in the fuel source section. This provides a range of fuel that would support economical fuel purchase. Fuel sulfur content was also evaluated and a seawater flue gas desulfurization system can also be added, provided to burn higher content sulfur fuels which may be economically attractive to purchase.

The warm-up and ignition fuel will be high speed diesel (#2 diesel) oil. This fuel will provide initial firing and will stabilize the combustion until the coal flames are stable, about 30% to 35% load. Details of the design depend on the specific supplier chosen for the Project.

Supercritical vs. Subcritical:

An evaluation was performed to select the thermal cycle design. The higher

Pressure of a supercritical cycle results in a higher efficiency than a subcritical cycle. A typical subcritical cycle has a maximum turbine throttle pressure of around 174 bar and a typical throttle pressure for a

Supercritical cycle is around 248 bars. This difference in pressure results in a heat rate difference of up to approximately 2%. There are currently over 460 supercritical units in operation in China, Europe, Korea, Japan, and the United States, and a few in the developing countries. The European, Japanese, and, recently, the Chinese suppliers have standardized on supercritical designs for units larger than 600 MW. With the

High price of coal, the higher efficiency of the supercritical design justifies the higher capital cost.

Capital cost of a supercritical versus a subcritical plant was also considered for the selection of the technology. The capital cost of a supercritical plant is generally approximately the same as, or 2% higher than, a subcritical plant.

Based on the above 1x 660 MW gross (ISO) unit is selected.



660 MW Imported Coal based Integrated Power Project Port Qasim Karachi

Feasibility Study Summary*

*The technical information provided in this feasibility report may vary based on the agreement with EPC Contractor

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EXECUTIVE SUMMARY

PROJECT OVERVIEW

Steps has been taken by Government of Pakistan, Ministry of Water and Power (Private Power & Infrastructure Board) to develop different Imported Coal Based Integrated Power Projects in Pakistan, they will be based on imported coal and on a Build, Own and Operate (BOO) basis. Private Power & Infrastructure Board (PPIB) selected different parties on behalf of the Government for the development of the Projects in the private sector through a pre-qualification and ranking process.

Lucky Electric Power Company Limited (LEPCL) will be required to conduct a detailed Feasibility Study of the Project as per the terms of the LOI. The Terms of Reference (TOR) will be provided in the LOI to establish the requirements, format, and details to be covered in this Feasibility Study.

The work to be completed during the specific milestones in the LOI. Monthly progress reports against these milestones and presentations to PPIB will be provided by LEPCL during this period.

LEPCL is developing this project with its consultant. In preparation of this Feasibility Study, LEPCL and its consultants have liaised with the power purchaser to determine the plant size, site, layout, transmission line and interconnection arrangements and Port Qasim Authority for coal jetty, coal handling and with other relevant entities for other activities related to the Project.

The potential area for the site selection at Port Qasim Karachi will be considered in this study. Land acquisition, site development, project construction costs, offshore fuel handling costs and environmental permitting are the key considerations which will be included. The recommended site is to be the least cost option among the other possible suitable sites available near Karachi, this is to be confirmed by our site selection study.

The Phase II work for full feasibility study shall be started, upon recieipt of the letter. Work that is not site specific had already continued per the milestone schedule. This feasibility study will be submitted to. LEPCL understands that after approval of the detailed Feasibility Study by PPIB, they will approach NEPRA for tariff determination.



ELECTRICAL POWER SUPPLY IN PAKISTAN: DEMAND AND SUPPLY GAP

The available capacity is less than 16, 000 MW, whereas total installed electricity Generation Capacity is around 22,812 MW. Maximum Electricity Demand in the country stood at 21,605 MW which is forecasted to grow at around 5% to 6% per annum. Government of Pakistan (GoP) envisages to meet increased demandsupply gap preferably through inexpensive and affordable electricity. Consumption pattern has remained relatively stable over last three years with domestic and industries accounting for 47% and 29% of the total electricity consumption respectively.

The forecast shows that there is a significant shortfall, and this is evidenced in the rolling brownouts and blackouts. Pakistan has added limited supply to the national grid in the last 8 to 9 years. The peak demand growth has approached 15 % per year during 2013 to 2014, and the electricity supply shortage occurred much earlier than expected. PPIB has forecasted the firm electricity supply and demand.

The following graph from PPIB illustrates the gap that needs to be filled.





Pakistan's current overall energy mix is, oil at 32%, gas at 47.6% and Hydroelectricity at 13.2% with coal at 7.0%. The lower values for hydro and coal highlight that both coal and renewable energy could play a significant role in meeting the future energy needs of Pakistan. For electricity generation, it is anticipated that oil's share will decrease from its current 32% share to about 4.8% and the predominance of gas as primary feedstock will continue to rise as by 2030. Coal electricity generation will increase from 0.8% to 18.2% while Hydro electricity is expected to decrease from 33.1% to 20.1%. Considering the demand forecast and without Lucky Electric Power Company Limited | Project Detail (CONFIDENTIAL) 2015

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LUCKY ELECTRIC POWER COMPANY LIMITED - FEASIBILITY 2015

any major discovery of any new fossil fuel fields, Pakistan is expected to engage in a multi-pronged strategy that could include the following:

- Import relatively cheaper energy sources under long-term contracts
- Develop domestic energy sources other than oil
- Increase energy conservation

A competitive upfront tariff is offered for the imported coal project and it increases the fuel diversity for meeting Pakistan's electricity requirements.

PROJECT SPONSORS

Lucky Cement Limited

The project company LEPCL is wholly owned subsidiary of Lucky Cement Limited (LCL).

Lucky Cement Limited was founded in 1996 by Tabba Memons. The company initially started with factories in the Pezu district of the North West Frontier Province (N.W.F.P). It now, also, owns a factory in Karachi.

Lucky Cement Limited has been sponsored by one of the largest business groups in Pakistan, the Yunus Brothers Group based in Karachi. Over the years, the Company has grown substantially and is expanding its business operations with production facilities at strategic locations in Karachi to cater to the Southern regions and Pezu, Khyber Pakhtunkhwa to furnish the Northern areas of the country. Lucky Cement has a network of over 200 dealers which enables it to dominate the local market and is Pakistan's first company to export sizeable quantities of loose cement and is the only cement manufacturer to have its own loading and storage terminal at Karachi Port.

In 2013, LCL imported 1 million ton of thermal coal. In the thermal coal market in Pakistan, LCL has been the largest coal importer and user for many years. The stable supply of coal from many countries, including Australia, Canada, China, Indonesia, and Russia.

The company is producing enough electricity to not only fulfil its own requirements but has also started supplying electricity to Hyderabad Electric Supply Corporation and is now in the process of providing electricity to Peshawar Electric Supply Corporation which is a noteworthy achievement in the area of energy generation.



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It also has Largest, lowest cost and most efficient cement manufacturer in Pakistan with captive power generation capacity of 200 MW. Similarly it produces 7.75 million tons of cement per annum production capacity with production lines at different strategic locations from coverage perspective within Pakistan. The 2013 Turnover of USD 375 million with USD 127 million exports to Africa, GCC countries, India, Iraq, Sri Lanka and Afghanistan. It is also the Largest exported of cement from Pakistan.

The group has around 29,000 employees. Yunus brother group is also a proud sponsor of 9 different firms including Lucky Cement Limited. The firms include textile mills, building materials and others. Almost all generate their own electricity. Following are the companies generating their own electricity:

- 1) Lucky Cement Limited (Pezu) 67.77 MW
- 2) Lucky Cement Limited (Karachi) 87 MW
- 3) Lucky Cement Limited WHR Pezu 16 MW
- 4) Lucky Cement Limited WHR Karachi 21 MW
- 5) ICI Pakistan Limited 50 MW
- 6) Gadoon Textile Mills Limited 56.47 MW
- 7) Yunus Textile Mills Limited 27 MW
- 8) Lucky Energy (Pvt) Limited 60.45 MW
- 9) Al- Mabrooka Cement (Iraq) 8 MW
- 10) Yunus Energy Limited 50 MW

Total In-house power capacity – 443.69 MW

Some key strengths of the group are:

- 7.75 million tons per annum state of the art cement manufacturing plant in Pakistan which continues to be a Cash cow for the group
- 300,000 spindles with 1,050 weaving looms along with significant processing, stitching and finishing capacity within the textile sector in Pakistan
- Captive power generation of 431 MW to support industrial units.• Recent acquisition of ICI Pakistan Limited which is (i) a renowned brand in the local market, (ii) 2nd largest Polyester Staple Fibre producer and (iii) market leader in Soda Ash production and Life Sciences business
- The use of expertise gained via Lucky Cement Limited in the Cement Manufacturing sector evident from the new planned investments in Africa and Iraq.

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LEPCL Consultants

Clifford Charles, International lawyer Habib Bank Limited, Financial advisor EMC, Environment Consultant Fichtner GmbH & Co. KG, Technical consultant

PROJECT STRUCTURE

A special purpose company (LEPCL) has been established by Lucky Cement, bringing together a team of highly professional people in all areas like, technical, commercial, and legal specialists with the capability to construct, develop, operate, finance and maintain the Project. Follwing figure shows the project company organization which is guided by a Board of Directors.





All applicable Pakistani regulations will be followed by the LEPCL (Project Company) and it will be organized and managed under an agreement that outlines reporting and budgeting requirements and the limits of authority for its various members. The Project Company will own finance, construct, design, and operate the facility. Development of a world class facility in terms of safety, customer satisfaction, employee development, regulatory relations, environmental compliance, and cost effectiveness is the project company's governing philosophy.



The management component of the Project Company will comprised of individuals with direct experience in development of power projects in developing countries, leading the Project through each phase of development will be their responsibility. There will be a date-certain, lump-sum, turnkey basis EPC Contract. It is envisioned at this time that a single EPC Contractor will be responsible for the power plant facilities, jetty, colony, and any other facilities necessary for the generation of power.

An Operation & Maintenance (O&M) organization will be established by the Project Company for the efficient operation and maintenance of the Project upon commissioning. The Project Compnay may form this O&M organization or assigned to a third-party company. Operations including compliance to the PPA, fuel delivery, permit, and environmental laws will be the responsibilities of the O&M organization.

