RPCL-NORINCO Intl. Power Limited

(A Joint Venture of RPCL and NORINCO Intl.)

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REQUEST FOR PROPOSAL

FOR

OPERATION AND MAINTENANCE

OF

PATUAKHALI 1320 (2 X 660) MW COAL FIRED THERMAL POWER PLANT

For Information Only

Date	:	**23 June, 2022**
Memo No.	:	**RNPL/1320/2022/0337**
Deadline for Proposal Submission	:	**12.00 PM on 22 August, 2022**

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PART 1 – Bidding Procedure

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Section I. Instruction to Bidders

A. General

1. Scope of Proposal

1.1 In connection with the Request for Proposal indicated in the Proposal Data Sheet (PDS), the Employer, as indicated in the PDS, issues this Request for Proposal for the procurement of Services as specified in Part 2 of this Request for Proposal. The project name and identification, number are provided in the PDS.

1.2. Throughout this Request for Proposal:

a) the term "in writing" means communicated in written form and delivered against receipt;

b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and

c) "day" means calendar day.

2. Source of Funds

2.1. Employer will be arranging for funds required for this Contract from its own funds.

3. Corrupt Practices

3.1. Employer requires that bidders, suppliers and contractors and their subcontractors observe the highest standard of ethics during the procurement and execution of contracts. In pursuance of this policy, the Employer:

a) defines, for the purposes of this provision, the terms set forth below as follows:

I. "corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;

II. "fraudulent practice" is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

III. "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;

IV. "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the

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party to influence improperly the actions of a party;

b) will reject a proposal for award if it determines that the bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question;

3.2. Furthermore, Bidders shall be aware of the provisions stated in Sub-Clause 21.6 (h) of the General Conditions.

4. Eligible Bidders

4.1. Bidders shall provide evidence, as the Employer shall reasonably request, of their eligibility in accordance with Section III.

4.2. A Bidder may be a natural person, private entity, government-owned entity—subject to ITB 4.6—or any combination of such entities supported by a letter of intent to enter into an agreement or under an existing agreement in the form of a joint venture (JV). In the case of a JV:

a) unless otherwise specified in the PDS, all partners shall be jointly and severally liable and

b) the JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the partners of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution.

4.3. A Bidder and all partners constituting the Bidder, may have the nationality of any country except from State of Israel, subject to the restrictions specified in Section V, Eligible Countries. A Bidder shall be deemed to have the nationality of a country if the Bidder is a citizen or is constituted, incorporated, or registered and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed subcontractors or suppliers for any part of the Contract.

4.4. A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if:

a) they have at least one controlling partner in common; or

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b) they receive or have received any direct or indirect subsidy from any of them; or

c) they have the same legal representative for purposes of this bid; or

d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the proposal of another Bidder, or influence the decisions of the Purchaser regarding this bidding process; or

e) a Bidder participates in more than one proposal in this bidding process. Participation by a Bidder in more than one Proposal will result in the disqualification of all Proposals in which the party is involved. However, this does not limit the inclusion of the same subcontractor in more than one bid; or

f) a Bidder participated as a consultant in the preparation of the design or technical specifications of any works related to the services that are the subject of the bid;

g) a Bidder was affiliated with a firm or entity that has been hired (or is proposed to be hired) by the Employer as Employer's Representative for the Contract.

4.5. A firm subject to a declaration of ineligibility by Bangladesh Anti-Corruption policies shall be ineligible during the debarment period.

4.6. Government-owned entities in the Employer's country shall be eligible only if they can establish that they are legally and financially autonomous and operate under commercial law. Also, they shall not be dependent agencies of the Employer.

4.7. Firms shall be excluded if:

a) as a matter of law or official regulation, the Employer's country prohibits commercial relations with that country; or

b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's country prohibits any import of goods or contracting of Works or services from that country or any payments to persons or entities in that country.

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B. Contents of Request of Proposal

5. Sections of Request of Proposal

5.1. The Request for Proposal consist of Parts 1, 2 and 3, which include all the Sections indicated below and should be read in conjunction with any addenda issued in accordance with ITB 8.