OVERALL IMPLEMENTATION SCHEDULE

Project Company (LEPCL) has been established by Lucky Cement through an agreement that sets forth the terms by which their relationship will be managed for the duration of the Project. The Project Company primary interfaces are depicted below:



Figure ES-3 — Overview of Primary Interfaces

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The overall project implementation schedule is based on supporting a financial close. The EPC execution schedule for the case is 48 months for the unit.

Project Company have currently planned to have the EPC Agreement contract include the boilers, steam turbines and generators, balance-of-plant, jetty, water intake, water discharge, colony, and all other associated facilities for a complete project. The Project will be implemented on a lump-sum, date-certain, turnkey basis. Any interfaces with Pakistani governmental agencies and obtain necessary permits associated with the execution of EPC contractor works. Similarly, the EPC Contractor will coordinate, through the Project Company. In addition, the EPC Contractor will be responsible for remaining in full compliance with existing environmental regulations during the EPC execution phase.

Once put into commercial operation, the general operations and maintenance of the Project will be managed by a team comprised of experienced individuals with the goal of operational efficiency

The O&M organization will begin the process of transitioning ownership of the plant from the EPC team before completion of the construction phase. Training will be conducted on all aspects of the facility until all aspects of plant operation have been adequately transitioned, as identified in the O&M Agreement.

PROJECT (660 MW)

The Project proposed site is located in the Industrial Zone of Port Qasim Authority (PQA), Karachi. The Project proposed site is characterized by long and narrow creeks, mud flats and the mangroves forest ecosystems.

The Project will be comprising of one coal-fired super critical unit generating unit of approximately gross-660 MW This feasibility Study is for a single Project to be implemented by LEPCL (660 MW [gross ISO]), which include the provisions for future expansion of the jetty, and the seawater intake and discharge systems.

The Venture comprises of a fully developed project including the complete engineering, design, Procurement, construction, commissioning, and operation of the plant. Including a pulverized coal (PC) Generating plant, supercritical thermal cycle, once-through cooling, single concrete chimney,

air and water quality controls (flue gas desulfurization, electrostatic precipitators or baghouse), coal ship unloading and coal storage facilities, ash disposal, balance-of-plant equipment including all buildings and internal roads and including a colony to provide a complete power generation facility. The proposed site is capable for future expansion for one additional unit of the similar generator size.





The Project emissions, workplace air quality, noise, worker health, safety, and training requirements will be fully in compliance with Pakistan and World Bank requirements.

Imported coal will be used along with using indigenous coal as plant fuel. Coal is expected to be sourced from Indonesia and South Africa. Blends of coal, based on fuel performance can be considered. Pakistani coal will be fired in the Project provided it meets price, quality, and quantity requirements.

SITE SELECTION AND SELECTED SITE

The potential sites were indutified on a methodical evaluation process. Key evaluation considerations included land acquisition, site development, project construction costs, offshore fuel handling costs, and environmental permitting. The identified sites were further evaluated to determine the lowest total development and operating costs. This information was considered in the selection of the sites for further development. The developed criteria were scored, and based on a levelized cost approach, the preferred sites were selected.

The fuel delivery options included evaluation of the size of ships to be used for transportation of coal (Capesize or Panamax), offloading at the proposed site via various combinations of jetty (and jetty with dredging), ship unloader to barges (including dredging), and wharfs (where feasible). The evaluation also considered the practicality of the coal unloading concept and the associated costs.

Plant finished grade elevation will be approximately +5.0 meters above mean sea level (MSL). The proposed site will be filled with granular soil excavated from the high elevation areas. A berth along with the shoreline will be provided that will be protected from waves with armored rip rap. Then, the proposed site area will be raised to elevation of +5.0 m. This will be based on highest astronomical tide (HAT) plus design wave run-up and will be adjusted to suit specific site conditions and drainage patterns. The finished grade surface will be sloped away from the buildings to provide surface drainage pile foundations supports will be used for all major building structures, such as the boiler building, turbine building, silo bay, precipitator, and chimney. Similarly, other structures and vibratory equipment, where total and differential settlements are critical, will be supported on piles. However, structures that are less sensitive to settlement tolerances and are lightly loaded will have spread footings or mat foundations resting on engineered structural backfill.

The final land area will need to accommodate the additional area for Colony but not the area for ash disposal. Ash will be transported to Lucky Cement Karachi Plant and 14 to 16 percent will be blend there to make cement and other products, area is located within a few kilometers from the proposed project site. Therefore, less off site storage area of ash is required.

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The climate conditions are listed in the Environmental Impact Assessment. The Geotechnical for the onshore and offshore are not completed but the job in these areas are in progress. OPERATIONAL REQUIREMENTS AND TECHNOLOGY SELECTION

Internationally recognized standards and statutory regulations will be followed for the plant and its equipment designe, manufacturinf, assemblling, and testing. The general trend in recent coal-fired power plants is to build larger size units, and most of the new coal-fired units built in the last five years have been in the 600 MW to ...000 MW size range.

The advanced technology will consist of supercritical bollers, state of the art steam turbines and air emission controls including low-NOX burners, flue gas desulfurization, particulate collection, and continuous emission monitoring.

The Project will be based on proven technologies and use advanced coal plant designs to achieve efficient operation and competitive tariff. The Project will be complete consisting of boiler, associated steam turbines, feed cycle, balance-of-plant equipment, electrical and l&C, material handling, coal receival, liquid fuel receival, coal piles, colony and other components.

The following are brief descriptions of key items considered in the feasibility study for the Project

Fuel Range

The boiler will be designed to burn a wide variety of sub-bituminous imported coal and local lignite coal from many potential sources. This is addressed in the fuel source section. This provides a range of fuel that would support economical fuel purchase. Fuel sulfur content was also evaluated and a seawater flue gas desulfurization system can also be added, provided to burn higher content sulfur fuels which may be economically attractive to purchase.

The warm-up and ignition fuel will be high speed diesel (#2 diesel) oil. This fuel will provide initial firing and will stabilize the combustion until the coal flames are stable, about 30% to 35% load. Details of the design depend on the specific supplier chosen for the Project.



Supercritical vs. Subcritical:

An evaluation was performed to select the thermal cycle design. The higher Pressure of a supercritical cycle results in a higher efficiency than a subcritical cycle. A typical subcritical cycle has a maximum turbine throttle pressure of around 174 bar, and a typical throttle pressure for a Supercritical cycle is around 248 bars. This difference in pressure results in a heat rate difference of up to approximately 2%. There are currently over 460 supercritical units in operation in China. Europe. Korea, Japan, and the United States, and a few in the developing countries. The European, Japanese, and, recently, the Chinese suppliers have standardized on supercritical designs for units larger than 600 MW. With the High price of coal, the higher efficiency of the supercritical design justifies the higher capital cost.

Capital cost of a supercritical versus a subcritical plant was also considered for the selection of the technology. The capital cost of a supercritical plant is generally approximately the same as, or 2% higher than, a subcritical plant

FGD Selection

When burning a coal that would produce SOX emissions in excess of the limit. The Project will be equipped if required, with a flue gas desulfurization (FGD) system. The systems available for FGD are sea water scrubber, wet limestone and spray dryers. A seawater FGD system is selected for this project because it is by far the most economical system that will meet the regulations. The cost to install a seawater scrubber is about 40% of the wet limestone scrubber cost. It has no lime or limestone cost and no waste disposal cost. The discharge to the sea is within the typical variations in seawater chemistry.

When combusting coal, virtually all the sulfur is converted to sulfur dioxide (SO2) gas. An FGD bypass will be installed for use when burning coals that produce less than that emission rate. Most of the coals that are anticipated for the Project will not require any SO2 removal. The system will operate only when coals or blends of coals that will have an emission rate higher than 0.473 g SO2/J (1.1 lb SO2/MBtu) are used. The system will be designed to treat 50% of the flue gas.

Water Supply



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This area can be classified as semi-arid, there is no fresh water available at the proposed site, sea being the only reliable source of the required quantities of water. Therefore, it is planned to have a reverse osmosis (RO) system for the desalination of water. An RO system offers greater flexibility for the production of water than a thermal-based distillation system. During the detailed design phase, this selection will be further evaluated and the EPC contractor will have the option of providing an RO system or a thermal-based distillation process for desalination.

Particulate Collection

To remove nearly all the particulates form the flue gas, the Project will be fitted with a particulate control system. Conventional means of collecting the particulate matter include electrostatic precipitation (ESP) or a liabric filter baghouse. In this case, either is fully capable of meeting the operating point, as well as a guarantee lower than that.

Circulating Water System

Two design alternatives for the offshore intake and discharge system are considered to provide all the water required for the 660 MW case.

(1) An open-channel Intake and an open-channel discharge to the ocean and (2) a submerged pipe with a velocity cap intake and either a buried pipe or an open-channel discharge to the ocean. The thermal discharge into the Arabian Sea is primarily the circulating water and other cooling waters. The impact of the heated water, which is 8° to8.5°C above the sea temperature was studied as part of the EIA.

There is one intake and one discharge, during normal operation, the offshore intake and discharge system is designed to passively provide a continuous supply of water to the plant and to discharge the warm water to the Arabian Sea. The intake and discharge system will be designed to supply water to the plant during low water levels in the Arabian Sea without interruption. The study in this area is still in progress.

The circulating water discharge from the plant is designed to properly discharge the warm water to the ocean. In order to minimize the possibility of recirculation, therefore, the design is based on the velocity cap. Using the velocity cap design will also minimize the possibility of littoral drift causing deposits along the stone barriers that form the open channel intake and discharge. The buildup of deposits could result in the following:

- Require periodic dredging
- Block the intake during storms, requiring a plant shut down
- Cause environmental issues
- (The study in this area is still in progress)



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The design will be based on submerged pipe with a velocity cap intake and submerged pipe discharge to the ocean. The intake and discharge are to be located suitably to minimize the overall cost of the system.

Fire Protection

A Fire Protection Master Plan will be developed and this consists of the following:

- Building and Fire Codes and Life Safety Compliance Review Report
- Fire Risk Evaluation Report
- Hazardous Area Classification Evaluation

The fire protection system will include water supply systems, clean agent extinguishing, sprinkler systems, stand pipes and hose stations, and hand-held extinguishers

Fuel Systems

The onshore coal storage will accommodate 90 days with a 30-day active coal pile and a 30-day inactive pile (as per the instructions given in revised coal tariff). Ninety days is determined to be adequate to bridge fuel delivery interruptions if they occur.

The coal handling system will receive coal from the jetty, transport it to the coal storage yard, reclaim coal from storage, and transport it to storage silos in the power block.

The fuel oil storage and transfer system will store the fuel oil and transfer that oil to the main boiler for ignition and warm-up of the main boiler and the auxiliary boiler and to power the black-start generator. The system will include truck unloading facilities.

Ash Disposal

The fly ash collection and disposal system will transfer particulate collected from the boiler flue gas to a fly ash storage silo for unloading into trucks and transported to Lucky Cement Karachi plant. Fly ash entrained in the boiler flue gas will be collected using a baghouse or electrostatic precipitator. Fly ash will also be collected throughout the flue gas system by means of ash hoppers at other locations such as the air heaters.

The bottom ash handling system will collect, store, and transport bottom ash from the boiler furnace, economizer hoppers, and mill reject hoppers. The bottom ash, mill rejects and economizer ash will be transported to a concrete bunker for removal by trucks. Each unit will have a dedicated bottom ash handling system. After the Ash is collected it will be transported to the Lucky Cement Karachi Plant and will be used there as the ingredient for cement and other products.



Electrical Systems and Switchyard

The main generation system will generate power from the turbine generator and transmit the power through an isolated phase bus and a generator with step up transformer. It will also serve to step down voltage through two unit-connected transformers used for supplying power to the upper medium-voltage auxiliary system for the normal operation of the generating unit. The system will be designed to generate and transmit electrical power to the 100% capability of the steam turbine. The generator will meet the reactive power requirements of the system from its rated leading to lagging auto matic power factor control (as per grid) under all turbine load conditions.

The generator transformer will be rated to transmit the maximum generator output capability, less transformer osses, to the switchyard. This will permit either unit to deliver maximum generation to the grid while using the backup source for the auxiliary power when the unit transformers are out of service or otherwise disconnected. We can also opt to utilize the Grid power as Black Start only for the start up of the main auxialaries.

The switchyard will be configured as a metal-enclosed pressurized SF6 gas insulated single-bus breaker-and-ahalf arrangement with one line coming in from the one generating units and one lines going out to evacuate the power into the 500-kV AC grid. The switchyard will be designed to allow complete power evacuation from the plants into the 500-kV AC grid (the size and specs of the grid will be finlised latter) while allowing any circuit breaker or other piece of switchyard equipment to be taken out of service for maintenance or replacement after a failure. Switchyard ratings will be in accordance with international standards based on the results of system design studies.

Startup of the unit will be done by synchronizing the generator across the generator circuit breaker. The unit's auxiliaries will have been energized by back-feeding the generator transformer from the switchyard. The transformer's load tap changer will be used to bring the system voltage up or down to the necessary level required by the auxiliary transformers. The medium-voltage switchgear buses will have backup power provided to them by a connection to the other unit's similar switchgear bus.

When offline, the station auxiliary transformer system will receive power from the switchyard, back-fed through the generator transformer that will step it down to unit auxiliary transformers, which will then power the medium-voltage auxiliary switchgear. When the generator is synchronized to the grid through the generator transformer, the unit auxiliary transformers will be supplied directly from the main turbine generator. Backup power to the auxiliary buses is from the unit auxiliary transformers of the other unit.

Instrumentation & Control

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The control and instrumentation systems will be upwardly compatible, state-of-the-art systems that have been installed and have been operating in power plants for at least seven to ten years. The control and monitoring functions will be implemented in a microprocessor-based distributed control system (DCS) that encompass the following subsystems:

- Boiler combustion and miscellaneous modulating control systems (BCS)
- Burner management system (BMS)
- Data acquisition system (DAS)
- Sequence-of-events recording system (SER)
- Electrical auxiliary power circuit breakers control system (APCS)
- Motor control system (MCS)
- Plant protection system (PPS)
- Human-Machine CRT-based operator consoles (HMI)

Project Execution and Construction

The key parameters associated with the execution and constructions are identified below:

- The proposed plant site requires grading and preparation by cutting and filling as appropriate, according to local standards and codes. All necessary governmental approvals, including resettlement, will be arranged.
- Areas totaling approximately 25 hectares need to be made available for laydown and staff accommodation during the construction phase.
- Completion of the cooling water intake and discharge channels, including the necessary excavation and dredging of the channels, will be achieved to provide an adequate amount of cooling water supply to the pumping stations and the required flow of cooling water discharge.
- Adequate capacity of temporary power and water for construction purposes for the entire duration of construction phase is to be arranged.
- Jetty suitable for safely receiving and unloading of coal vessels will be provided.
- Permanent electrical interconnect will be provided at the plant boundary to deliver power generated from the Project to the national grid (NTDC). Facilities will also be included to import power necessary for start up power.
- Land for permanent colony housing will be made available for construction of permanent operations staff accommodation.



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- A 500-kV (will be finalized later) interconnecting transmission line from the Project outgoing gantry to the grid system needs to built, for timely and successful evacuation of the electricity generated in the Project. This will also provide the start-up auxiliary power to the power plant.
- The final size and design and location of the colony will be determined as the Project develops. In general terms, the colony will be designed to provide housing to all the workers and families of the workers who require housing near the proposed site. Some workers may elect to keep their families in or near Karachi. For those workers, bachelor quarters will be provided at the colony. Separate from the colony will be a construction camp. The design of the construction camp will be the responsibility of the EPC Contractor.

Transportation of Equipment

The proposed Project is located along the Arabian Sea and is normally accessed by roadway.

The transportation plan during the construction phase will be to deliver goods, commodities, and equipment to the Project by road. The equipment received at Karachi ports or Port Qasim will be transported to the proposed site by road. Transportation by truck may also be preferred for goods, commodities, and equipment originating within Pakistan. Since the proposed site is in an undeveloped area, there is adequate room for construction laydown. Construction laydown is the area used to store equipment and material shipped to the site before it is installed in the plant. Depending on the final arrangement, the coal storage can be part of the construction laydown area.

Some temporary warehouse and fabrication shops will be built for the storage of equipment that requires protection from the weather. The fabrication shops will be used for fabrication of piping and other assemblies before installation into the plant.

FUEL SUPPLY

The LEPCL coal supply plan is based on the evaluation of reliable and economic sources of coal for the Project. The study included an evaluation of the world coal market, the availability of a range of coals, the quality of the coals, and the indicative FOB and delivered price of the range of coals.

The coal specification to be selected for the LEPCL power plant will be based on the coal that can most economically be used to generate electricity.

Coal Source and Pricing

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Based on logistics and coal availability, the most likely sources of competitive coal supply to the LEPCL power plant in Pakistan are Australian Indonesian, South African, and Pakistani coal. Due to relatively shorter shipping distances, Indonesia, South Africa, and, to a lesser extent, Australia enjoy a delivered cost advantage to Pakistan over more distant coal-exporting countries such as Colombia, Venezuela, and Russia.

2013		2013 Steam	
Export	Exporting Country	Coal Exports	
Rank		(Mt)	
1	Indonesia	423	
2	Australia	182	
3	Russia	118	
4	South Africa	72	
5	Columbia	73	
6	USA	47	
7	Canada	4	
Total		919	

Table ES-1 — Summary of Seaborne Steam Coal Exporters

Figure ES-4 — Coal Supply Map



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Coal pricing [to be provided later]

Indigenous Fuel

Pakistan itself has identified coal and lignite resources of coal in the Sindh Province. However, the coal quality is low with heating values of 2,800 to 4,000 kcal/kg (GAR) and high sulfur values of 1.25% to 5% on an asreceived basis (arb). Some of the coal deposits are mined and the coal is used locally. There are no coal resources at a stage of development or with adequate infrastructure to deliver coal to LEPCL in the foreseeable future.

Coal resources in the Sindh Province of Pakistan in the Thar Coalfield, 400 km to the east of Karachi, amount to 185 BT according to the Geological Survey of Pakistan (GSP). According to the survey by the Shenhua Group of China, has identified a 200-Mt reserve within the Thar Coalfield. The coal ranges from lignite-B to subbituminous-A. The ability of indigenous coal supplies in Pakistan to supply large quantities of suitable coal to the LEPCL Project in the future cannot be determined at this time. LEPCL is willing to consider the purchase of indigenous coal if the delivered quality, quantity, and price are acceptable. The indigenous coal would either replace contracted coal, which could be reduced to minimum tonnage, or replace other spot coal.

Ocean Freight

Ocean freight prices have been subject to similar volatility and increases as coal prices. The changes in spot coal prices and freight prices have followed a similar path. The price increases are both driven by the increased demand for commodities in China, particularly, and in India. In 2007, enormous gains were made in the shipping industry as a whole as steel production and demand for raw materials in China soared. Since mid-October 2007, freight rates have been declining.

The ocean-going vessels used in the seaborne trade of coal and other dry bulk commodities are referred to as dry bulk carriers. Bulk carriers are classified by deadweight tonnage (dwt), which refers to a vessel's carrying capacity of cargo, bunker fuel, fresh water, and stores, into four general size categories: Handysize, Handymax, Panamax, and Capesize. The distribution of bulk carriers by size class is summarized in the following tabulation:



Vessel Category	Vessel Size Class (dwt)	No. of Vessels in World Fleet	Percent of World Fleet by No. Vessels	Total Fleet Dead Weight (Mdwt)	Percent of World Fleet by dwt
Handysize	< 35,000	2883	43.40%	51	16.0%
Handymax	35,000 - 60,000	1713.0	25.80%	77	22.%
Panamax	60.000 80,000	1249	18.80%	88.5	25.00%
Capesize	80,000 - 150,000	277.0	4.20%	124	37.%
	> 150,000	519	7.80%		
	Total	6,641	100%	340.5	100%

Table ES-2 — Summary of World Bulk Carrier Fleets

Bulk carriers of less than 35,000 dwt constitute the Handysize vessel category. Vessels with carrying capacities ranging from 35,000 to 60,000 dwt comprise the Handymax class. Recently, a new vessel subclass dubbed the Supramax, has emerged between traditional Handymax vessel sizes and Panamax vessels.