PART 1 Bidding Procedures

- Section I. Instructions to Bidders (ITB)
- Section II. Proposal Data Sheet (PDS)
- Section III. Evaluation and Qualification Criteria
- Section IV. Standard Forms
- Section V. Eligible Countries

PART 2 Services Requirements

- Section VI. Schedule of Service Requirements

PART 3 Conditions of Contract and Contract Forms

- Section VII. General Conditions (GC)
- Section VIII. Particular Conditions (PC)
- Section IX. Annex to the Particular Conditions - Contract Forms

5.2. The Invitation for Proposal issued by the Employer is not part of the Request of Proposal.

5.3. The Bidder shall obtain the Request of Proposal and its addenda directly from the source stated by the Employer in the Invitation for Proposal. If the Request for Proposal is not collected from the source mentioned in the Invitation for Proposal, may result the rejection of the bid. The Employer is not responsible for the completeness of the Request of Proposal and its addenda if they were obtained otherwise.

5.4. The Bidder is expected to examine all instructions, forms, terms and specifications in the Request of Proposal. Failure to furnish all information or documentation required by the Request for Proposal may result in the rejection of the bid.

6. Clarification of Request of Proposal, Site Visit, Pre-Proposal Meeting

6.1. A prospective Bidder requiring any clarification of the Request of Proposal shall contact the Employer in writing at the Employer's address and by the means of communication indicated in the PDS or raise his enquiries during the pre-proposal meeting if provided for in accordance with ITB 6.4. The Employer will respond in writing to any request for clarification, provided that such request is received no later than fourteen (14) days prior to the deadline for submission

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of Proposal. The Employer shall forward copies of its response to all Bidders who have
acquired the Request of Proposal in accordance with ITB 5.3, including a description of the inquiry but without identifying its source. Should the Employer deem it necessary to amend the Request of Proposal as a result of a request for clarification, it shall do so following the procedure under ITB 8 and ITB 22.2

6.2. The Bidder is advised to visit and examine the site or sites that are the subject of the proposed Contract and their surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the proposal and entering into the Contract. Such visits to the sites (hereinafter referred to as Site Visits) shall be conducted in accordance with the procedures and during the dates defined in the PDS.

6.3. The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of inspection, but only upon the express condition that the Bidder, its personnel and agents will release and indemnify the Employer and its advisors, personnel, consultants and agents from and against all liability in respect thereof and will be solely responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as a result of the inspection.

6.4. The Bidder's designated representative is invited to attend a pre-proposal meeting, if and as provided for in the PDS. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage. A site visit conducted by the Employer will be organized if provided for in the PDS.

6.5. The Bidder is requested to submit, as far as possible, any questions in writing, to reach the Employer not later than one week before the meeting.

6.6. Minutes of the pre-proposal meeting, including the text of the questions raised, without identifying the source and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Request for Proposal in accordance with ITB 5.3. Any modification to the Request for Proposal that may become necessary as a result of the pre-proposal meeting shall be made by the Employer exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-proposal meeting.

6.7. Nonattendance at the pre-proposal meeting will not be a cause for disqualification of a Bidder.

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7. Data Room

7.1. If specified in the PDS, the Employer has established a data room (hereinafter called the Data Room) with a selection of relevant data to be accessible to Bidders or their representatives. The address of the Data Room and other information considered relevant by the Employer (such as an inventory of materials, or dates, rules and procedures for access and dates of availability) are as specified in the PDS.

8. Amendment of Request of Proposal

8.1. At any time prior to the deadline for submission of Proposal, the Employer may amend the Request for Proposal by issuing addenda.

8.2. Any addendum issued shall be part of the Request of Proposal and shall be communicated in writing to all who have obtained the Request of Proposal from the Employer in accordance with ITB 5.3. No other communications of any kind whatsoever will modify the Request of Proposal.

8.3. To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Proposal, the Employer may, at its discretion, extend the deadline for the submission of Proposal, pursuant to ITB 22.2.

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C. Preparation of proposal

9. Cost of Proposal

9.1. The Bidder shall bear all costs associated with the preparation and submission of its Proposal and the Employer shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

10. Language of Proposal

10.1. The Proposal, as well as all correspondence and documents relating to the Proposal exchanged by the Bidder and the Employer, shall be written in the language specified in the PDS. Supporting documents and printed literature that are part of the Proposal may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified in the PDS for the Proposal, in which case, for purposes of interpretation of the Proposal, such translation shall govern.