Traditionally, most Handymax vessels were less than 50,000 dwt, but the aging Handymax fleet is being increasingly replaced with Supramax vessels in the 50,000 to 60,000 dwt range.

Bulk carriers in the 60,000 to 80,000 dwt size class are termed Panamax vessels. Panamax vessels are the largest bulk carriers that can transit the Panama Canal, which has a maximum beam restriction of 32.2 m. Ocean-going vessels exceeding 80,000 dwt falls into the Capesize class. Care must be taken with defining the size and tonnage of ships, as they are constantly changing designs, which changes the required berthing depths and dock dimensions.

Assuming that the 660 MW plant will consume 2.5.0 Mtpy, if Capesize vessels are used exclusively, then there will be two vessel arrivals per month. If Panamax vessels are used exclusively, there will be five vessel arrivals



per month. A bulk carrier traveling at 14 knots will take 19 days to travel from Newcastle, NSW, to Karachi; from Richards Bay, South Africa, it will take 11 days; and from Balikpapan, Indonesia, it will take approximately 12 days.

Coal Procurement

The coal suitable for the Project should be sourced from all primary supply countries. Low-rank Indonesian coal (4.100 kcal/kg gross as-received [GAR]) and higher ash Australia and South African coal should be considered if coal price discounts improve the overall economics. Pakistani coal will be used if it meets the quality, quantity, and cost requirements.

Several coal supply options-including bituminous coals from Australia. Indonesia, and South Africa .

- All low-rank Indonesian coal. This would likely be the lowest price coal option. This would consist of, for example, PT Adaro Wara ultra-low sulfur coal, which has offered 1.0 Mtpy at 4.100 kcal/kg (GAR). Adaro may also offer a 4.500-kcal/kg (GAR) blend of Tutupan and Wara coals. Other possibilities are PT Arutmin Ecocoal ultra-low sulfur, tonnage negotiable, at 4.200 kcal/kg and Kideco, which can available of up to 2.0 Mtpy at 4.700 kcal/kg (GAR).
 - These coals would be the lowest priced on a FOB basis.
 - The option of using subbituminous (+5,000 kcal/kg [GAR]) coal is also considered, this coal would likely be available at market price with little or no discount in south africa.
- All Australian or all South African.
- A mix of low-rank Australia, Indonesian, and South African.
- A mix of low-rank Indonesian and Australian coal.
- A mix of medium-rank (4,500 to 5,000 kcal/kg [GAR]) Indonesian with Australian and South African coal.

Given the state of the coal market and the risk implied in over-reliance on one country (whether Australia, Indonesia, or South Africa), the current plan is that coal be sourced from all three of these primary supply sources. It is recognized that coal resources are present in Pakistan and that it would be of interest to the government of Pakistan to use indigenous coal as a domestic supply. The Project would consider use of such coal if it is offered at economic price and useable quality and quantity.

Depending on the final calculation of the costs of coal, including the cost impact on power plant capital and operating costs, the largest amount of coal should be sourced from the most cost-effective and reliable source.



This stipulation will likely result in a substantial amount of coal, both low and medium rank, being sourced from Indonesia. The next coal to be selected would be from the most economical coal from Australia or South Africa, In the future, given the expansion in NSW and Queensland, and the very large domestic requirement in South Africa.

If the price of coal from Australia is competitive with South Africa at the time of coal acquisition, then the next largest portion of coal should be purchased from Australia. The remainder will come from South Africa.

In our opinion coal should be purchased with a mix of contracts — short-term (one year), medium-term (up to five years), and long-term (longer than five years) — to allow the Project to respond to market variations. Short-term contracts will likely be priced by indexes such as the Japan/Australia Reference Price or spot index prices such as the Barlow Jonkers or Global Coal Newcastle Spot Index. Indonesian Coal Price Index, and the Platts or Global Coal South African Coal Indexes. Medium-term and long-term contracts should be a mix of Evergreen annually renegotiated prices, or index-related prices with caps and floors to control price volatility. Coal prices should be discounted for heat content and moisture content for high-moisture, low-rank Indonesian coal. In the current market, discounts for other components, such as ash or sulfur, are minimal. Penalties may be negotiated for out-of-specification coal in the coal supply agreements.

Terms should be staggered; that is, different contracts should expire and be renewed at different times. The portfolio should change with market circumstances. In general, during times of low prices, the longest possible terms should be negotiated. As prices increase, terms should be decreased. Over the past 10 years, Pacific coal market prices have shifted significantly. Properly implemented, the portfolio strategy should ensure that LEPCL coal purchases allow the plant to remain competitive over the long term.

Contract terms should be staggered to mitigate market exposure over time. Short-term prices should be fixed; longer term prices may be based on a market index or fixed if reasonably discounted. Contracts should provide flexibility to reduce and increase the base tonnage as much as possible. At all times, LEPCL's anticipated requirements should be fully covered under contracts at least one or two quarters forward.

It is generally expected that future coal prices will be volatile, but will reduce as the production is increasing and the demand is going to reduce due to less consumption in USA.

Consequently, it is recommended that LEPCL FOB coal price be based on a reported Index Price and that the coal price at the time of purchase and beyond be directly linked to a published index, not on any attempt to forecast a market price, which would be at best an educated guess. It is possible that some discount against an Lucky Electric Power Company Limited [Project Detail (CONFIDENTIAL) 2015



index, or coal price caps and floors, would be agreed to by a coal supplier, but this will not be known until the Terms of Reference for a Coal Supply Agreement have been negotiated between LEPCL and the coal supplier.

Coal Shipping and Receival

Coal should be transported to the proposed site in the most economical manner i.e directly on project jetty. Ocean transport should be by Capesize vessels where possible, with Panamax vessels as the next lowest cost option, under long-term contracts, which are currently significantly lower than spot rates. To take fullest advantage of lowest freight rates, coal may arrive in virtually any size or configuration of ocean vessel, as scheduled and approved by the Project's logistics group.

The planned coal unloading method is to transfer coal from the project to the project jetty.

In general, ocean transportation market prices depend on time charters of specified vessel types for certain voyage routes and durations. For a generally fixed service, ocean transportation providers may be much more economic in pricing, provided reasonable terms are offered for indexing actual changes in cost and providing some reasonable reflection of changes in market over the period of the agreement. If the transportation services provider is free to arrange vessels from its fleet or charter from others for the service, properly structured and priced long-term transportation services agreements should provide the most economic coal transportation to LEPCL over the long term.



Photograph ES-1 -- Jetty Figure

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The coal will be off loaded from the ships direct to the jetty. The project is also constructing its own jetty around two KM from the project on the main channel of the Port Qasim authority.

Coal Storage

The coal stocking capability will be sized to allow a maximum of 90 days of operation at expected load factors. The 90-day coal supply should only be required during the monsoon season. Annual stockpile capital costs can be reduced by managing the coal stockpile to have a reasonable stockpile of 45 to 60 days during normal conditions, increasing the stockpile to 90-day supply in advance of the monsoon season, and then reducing the nile to normal levels after the monsoon season is over.

ENVIRONMENTAL EIA

The EIA Report is attached

FINANCIAL CLOSURE

LEPCL commits to working diligently and in a timely manner to support the schedule provided in Nepra Tariff and achieve financial closure. Meeting the schedule will also depend in large part on the role and cooperation of the various GoP and GoS agencies to complete the contractual framework, some important elements of which are listed below. The following list of consents and permits is not exhaustive and delay in completion of any of these can delay the financial close. We request that the GoP and GoS to extend their fullest cooperation and support to this project for completion of activities and agreements.

Some of the more important contracts and consents that need to be in place before financial close are listed below:

- Tariff Approval and License from NEPRA
- Implementation Agreement
- Power Purchase Agreement
- Land Acquisition and Facilitation Agreement with the GoS to seek consents which are provincial subject
- Permission and/or consents from the Federal Board of Revenue for withholding taxes, income tax, minimum tax etc

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- Permissions and/or Consents from State Bank of Pakistan for accounts operations, local and abroad, permission to issue and export shares to non-residents etc
- Clarification and/or permission from the Ministry of Ports and Shipping for operations of incoming ships to the Port Qasim area for offloading cargo for the Project
- Permissions from Pak and Sindh EPAs



1-Location map site maps and Land.

The Project site is located in the Industrial Zone of Port Qasim Authority (PQA), The Project site is characterized by long and narrow creeks, mud flats and the mangroves forest eco-systems.





2 Technology, size of plant, number of units:

The power plant consists of one set of 660 MW supercritical units with one boiler, steam turbine and generator. The boiler is fueled by sub-bituminous imported coal. The power plant connects with grid by 500kV AC outgoing transmission lines. (The final outgoing voltage information will be provided after technical detailed study from NTDC).

2 TECHNOLOGY SELECTION

The unit size and steam conditions selected for the Project is typical of modern coalfired unit, and the major equipment is available from several suppliers. There are many similar installations worldwide, which will facilitate EPC Contractor selection.

2.1 Supercritical vs. Subcritical Technology

The technology selection includes the evaluation of subcritical or supercritical boilers. The selection of the technology will determine the boiler and turbine suppliers as they have definite expertise for either subcritical or supercritical designs.

The terms "subcritical" and "supercritical" refer to main Steam operation conditions being either below or above the critical pressure of water around 222 bars. The significance of the critical point is the difference in density between steam and water. Above the critical pressure, there is no step increase in the density between water and steam.

A typical subcritical cycle has a maximum turbine throttle pressure of around 174 bars, and a typical throttle pressure for a supercritical cycle is around 242 bars. The higher pressure of a supercritical cycle results in a higher efficiency than a subcritical cycle. The difference in pressure results in a heat rate difference is up to approximately 2%.

There are currently over 400 supercritical units in operation in the United States, Europe, Korea, and Japan and a few in the developing countries. The European, Japanese, and, recently, the Chinese suppliers have standardized on supercritical designs for units larger than 600 MW. Due to renewed interest in large coal-fired plants in the United States, the American suppliers have revived the debate over subcritical versus supercritical steam cycles. Most recent coal plants now under design and construction are supercritical.

The selection of the technology also considers the capital cost of a supercritical versus a subcritical plant. The capital cost of a supercritical plant is generally approximately the same as, or 2% higher than, a subcritical plant. This cost difference, however, is well

within the spread of prices expected in a competitive bid situation, depending on the selection of the EPC Contractor.

Based on the above, the LEPCL Project will be based on a supercritical cycle to realize the benefit of higher efficiencies and, thereby, reduced fuel costs over the life of the Project.

2.2 Unit Size Selection

The general trend in recent coal-fired power plants is to build larger size units, and most of the new coal fired units built in the last five years have been in the 600 MW to 1,000 MW size range. Some smaller units (200 MW to 500 MW) have been built, but in most of those cases, the small size was selected due to grid or transmission limits. The economies of scale, including lower capital cost in \$/kW and lower operating costs (\$/MWh), favor the larger sizes.

Based on the policy frame work generation range of 1x660 MW imported coal based super critical power plant is selected.



3 Fuel: Type, imported / indigenous, supplier, logistics, pipe line etc.

The LEPCL coal supply plan is based on the evaluation of reliable and economic sources of coal for the Project. The study included an evaluation of the world coal market, the availability of a range of coals, the quality of the coals, and the indicative FOB and delivered price of the range of coals.

The coal specification to be selected for the LEPCL power plant will be based on the coal that can most economically be used to generate electricity.

Coal Source and Pricing

Based on logistics and coal availability, the most likely sources of competitive coal supply to the LEPCL power plant in Pakistan are Australian Indonesian, South African, and Pakistani coal. Due to relatively shorter shipping distances, Indonesia, South Africa, and, to a lesser extent, Australia enjoy a delivered cost advantage to Pakistan over more distant coal-exporting countries such as Colombia, Venezuela, and Russia.

2013 Export Rank	Exporting Country	2013 Steam Coal Exports (Mt)
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Total	· · · · · · · · · · · · · · · · · · ·	919

Table ES-1 — Summary of Seaborne Steam Coal Exporters



Figure ES-4 — Coal Supply Map



Indigenous Fuel

Pakistan itself has identified coal and lignite resources of coal in the Sindh Province. However, the coal quality is low with heating values of 2,800 to 4,000 kcal/kg (GAR) and high sulfur values of 1.25% to 5% on an as-received basis (arb). Some of the coal deposits are mined and the coal is used locally. There are no coal resources at a stage of development or with adequate infrastructure to deliver coal to LEPCL in the foreseeable future.

Coal resources in the Sindh Province of Pakistan in the Thar Coalfield, 400 km to the east of Karachi, amount to 185 Bt according to the Geological Survey of Pakistan (GSP). According to the survey by the Shenhua Group of China, has identified a 200-Mt reserve within the Thar Coalfield. The coal ranges from lignite-B to subbituminous-A. The ability of indigenous coal supplies in Pakistan to supply large quantities of suitable coal to the LEPCL Project in the future cannot be determined at this time. LEPCL is willing to consider the purchase of indigenous coal if the delivered quality, quantity, and price are acceptable. The indigenous coal would either replace contracted coal, which could be reduced to minimum tonnage, or replace other spot coal.

KARACH!

Coal Unloading and Handling System

Function

The coal handling system will receive coal from the jetty, transport coal to the coal storage yard, reclaim coal from storage, and transport it to storage silos in the power block.

The coal receival jetty and related off-shore equipment is covered in other sections. This discussion includes the coal handling systems on shore.

Design Basis

A common coal handling system will be provided to fuel the units. The coal handling system will be designed based on the following parameters

Table	3-12	Coal	Handling	System	Desian	Parameters
Iavie	J-1Z	Cuai	nanumy	System	Design	r urcaneter 5

Parameter	Value
unit operates hours annually	7746
unit operates hours daily	22
Size of total storage pile	30 days coal consumption
Coal Consumption per day	6,456t
System redundancy	2x100%

The coal for the project will be received in the coal unloading jetty and will be transposed to the plant by overland conveyors, which connect the jetty with the plant. The one overland conveyors will receive coal from the ship/barge unloading conveyors, one 100% capacity jetty conveyors will be provided to transport the coal to the plant site.

The jetty conveyors will deliver coal to an on-shore transfer house, and from there, the on-site conveyor system will transport the coal to storage piles. The coal storage system will include all the required conveyors and transfer houses. One traveling stacker conveyors will form two parallel storage piles, with a total storage of TBD tones for the four piles. The traveling stackers will be of the slewing type, and each stacker will serve two coal piles. There will be an inactive pile of TBD tones.

The reclaim and conveying system will be capable of supplying coal at 100% boiler burn rate. From the storage piles, the coal will be reclaimed by four traveling portal reclaimers and discharged onto the plant supply conveyor system, as indicated in flow diagram. The portal reclaimers will each have a single reclaimer boom, with traversing scraper chain and scraper flight that travels a horizontal runway. The reclaimed capacity will be controlled by varying the travel speed of the flight conveyor. For blending coal from the different storage piles, multiple reclaimers can be operated at a controlled rate to provide the desired blend ratio.

The conveying system, consisting of two parallel trains of conveyors, will supply coal from the coal piles to the coal silos at the boilers.

Two stacker & re-claimers will be set for the two barrel-type coal stockyards. Each stacker & re-claimer includes a re-claimer and a cantilever stacker.

The coal will be transported from the re-claimers to a twin outlet surge bin in the crusher house, which will include magnetic separators to remove tramp metal. The surge bin will be designed to hold TBE tones (minimum) of coal and include two hoppers with rod gates and a level monitoring system. Each surge bin hopper will discharge by gravity to a parallel and equal capacity conveying system to the in-plant coal silos.

Each conveyor system will consist of a belt feeder, a crusher, a transfer conveyor to the boiler house, and tripper conveyor. Diverter gates and bypass chutes will be provided at the crusher if size reduction is not required. A free-standing, self-contained, modular-type sampling system will obtain samples from the transfer conveyors that supply the boiler house. Both tripper conveyors will traverse over all the in-plant silos for full redundancy.

Two sets of crusher and two sets of screen will be equipped in the system. The outlet coal size will be \leq 30mm. All the crusher and screen will be double settled with one for running and one for stand-by.

At A Contract

The conveyors of the parallel coal yard need water wipers, and all the conveyors are equipped with cleaner equipment.

Electric driven two side plough unloader will be equipped on bunker conveyor and will be used to unload coal to the coal bunkers.

The magnetic separators will be equipped on the coal handling system. The magnetic separator will be respectively set once before the coal yards, and will be set twice before the crusher house and once again after the crusher house.

Cranes or hoists will be set in all kinds of coal handling system buildings, which will be used to maintain all kinds of equipment.

Protection devices will be equipped on the belt conveyor, together with coal blockage signal and vibrator will be set on coal chute. Meanwhile bin coal level indicator will be set in every bunker.

Complex building for coal handling system and buildozer garage will be built in coal handling system.

Dust suppressor system, buffer, wash down system, coal yard water spray system will be equipped in coal handling system. They will be used to reduce the environment pollution caused by the coal flying and scattering.

Various water spray systems and dust collection equipment used to prevent dust and restrain dust will be equipped in coal handling system. Water spray pipe winder will be set at coal handling system building floor to clear the building ground. Wash down water will be collected to the sewage well of each transfer tower, further pumped to the water treatment pool near the coal yard to handle.

Wind fences will be provided around the coal yard. The coal piles will be equipped with a water spray dust suppression system. Dust suppression systems will also be provided for conveyor transfer points, Dust collection systems will be provided for the crusher house (pulse jet collector), and coal silo ventilation and the tripper conveyor room at the power plant.

4 Emission Values:

Air emissions from the Proposed Project, for the Case (660 MW) will comply with the applicable air emission standards of the Pakistan and World Bank Environmental, Health, and Safety Guidelines (WBEG), the NEQS, and the Lender's Requirements.(SRO on NEQS enclosed)

When burning a coal that would produce SOX emissions in excess of the limit. The Project will be equipped if required, with a flue gas desulfurization (FGD) system. The systems available for FGD are sea water scrubber, wet limestone and spray dryers. A seawater FGD system will be selected for this project because it is by far the most economical system that will meet the regulations.

The maximum allowable limits for SOx, NOx and PM emissions from stacks (before mixing with the atmosphere) are provided in the Sindh Environmental Quality Standards (SEQS) as follows:

- SOx : 500 Tons Per Day
- NOx: 300 nomogram per Joule of heat input
- PM : 500 mg/Nm³

The corresponding values of maximum allowable flue gas conc. for coal fired plants have been converted into mg/Nm³ for better understanding of the engineering consultant. The values are as follows:

- SO₂: 2000 mg/Nm³ or 500 Tons Per day (tpd)
- NOx: 750 mg/Nm³ or 260 nomogram per joule (ng/J)
- PM: 500 mg/Nm³

The SOx & PM emission depend on the amount of sulphur and ash content in the fuel and can be easily calculated if the fuel quantities (tons/day) are known. NOx emission depend on the heat content and can be calculated using AP-42.

The limits defined in ambient air quality standards are as follows:

	Annual	24-hr		
SO ₂	80	120		
NOx	40	80		
PM10	120	150		
PM2.5	40	75		

The maximum Ground Level Concentrations (GLC) of pollutants must not exceed the above limits. The GLC is calculated through air dispersion modeling approach using different stack heights. The maximum incremental GLC is superimposed over the maximum baseline ambient air level and the resultant values are then compared with SEQS.

All these information may very based on agreement on the EPC Contractor.

5 Cooling Water source :tube well, sea /river /canal ,distance from the source

Water Supply

This area can be classified as semi-arid; there is no fresh water available at the site, sea being the only reliable source of the required quantities of water. Therefore, it is planned to have a reverse osmosis (RO) system for the desalination of water. An RO system offers greater flexibility for the production of water than a thermal-based distillation system. During the detailed design phase, this selection will be further evaluated and the EPC contractor will have the option of providing an RO system or a thermal-based distillation process for desalination.