11. Documents Comprising the Proposal

11.1. The Proposal shall comprise the following documents:

a) A Technical Proposal, with the following parts;
   I. Part I – Letter of Proposal, in accordance with ITB14.1
   II. Part II – The Bid Security, in accordance with ITB 16;
   III. Part III – Written confirmation authorizing the signatory of the Proposal to commit the Bidder, in accordance with ITB 20.3;
   IV. Part IV – In the case of a Proposal submitted by a JV, JV agreement, or letter of intent to enter into a JV including a draft agreement, indicating at least the parts of the services to be performed by the respective partners;
   V. Part V – Methodology and Approach in accordance with ITB 12.1;
   VI. Part VI – documents establishing the qualifications of the bidder in accordance with ITB 17.1;
   VII. Part VII – any other documents required by the PDS.

b) The Financial Proposal in accordance with ITB 13.

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12. Documents Comprising the Methodology and Approach

12.1. The Methodology and Approach (separately for Mobilization period and After COD period) shall consist of the following sub-parts:

A detailed work plan (separately for Mobilization period and After COD period) (hereinafter referred to as the work plan) using the corresponding form included in section IV, standard forms and setting out the manner in which the bidder proposes to carry out the services as defined in the contract and to meet any performance targets specified in the contract.

A detailed staffing plan (hereinafter referred to as the Staffing Plan); (separately for Mobilization period and After COD period) setting out the Bidder's proposed staffing arrangements as they relate to the requirements in the Contractor's Personnel Schedule (Schedule E), included in Section VI, Schedule of Services Requirements.

Any other information as stipulated in Section IV, Standard Forms.

13. Documents Comprising the Financial Proposal

13.1. The Financial Proposal shall consist of a completed and properly executed Proposal Price Form. The Proposal Price Form is included in Section IV of this Request of Proposal. Bidders shall complete the Proposal Price Form in full and shall not amend or change the form in any way.

13.2. The Bidder may quote its prices in accordance with ITB 18.

13.3. All duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of Proposal, shall be included in the rates and prices and the total Proposal Price submitted by the Bidder.

14. Letter of Proposal

14.1. Each Bidder shall provide a completed Letter of Proposal in accordance with the Letter of Proposal forms furnished in Section IV, one each for the Technical Proposal, including its attachment (TECH Form) and for the Financial Proposal.

14.2. All forms required in accordance with ITB 14.1 must be completed without any alterations to the text and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.

15. Power of Attorney

15.1. Each Bidder shall provide a written power of attorney duly notarized, indicating that the person(s) signing the Proposal has(ve) the authority to sign the Proposal and thus that the Proposal is binding upon the Bidder during the full period of its validity.

16. Bid Security

16.1. The Bidder shall furnish as part of its Proposal, in original form, either a bid security as specified in the PDS. The bid security shall be in the amount and currency specified in the PDS.

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16.2. The bid security shall be an unconditional guarantee issued by a bank from a reputable source from an eligible country. If the unconditional guarantee is issued by an insurance company or a bonding company located outside the Employer's Country, the issuer shall have a correspondent financial institution located in the Employer's Country to make it enforceable or follow if there is anything specified in PDS. In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section IV, Standard Forms or in another substantially similar format approved by the Employer prior to Proposal submission. In either case, the form must include the complete name of the Bidder. The bid security shall be valid for twenty-eight days (28) beyond the original validity period of the Proposal, or beyond any period of extension if requested under ITB 22.2.

16.3. Any Proposal not accompanied by an enforceable and compliant bid security, if one is required in accordance with ITB 16.1, shall be rejected by the Employer as nonresponsive.

16.4. The bid security of the unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's furnishing of the performance security pursuant to ITB 41.

16.5. The bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the performance security.

16.6. The bid security may be forfeited:

a) if a Bidder withdraws its Proposal during the Period of Validity of Proposal, except as provided in ITB 19.2 or

b) if the successful Bidder fails to:

i. sign the Contract in accordance with ITB 40; or

ii. furnish a performance security in accordance with ITB 41.1.

16.7. The bid security of a Joint Venture (JV) shall be in the name of the JV that submits the bid. If the JV has not been legally constituted at the time of Proposal, the Bid Security shall be in the names of all future partners as named in the letter of intent to execute the JV.

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16.8. If a bid security is not required in the PDS pursuant to ITB 16.1 and

a) if a Bidder withdraws its Proposal during the Period of Validity of Proposal specified by the Bidder on the Letter of Proposal pursuant to ITB 19.1, except as provided in ITB 19.2, or

b) if the Successful Bidder fails to sign the Contract in accordance with ITB 40; or furnish a performance security in accordance with ITB 41; the Employer may, if provided for in the PDS, declare the Bidder disqualified to be awarded a contract by the Employer for a period of time as stated in the PDS.

17. Documents Establishing the Qualifications of the Bidder

17.1. To establish its qualifications to perform the Contract in accordance with Section III, Evaluation and Qualification Criteria, the Bidder shall provide the information requested in the corresponding information sheets included in Section IV, Standard Forms

18. Currencies of Proposal and Payment

18.1. Bidders may express the price of their proposal in a maximum of three freely convertible currencies, in addition to the currency of the Employer's country as follows:

a) for those inputs to the Services that the bidder expects to supply from within the Employer's country (referred to as "the local currency requirement"), in the currency of the Employer's country specified in the PDS; and

b) for those inputs to the Services that the bidder expects to supply from outside the Employer's country (referred to as "the foreign currency requirements") in up to any three currencies of any country unless anything specified in PDS.

18.2. Bidders may be required by the Employer to justify, to the Employer's satisfaction, their local and foreign currency requirements and to substantiate the amounts included in the Proposal Price Form, in which case a detailed breakdown of the foreign currency requirements shall be provided by Bidders.

19. Period of Validity of Proposal

19.1. Proposal shall remain valid for the period specified in the PDS after the Proposal submission deadline date prescribed by the Employer. A Proposal valid for a shorter period shall be rejected by the Employer as nonresponsive.

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19.2 In exceptional circumstances, prior to the expiration of the Proposal validity period, the Employer may request Bidders to extend the period of validity of their Proposal. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 16.1, it shall also be extended for twenty-eight days (28) beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its bid.

20. Format and signing of Proposal

20.1. The bidder shall prepare one original of the Technical Proposal and one original of the Financial Proposals as described in ITB 11.1 and clearly mark each as "Original." In addition, the Bidder shall submit copies of the Technical Proposal and the Financial Proposal, in the number specified in the PDS and clearly mark them "Copy."

20.2. In the event of any discrepancy between the original and the copies, the original shall prevail.

20.3. The original and all copies of each Proposal shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the PDS and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Proposal where entries or amendments have been made shall be signed or initialed by the person signing the Bid.

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D. Submission and Opening of Proposal

21. Sealing and Marking of Proposal

21.1. The original and all copies of the Technical Proposal shall be placed in a sealed envelope clearly marked "Technical Proposal". Similarly, the original and all copies of the Financial Proposal shall be placed in a sealed envelope clearly marked "Financial Proposal" with a warning "Do Not Open with The Technical Proposal." The envelopes containing the Technical and Financial Proposals shall be placed into an outer envelope and sealed."

21.2. The inner envelopes and the outer envelope shall:

a) bear the name and address of the Bidder;

b) be addressed to the Employer in accordance with ITB 22.1;

c) bear the specific identification of this bidding process indicated in the PDS pursuant to ITB 1.1; and

d) bear a warning not to open before the time and date for Proposal opening.

21.3. If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the bid.

22. Deadline for Submission of Proposal

22.1 Proposal must be received by the Employer at the address and no later than the date and time indicated in the PDS. When so specified in the PDS, bidders shall have the option of submitting their Proposal electronically. Bidders submitting Proposal electronically shall follow the electronic Proposal submission procedures specified in the PDS.

22.2. The Employer may, at its discretion, extend the deadline for the submission of Proposal by amending the Request of Proposal in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

23. Late Proposal

23.1. The Employer shall not consider any Proposal that arrives after the deadline for submission of Proposal, in accordance with ITB 22. Any Proposal received by the Employer after the deadline for submission of Proposal shall be declared late, rejected and returned unopened to the Bidder.

24. Withdrawal, Substitution and Modification of Proposal

24.1. A Bidder may withdraw or modify its Proposal after it has been submitted by sending a written notice, duly signed by an authorized representative and shall include copies of the authorization in accordance with ITB 20.3, (except that withdrawal notices do not require copies). A Bidder's modification or withdrawal must be:

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a) prepared and submitted in accordance with ITB 20 and ITB 21 (except that withdrawals notices do not require copies) and in addition, the respective envelopes shall be clearly marked "Withdrawal," "Substitution," "Modification;" and

b) received by the Employer prior to the deadline prescribed for submission of Proposal, in accordance with ITB 22.