The project site abounds in seawater resources. The water for the project is from adjacent sea channel. A once-through seawater cooling system will be used. A submerged pipe with a velocity cap intake and either a buried pipe or an open-channel discharge to the ocean is proposed.





NATIONAL TRANSMISSION & DESPATCH CO. LTD.

General Manager (WPPO) NTDCL

February 19, 2015

No.GM (WPPO)/NTDC/HUB-152/ 1430 -34

Mr. Intisar Ul Haq Haqqi

Chief Executive Officer

Lucky Electric Power Company Ltd.

6-A, A. Aziz Hashim Tabba Street,

Muhammad Ali Housing Society,

Karachi.

SUBJECT:- Power Purchaser Consent - NEPRA Tariff Petition

Ref.- Your office letter no. LEPCL/CEO/660-008 dated February 16, 2015.

This is to confirm that the Power Purchaser shall procure the power from 660 MW Coal-fired power project of M/s Lucky Electric Power Company at the tariff allowed by NEPRA and the terms and conditions to be finalized in the Power Purchase Agreement.

(Muhammad Azam Khan) General Manager (WPPO)

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1) The Registrar NEPRA, NEPRA Tower, Ataturk Avenue (East), G-5/1, Islamabad.

Managing Director NTDCL, WAPDA House Lahore.
Managing Director PPIB, 50-Nazimuddin Road, Sector F-7/4, Islamabad.

4) General Manager (Planning Power) 4th Floor, PIA Tower, Lahore.

325-WAPDA House, Lahore, Pakistan TEL: +92 42-99202111, Fax: +92 42-99202578 gm_wppo@yahoo.com



NATIONAL TRANSMISSION & DESPATCH CO. LTD.

General Manager (WPPO) NTDC

No.GM(WPPO)/NTDC/ 10013-16

Dated: 2-1 / 10 / 2014.

Mr. I. H. Haqqi Chief Executive Officer Lucky Electric Power Company Limited, 6-A Muhammad Ali Housing Society, A. Aziz Hashim Tabba Street, Karachi.

Subject:- Power Evacuation for 660 MW Lucky Energy Coal Power Project.

Kindly be apprised that NTDC, in principle does not have any objection to the proposed size (660 MW) and technology (Super-critical Coal-fired) of the proposed plant.

As far as power evacuation from the plant is concerned, NTDC has yet to finalize its studies for power evacuation from the proposed coal fired power plants in the South. This is due to the uncertainty regarding the ultimate materialization of such plants.

You are, however, advised to continue the required activities for the implementation of the proposed project as per the requirements of PPIB. The final confirmation for power evacuation from the plant will be given by NTDC after finalization of the evacuation plan of the upcoming projects in the south and after the LOS stage of the subject project.

(Muhammad Azam Khan) General Manager (WPPO)

C.c

- 1) Managing Director NTDCL, WAPDA House Lahore.
- 2) Managing Director PPIB, 50-Nazimuddin Road, Sector F-7/4, Islamabad.
- 3) General Manager (Planning Power) NTDCL, 4th Floor, PIA Tower, Lahore.

Supercritical vs. Subcritical:

An evaluation was performed to select the thermal cycle design. The higher

Pressure of a supercritical cycle results in a higher efficiency than a subcritical cycle. A typical subcritical cycle has a maximum turbine throttle pressure of around 174 bar and a typical throttle pressure for a

Supercritical cycle is around 248 bars. This difference in pressure results in a heat rate difference of up to approximately 2%. There are currently over 460 supercritical units in operation in China, Europe, Korea, Japan, and the United States, and a few in the developing countries. The European, Japanese, and, recently, the Chinese suppliers have standardized on supercritical designs for units larger than 600 MW. With the

High price of coal, the higher efficiency of the supercritical design justifies the higher capital cost.

Capital cost of a supercritical versus a subcritical plant was also considered for the selection of the technology. The capital cost of a supercritical plant is generally approximately the same as, or 2% higher than, a subcritical plant.

Based on the above 1x 660 MW gross (ISO) unit is selected.



<u>6: Interconnection with Grid Co. distance and name of nearest grid , voltage</u> <u>level (SLD) (The final outgoing voltage information will be provided after</u> <u>technical detailed study from NTDC)</u>

The switchyard will be configured as a metal-enclosed pressurized SF6 gas insulated two-bus breaker-and-a-half arrangement with two lines coming in from the two generating units and two lines going out to evacuate the power into the 500-kV AC grid. (The final outgoing voltage information will be provided after technical detailed study from NTDC) The switchyard will be designed to allow complete power evacuation from the plants into the 500-kV AC grid (The final outgoing voltage information will be provided after technical detailed study from NTDC) while allowing any circuit breaker or other piece of switchyard equipment to be taken out of service for maintenance or replacement after a failure. Switchyard ratings will be in accordance with international standards based on the results of system design studies.

The switchyard will be designed to allow complete power evacuation from the plants into the 500-kV AC grid (The final outgoing voltage information will be provided after technical detailed study from NTDC) while allowing any circuit breaker or other piece of switchyard equipment to be taken out of service for maintenance or replacement after a failure. Switchyard ratings will be in accordance with international standards based on the results of system design studies

NTDC has yet to finalize its studies for the power evacuation from the proposed coal fired power plants in the south. In principle they does not have any objection NTDC letter No. GM(WPPO)/NTDC/10013-16 dated 21-10-2014 and letter no. GM(WPPO)/NTDC-HUB-152/1430-34 dated 19-02-201 are enclosed for reference.

7 Infrastructure :roads ,rails ,staff colony ,amenities.

Transportation

The Project is located near Port Qasim Karachi and is normally accessed by roadway. The travel distance from the center of Karachi to the site is approximately 40 kilometers.

The original design capacity of Port Qasim Karachi for handling of cargo is 64 million tonsannum, Import customs clearance system is perfect, and so the Port can meet the needs of equipment transportation of The Project

The transportation plan during the construction phase will be to deliver goods, commodities, and equipment to the project by road. Transportation by truck may a so be preferred for goods, commodities, and equipment originating within Pakistan.

Colony, Security Colony, and Construction Camp

There will be a permanent colony for the workers at the site. The final size and design of the colony will be determined as the project develops. In general terms, the colony will be designed to provide housing to all the workers and families of the workers who require housing near the site. Some workers may elect to keep their families in or near Karachi. For those workers, bachelor quarters will be provided at the colony.

Housing for the security force will be provided as part of the colony. This will likely be barracks-style housing adjacent to the main colony. It is estimated that there will need to be a security force of about 100 for the plant and colony. The colony will be enclosed in a security fence with gate houses and watch towers.

The colony will include facilities such as guest house, gymnasium, community center, athletic fields, other green areas, and canteen. There may be a school in the colony or the operating company may make a contribution to the local school system to provide the schools for the workers' children.

Separate from the colony will be a construction camp. The design of the construction camp will be the responsibility of the EPC Contractor. We estimate that the peak construction manpower will be between 3,000 and 4,000 people. There will be three general areas:

• Container-based housing for the management. These will be removed at the completion of construction

• Cement block / concrete housing for lower management and supervisors. These will be designed for two to four men to a room. These buildings will be designed as permanent buildings and will be used for the outage workers after the plant is in operation. Dining hall and mosque will be included.

• Hall style housing for the workers. These will be removed at the completion of construction.

8 Project Cost , information regarding sources and amounts of equity, debt.

It is proposed to set up the project with debt equity ratio of 75:25 with the estimated cost of US \$ 1.08 Billion (Excluding Jetty Cost). The Project Company has received letter of interest from Chinese Banks (Bank of China & Industrial & Commercial Bank of China) whereas the company also intends to secure local financing to meet part of the Project requirement. The Project Company is wholly owned subsidiary of Lucky Cement Limited and the entire will be injected by Lucky Cement through its internal fund generation as on 30th June 14. The Lucky Cement has equity of Rs. 49.7 Billion and no long term debt.



12 System studies , load flow , short circuit , stability , reliability





NATIONAL TRANSMISSION & DES. ATCH CO. LTD.

General Manager (WPPO) NTDCL

No.GM (WPPO)/NTDC/HUB-152/<u>1412</u>-14

February 19, 2015

Mr. Intisar Ul Haq Haqqi

Chief F lecutive Officer Lucky Electric Power Company Ltd. 6-A. A. Aziz Hashim Tabba Street, Muhammad Ali Housing Society, Karachi.

SUBJECT:- <u>Grid Interconnection Study for Dispersal of Power from 660 MW Coal-Fired</u> <u>Power Project of M/s Lucky Electric Power at Port Qasim.</u>

Ref:-

- 1. Your office letter no. LEPCL/HO/660MW/301015 dated January 30, 2015.
- 2. G.M Planning (Power) office letter no. GMPP/CEMP/TRP-300/631-33 dated February 16, 2015. (copy enclosed)

This is with reference to above mentioned letter at serial no. 1, vide which it has been requested to NTDC to conduct the grid interconnection study of subject cited power project.

in this regard, GM Flanning (Power) vide letter referred at serial no. 2 intimated that as per NTDC Policy, the project sponsor is required to deposit an amount of Rs. 2.500,000/- (Two and a half million rupees) payable to General Manager (services Division) NTDC, WAPDA House Labore , on account of service enarges of the said study.

... "Year to conduct the grid interconnection study, project sponsor is required to provide "Cormation/data of their proposed power project on the attached specimen sheet.

It is, therefore, requested to submit the requisite information/data at the earliest to conduct the grid interconnection study and a copy of bank draft may also be forwarded to GM Planning office under intimation to this office.

Tahir) Chief Engineer-I (WPPO)

DA/As above

C.c

- 1. P.A to General Manager (WPPO), 325-WAPDA House Lahore.
- 2. General Manager (Planning Power) 4th Floor, PIA Tower, Lahore.

325-WAPDA House, Lahore, Pakistan TEL: +92 42-99202111, Fax: +92 42-99202578 gm_wppo@yahoo.com



NATIONAL TRANSMISSION & DESPATCH CO. LTD

General Manager Planning Power, NTDCL

No. GMPP/CEMP/ TRP- 300 / 631-33

Dated: 16-02-2015

Chief Engineer-I (WPPO) WAPDA House Lahore. Fax #042-99202578

Subject: Grid Interconnection Study for Dispersal of Power from 660 MW Coal-Fired Projects of Lucky Electric Power at Port Qasim.

Ref: General Manager WPPO letter No.GM (WPPO)/NTDC/1014-16 dated 03-02-2015.

This is with reference to above mentioned letter in which M/s Lucky Electric Power has requested NTDCL to conduct the grid interconnection study for the subject power plant. In this regard, it is intimated that as per NTDC Policy, the project sponsor is required to deposit an amount of Rs.2,500,000/- (Two and a half million rupees only) payable to General Manager (Services Division) NTDC, WAPDA House, Lahore, on account of service charges for the subject interconnection study. A copy of the bank draft may also be sent to this office alongwith the information/data (as enclosed) to be supplied by the project sponsor in order to carry out grid interconnection study. It is also worth mentioning that the interconnection study report will only contain load flow, short circuit and transient stability studies.

This office will initiate the subject studies upon the receipt of the service charges and the required data from the project sponsor as mentioned above.

DA/As above

Master File (MP)

R.S.Rehan

General Manager Planning Power

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- () General Manager (WPPO), 325-WAPDA House Lahore.
- (ii) Mr. Intisar Ul Haq Haqqi, Chief Executive Officer, Lucky Electric Power Company Limited, 6-A, A.Aziz Hashim Tabba Street, Muhammad Ali Housing Society, Karachi.(Fax:021-34534203)

Chief Engineer-I (WPPO)

Floor, PIA Tower, Egerton Road, Lahorel TEL:+92-42 99202613, Fax: +92 42 36307738|gmpp@ntdc.com.pk

Data/Information Required for Interconnection Study of Lucky Electric Power

Company Coal-fired Power Project

(to be supplied by the Project Sponsor/consultant)

- 1. Expected Commissioning Date (COD) of power project
- 2. Generator Data:

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- Number of generators
- Generator capacity [MVA, MW (gross and net)]
- Auxiliary consumption
- Generator voltage
- Power factor (Lagging/Leading)
- Generator reactances: Sub-transient, transient, synchronous reactances along d- & q-axis; negative and zero sequence reactances
- Generator open circuit time constants (sub-transient, transient along d and q axis)
- Total Inertia Constant (generator + turbine + rotating exciter)
- Characteristic Curves (Saturation, PQ and V-curve)
- Type of Generator Earthing (solid grounding or transformer/impedance grounding). In case of transformer impedance grounding, the data of voltage ratio, MVA, impedance of grounding transformer and the values of impedance (resistance or reactance).
- E. Control Systems
 - Type of Exciter and Governor with parameters. (typical dynamic model profomae in PSS/E software format are attached)
 - Type of Power System Stabilizer with parameters (typical dynamic model profoma in PSS/E Loftware format is attached)
 - Note: the dynamic models of Exciter, Governor and Power System Stabilizer will also be acceptable if these are different from the typical ones as provided above, however, the model notries and parameters should be as per PSS/E pottware. It is because the simulations will be run in PSS/E software.
- 4 Generator Step-up Transformer Data:
 - Number of step-up transformers
 - Voltage ratio
 - MVA rating
 - Percentage Impedances
 - Number of Generators connected to each step-up transformer.

6.35 EXST1

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IEEE Type ST1 Excitation System



CONS	#	Value	Description
J			T _R
J+1			VIMAX
J+2			VIMIN
J+3			T _C
J+4			T _B (sec)
J+5			KA
J+6			T _A (sec)
J+7			VRMAX
J+8		İ	VRMIN
J+9]	Kc
J+10		1	KF
1449		!	Te (> 0) (sec)

States		Description	
к		Vmeasured	
K+1		Lead lag	
K+2		VR	
K+3		Feedback	

IBUS, 'EXST1', ID, CON(J) to CON(J+11) /

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VS = VOTHSG + VUEL + VOEL

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Turbine-Governor Model Data Sheets TGOV1

7.20 TGOV1

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5

Steam Turbine-Governor

This model is located at system bus	*	IBUS,			
Machine Identifier	*	ID,	SPEED		PMECH
This model uses CONs starting with	#	J,		TGOVI	
and STATEs starting with	#	К,			
and VAR	#	L.		•	

CONS	#	Value	Description	
J			R	
J +1			T ₁ (>0) (sec)	
J+2			VMAX ¹	
J+3			[∨] min ¹	
J+4			$T_2 (sec)^2$	
J+5			T ₃ (>0) (sec) ³	
J+6			D ₁ ¹	

VMAX, VMIN, Dt are in per unit on generator base.
T2/T3 = high-pressure fraction.
T3 = reheater time constant.

	STATES	Ä	Description
a	K		Valve opening
1	K+1.		Turbine power

-	NR.R.E	 Securiptics	_
	ļ.	Reference	The second

IEUS, TGOV1', IE, CON(J) to CON(J+6) /

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3.9 PSS2D

IEEE 421.5 2005 PSS2B IEEE Dual-Input Stabilizer Model

#	IBUS,
#	ID.
#	J.
#	К,
#	L,
#	М.
	# # # # #

С	ONs	#	Value	Description
	J			Tw1 (> 0)
	J+1		1	T _{w2}
	J+2			T ₆
J	1+3		1	T _{w3}
J	+4			T _{w4}
J	+5			Τ ₇
J	+6			K _{S2}
J.	+7			K _{S3}
J	+8			T ₈
1.	≁ 9			T3 (20)
+ر	10			K _{S1}
+	-11		1	T,
+ز	12			T2
<u></u> +	12			72
÷ز	14		ł	7.
÷	15			T10
+ل	16			Tq.
J+	17]	VS1MAX
J+	18			VS1MIN
J+'	19			V _{S2MAX}
J+2	20			V _{S2MIN}
J+2	21			VSTMAX
J+2	22			VSTMIN

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STATEs	#	Description
К		Washout-first signal
K+1		Washout-first signal
K+2		Transducer-first signal
K+3		Washout-second signal
K+4		Washout-second signal
K+5		Transducer-second signal
K+6		
		Ramo tracking filler
-		
K+13		
K+14		First lead-lag
K+15		Second lead-lag
K+16		Third lead-lag

VARs	#	Description
L	1	Memory
L+1		Derivative of pu bus voltage-first bus
1.+2		Memory
L+3		Derivative of pu bus voltage-second bus

Slemens Energy, Inc., Power Technologies International

PSS®E	32.0.5	
PSS®E	Model	Library

ICON	#	Value	Description
			ICS1, first stabilizer input code:
			1 rotor speed deviation (pu)
			2 bus frequency deviation (pu)
М			3 generator electrical power on MBASE base (pu)
			4 generator accelerating power (pu)
			5 bus voltage
			6 derivative of pu bus voltage
M+1			REMBUS1, first remote bus
			ICS2, second stabilizer input code:
			1 rotor speed deviation (pu)
			2 bus frequency deviation (pu)
M+2			3 generator electrical power on MBASE base (pu)
			4 generator accelerating power (pu)
			5 bus voltage
			6 derivative of pu bus voltage
M+3			REMBUS2, second remote bus
M+4			M, ramp tracking filter
M+5			N, ramp tracking filter

IBUS, 'PSS2B', ID, ICON(M) to ICON(M+5), CON(J) to CON(J+22) /

Siemens Energy, Inc., Power Technologies International

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luchyelectricpower.com

Ref. No. LEPCL/HO/660MW/301015

15 -

Dated:- January 30th , 2015

To,

General Manager(WPPO), WAPDA House, The Mail Lahore,

Managing Streetor (NTDC) Deary No. 7674

Subject: Power Evacuation for 660 MW Lucky Energy Coal Power Project

Dear Sir,

This is with reference to the letter GM(WPPO)/NTDC/10013-16 dated 21st October, 2014. We would like to appraise you that we have received the Notice to Proceed from PPIB on 15th January, 2015, which is enclosed as Appendix-I. We have already submitted the performance guarantee amount in the office of PPIB for the issuance of EOI receipt enclosed as Appendix-II.

We would like to formally approach NTDCL to carry out the load flow studies, including short circuit transient and stability studies for our 660 MW Coal Fired Project at Port Qasim, Karachi. We would be grateful if you could provide us with the fee which we need to pay NTDCL Planning Power, so that they can carry out the load flow study.

We look forward to your urgent feedback on this.

CC:

Intisar Ul Haq Haqqi Chief Executive Officer Lucky Electric Power Company Limited Karachi.

Managing Director NTDCL, Wapda House, Lahore. Managing Director, PPIB, 50 Nazimuddin Road, Sector F-7/4, Islamabad. General Manager (Planning Power), 4th Floor, PIA Tower, Lahore.

Unief Engineer-I (WFPO)

Z:\LEPCL\660 MW COAL\290115 -Load Flow Study.doc

Diary No: 429 Dotation 03/02/05

YBG

6-A. A. Aziz Hashem Tabba Street, Muhammad Ali Housing Society, Karachi - 75350, Pakistan UAN: +92 21111 786 555 | FAX: +92 21 3453: 4203

Standard Simplified Computer Representation for Power System Stability Studies UNITROL[®] 6000

The final status of this information is subject to final selection of EPC Contractor

Rev.	- 2	008-03-20. Ta		Rev.		Issued: 08-03-20 Ta	Document	Format L	ngue Pr	de	No. of pages
Rev.	A 2	008-10-02, MB		Rev.		Check 1:	ZAB	A4	Ĕ	Γ1	8
Rev.	B 2	009-04-07. MB		Rev.		Check 2:			1 -		-
		Dept. 1	Dept. 2	Der fr	om/Repla	Released: 08-04-08 RW					
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AUTOMATIC VOLTAGE REGULATOR (AVR)

1.1 Computer representation



Fig. 1.1 Computer representation of AVR

Short model description (ref. to Fig 1.1)

All the required measuring values are submitted to first order transfer functions which represents the time constant of corresponding measuring transducers. Since the measuring time constants for the signals VT, QT, PT are practically equal, all transducer time constants may be represented by TR. The actual value of machine terminal voltage VT is the main controlled variable.

The actual value of reactive power QT at machine terminals is required for the parallel operation with the grid and/other machines. The QT signal is weighted with a factor KIR which can be adjusted either to obtain an droop characteristic (KIR negative) or a reactive power compensation (KIR positive) as normally required to compensate the voltage drop at the unit step up transformer.

The PT signal represents the active power at machine terminals and is normally not required. This path is mainly provided for special systems in which a large resistive voltage drop is expected. In such cases the required compensation may be adjusted with the factor KIA.

The Voltage set point for VT is added to the reactive an active power compensation signal building the main set point for the voltage control loop.

The difference between the main voltage set point and the filtered value of the actual terminal voltage VT represents the error signal.

The error signal is applied to a lead-lag regulator that is tuned to achieve the an accurate, fast and a stable voltage control performance. The controller consists of two anti wind-up lead-lag filters and an amplification factor KR1. The lead lag filters are adjustable and are provided for optimum phase and gain compensation. The steady state gain that determines the control stationary control accuracy is adjusted with the factor KR1.

KARACH

The output signal of AVR controller is applied to a high value (HV) and a low value (LV) priority gates. These two gates also collect the outputs of the several over- and under-excitation limiters. The gates are used for a control take over in case that some limiter has to decrease or decrease the excitation level as soon as a limitation characteristic gets violated. The underexcitation signals are applied to the HV gate have priority over the AVR signal. The overexcitation limiters have priority over both AVR and underexcitation system. The equipment allows the inversion of this priority logic. Figure 1.1 shows the standard limiter priority philosophy of ABB.

After the HV and LV gates, the predominant control signal is added to the stabilizer signal (PSS) that has an own Lead-lead controller with exactly the same parameters of the AVR controller. This allows the optimum performance of PSS even if some limiter takes over the excitation control.

After the summation to the stabilizing signal, the AVR control passes to the limitation function with VAmax and VAmin limits that represent the physical limitations of the controller output signal in p.u.

Parameter	Description	Unit	Standard settings	Proposed settings		
TR	Measuring filter time constant	Measuring filter time constant s				
KIR	Reactive power compensation factor	p.u./p.u	-0.05			
KIA	Active power compensation factor	p.u./p.u	0.00			
KR1	Steady state gain	p.u./p.u	300			
TB11	Controller first lag time constant	s	6.0			
TB21	Controller second lag time constant	s	0.1			
TC11	Controller first lead time constant	s	0.8			
TC21	Controller second lead time constant	s	0.10			
VAmax	AVR output positive ceiling value	p.u.	5.00			
VAmin	AVR output negative ceiling value	p.u.	-0.85 * VAmax	-0.85 *VAmax		

1.2 Parameter list

1.3 Correspondence between model parameters and equipmet settings

Parameter	Equipment settings correspondence
TR	No correspondence, constant value
KIR	Reg_Q_Static.QStatic
KIA	Reg_P_Static.PStatic
KR1	Reg_AVR_PID.vo
	Reg_AVR_PID.vo / Reg_AVR_PID.vp * Reg_AVR_PID.ta
TB21	Reg_AVR_PID.vp / Reg_AVR_PID.voo * Reg_AVR_PID.tb
TC11	Reg_AVR_PID.ta
TC21	Reg_AVR_PID.tb
VAmax	ExcitationSystems.UpperCeilingFactorLimit
VAmin	ExcitationSystem.LowerCeilingFactorLimit



2 Definition of excitation system supply modes and exciter types



Fig. 2 Definition of excitation system supply modes and exciter types

2.1 Parameter list

Parameter	Description	Unit	Possible setting	Proposed settings
SES	Selection of Static excitation system	-	0.0 or 1.0	1.0
KVC	AC side vectorial compounding factor	p.u./p.u	0.005.00	0.00
VVCmax	Maximum voltage of vectorial compounding	p.u.	0.005.00	0.00
KSC	DC side series compounding factor	p.u./p.u	0.005.00	0.00
VSCmax	Maximum voltage of DC side series compounding	p.u.	0.005.00	0.00
VCOMP	Selection of vectorial compounding	-	0.0 or 1.0	0.0
SHUNT	Selection of shunt supply	-	0.0 or 1.0	1
Ts	Gate control unit and converter time constant	s	0.004	0.004
KID	DC-Voltage drop proportional to converter output current	p.u./p.u	0.0	0.0
TE	Exciter time constant	p.u.	Project related	N.A.
KE	Exciter self excitation factor	p.u./p.u	Project related	N.A.
SE0.75 max	Saturation factor at 75% of ceiling voltage	p.u./p.u	Project related	N.A
SEmax	Saturation factor at ceiling voltage p.u./p.u		Project related	N.A.
EFmin	Minimum exciter output voltage	p.u.	Project related	N.A.



3 Power system stabilizer

3.1 Computer representation of IEEE PSS 2B



Fig. 3.1: Computer representation of PSS2B according to IEEE 421.5 2005

Short model description of PSS2B (ref. to Fig 3.1)

The model consists of the following sub models:

- Calculation of driving power
- Filtering of torsional oscillations and noise components
- Calculation of acceleration power
- Phase and gain conditioning for stabilizing signal

The required signals for the generations of stabilizing signals are the active power PT and the rotor angular frequency deviation.

Both signals are submitted to two wash-out stages which are provided for the elimination of steady state signal component.

An approach for the integral of electric power is obtained by applying the output of the second washout filter of power channel to a first order transfer function. The value T7 shall correspond washout time constants TW1, TW2, TW3 that are selected to allow the operation of the PSS in the frequency range of interest (e.g. >0.1 Hz). The constant Ks2 shall be equal to T7/(2H) in order to obtain a proper signal relationship for the calculation of the acceleration power.

Ks3 is provided for the fine scaling between signals coming from power and frequency channels. Normally Ks3 is equal to 1.

The integral of driving power is obtained from the summation of conditioned frequency signal and the calculated integral of electric power variation.

A selective low pass filter so called "ramp tracking filter" is provided for the suppression of high frequency components (e.g. shaft torsional oscillations).

The integral of acceleration power is calculated from the difference between integral of driving power and integral of electric power.

The conditioning network consisting of the gain Ks1 and three lead-lag stages are provided in order to achieve the required phase and gain compensation for the stabilizing signal. Finally the maximum and minimum amplitudes of stabilizing signal can be limited as well by individual and adjustable maximum and minimum adjustable limitation parameters (ref. PSS control logic).

KAPACH

3.2 Parameter list of PSS2B

Parameter	Description	Unit	Standard settings	Proposed setting
TW1,TW2	Wash out time constants	s	2.0	
TW3,TW4	Wash out time constants	s	2.0	
Ks1	PSS gain factor	p.u.	5.0	
Ks2	Compensation factor for calculation of integral of electric power	p.u.	0.2	
Ks3	Signal matching factor	p.u.	1.0	
T1,T3,T10	Lead time constants of conditioning network	s	0.20 0.36 0.01	
T2,T4,T11	Lag time constants of conditioning network	S	0.04 0.12 0.01	
TR	Active power transducer time constant	S	0.02	0.02
Т6	Rotor angular frequency deviation transducer time constant	s	0.02	0.02
Т7	Time constant for integral of electric power calculation	s	2.0	
Т8	Ramp tracking filter time constant	s	0.0	
Т9	Ramp tracking filter time constant	S	1.0	
м	Ramp tracking filter degree	-	5	
N	Ramp tracking filter degree	-	1	

3.3 Correspondence between model parameters and equipmet settings

Parameter	Equipment settings correspondece for PSS2B
TR and T6	No correspondence, constant values
TW1	Reg_PSS_IEEE_2B.TW1
TW2	Reg_PSS_IEEE_2B_TW2
TW3	Reg_PSS_IEEE_2B.TW3
TW4	Reg_PSS_IEEE_2B.TW4
Ks1	Reg_PSS_IEEE_2B.Ks1
Ks2	Reg_PSS_IEEE_2B.Ks2
Ks3	Reg_PSS_IEEE_2B.Ks3
T1	Reg_PSS_IEEE_2B.T1
T2	Reg_PSS_IEEE_2B.T2
тз	Reg_PSS_IEEE_2B.T3
Т4	Reg_PSS_IEEE_2B.T4
T7	Reg_PSS_IEEE_2B.T7
тв	Reg_PSS_IEEE_2B.T8
т9	Reg_PSS_IEEE_2B.T9
T10	Reg_PSS_IEEE_2B.T10
T11	Reg_PSS_IEEE_2B.T11
м	Reg_PSS_IEEE_2B.m
N	Reg_PSS_IEEE_2B.n

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3.4 PSS control logic and amplitude limitation

Fig. 3.7: PSS control logic and amplitude limitation

Parameter	Description	Unit	Standard settings	Proposed setting
PTmin	Minimum active power level for PSS release	p.u.	0.30	
VTmax	Maximum terminal voltage level for PSS blocking	p.u.	1.10	
VTmin	Minimum terminal voltage level for PSS blocking	p.u.	0.90	
BlockPSS	PSS block parameter	-	0	
PSSEnable	PSS release parameter	-	1	
TON	PSS release time delay	's	1.0	
VSmax	Maxim limit of PSS signal	p.u.	0.1	
VSmin	Minimum limit for PSS signal	p.u.	-0.1	
VTSLmax	Terminal voltage limit value for reduction of PSS maximum limit of PSS signal	p.u.	1.07	
TSL	Integration time of VTSLmax limitation	s	1.0	
IEEE PSS2B	Selection of PSS IEEE2B	-	1	

3.5 Parameter list for PSS control logic

3.6 Correspondence between model parameters and equipmet settings

Parameter	Equipment settings correspondece for PSS4B	
PTmin	Reg_PSS.PMinEna	
VTmax	Reg_PSS.UgMaxEna	
VTmin	Reg_PSS.UgMaxEna	
BlockPSS	Reg_PSS. BlockPSS	and a star of the second second
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PSSEnable	Reg_PSS. PSSEnable
TON	Reg_PSS.EnableOnDelayTime
VSmax	Reg_PSS.UpperPSSLimit
VSmin	Reg_PSS.LowerPSSLimit
VTSLmax	Reg_PSS.UgMaxLim
TSL	Reg_PSS.IntegratorTime
IFFF PSS2B	Reg PSS.SelPSS2B

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