24.2. Proposal requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.

24.3. No Proposal may be withdrawn, substituted, or modified in the interval between the deadline for submission of Proposal and the expiration of the period of Proposal validity specified by the Bidder on the Letter of Proposal Form or any extension thereof.

25. Technical Proposal Opening

25.1. The Employer shall open the Technical Proposals in public, in the presence of Bidders' designated representatives and anyone who chooses to attend, at the address and at the date and time specified in the PDS. Any specific electronic Proposal opening procedures required if electronic bidding is permitted in accordance with ITB 22.1, shall be as specified in the PDS.

25.2. First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelope with the corresponding proposal shall not be opened but returned to the Bidder. No proposal withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at the proposal opening. Next, envelopes marked

"Substitution" shall be opened and read out and exchanged with the corresponding proposal being substituted and the substituted proposal shall not be opened but returned to the Bidder. No proposal substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at proposal opening. Envelopes marked "Modification" shall be opened and read out with the corresponding proposal. No proposal modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at the proposal opening. Only envelopes that are opened and read out at the proposal opening shall be considered further.

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25.3. All other envelopes shall be opened one at a time, reading out: the name of the Bidder and whether there is a modification; the presence of a bid security, if required; and any other details as the Employer may consider appropriate. No proposal shall be rejected at the proposal opening except for late Proposal, in accordance with ITB 23.1.

25.4. The Employer shall prepare a record of the proposal opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; and the presence or absence of a bid security, if one was required. The Bidders' representatives who are present shall be requested to sign the attendance sheet. A copy of the record shall be distributed to all Bidders.

26. Financial Proposal Opening

26.1. The Financial Proposals shall not be opened by the Employer until the evaluation of the Technical Proposals has been completed.

26.2. The Employer shall open the Financial Proposals in public, in the presence of Bidders' designated representatives and anyone who chooses to attend and at the address specified in the PDS. Any specific electronic Proposal opening procedures required if electronic bidding is permitted in accordance with ITB 22.1, shall be as specified in the PDS.

26.3. Financial Proposals will be opened only from those bidders who:

a) have submitted an acceptable Bid Security;
b) have submitted a responsive proposal pursuant to ITB 31; and
c) if applicable, have met the minimum technical scores specified in the PDS pursuant to ITB 33.1 (b).

Financial Proposals from bidders who have failed to meet requirements (a) and (b) and, if applicable, requirement (c), above, will be returned unopened.

26.4. First, envelopes marked "SUBSTITUTION" shall be opened and read out and exchanged with the corresponding proposal being substituted and the substituted proposal shall not be opened but returned to the Bidder. No proposal substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at proposal opening. Envelopes marked "MODIFICATION" shall be opened and read out with the corresponding proposal. No proposal modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at the proposal opening. Only envelopes that are opened and read out at the proposal opening shall be considered further.

26.5. All other envelopes shall be opened one at a time, reading out: the name of the Bidder and whether there is a

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modification; and the Proposal Price in the Financial Proposal.

26.6. The Employer shall prepare a record of the Proposal opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; the Proposal Price and the presence or absence of a bid security, if one was required. The Bidders' representatives who are present shall be requested to sign the attendance sheet. A copy of the record shall be distributed to all Bidders.

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E. Evaluation and Comparison of Proposal

27. Confidentiality

27.1. Information relating to the evaluation of Proposal and recommendation of contract award shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to all Bidders.

27.2. Any attempt by a Bidder to influence the Employer in the evaluation of the Proposal or Contract award decisions may result in the rejection of its bid.

27.3. Notwithstanding ITB 27.2, from the time of Proposal opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it may do so in writing.

28. General clarification of Proposal

28.1. To assist in the examination, evaluation and comparison of the Proposal and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered and the Employer's request for clarification and the response shall be in writing. If the Proposal includes a financial proposal, no change in the prices or substance of the Proposal shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Proposal, in accordance with ITB 35.

28.2. If a Bidder does not provide clarifications of its Proposal by the date and time set in the Employer's request for clarification, its Proposal may be rejected.

29. Selection Method and Evaluation process

29.1. Selection of the successful bidder will be conducted using Quality- and Cost-Based Selection (QCBS).

29.2. Prior to the evaluation of any Bid, the Employer will determine whether each Bid:

a) has been properly signed;

b) is accompanied by the required securities; and

c) is substantially responsive to the Proposal requirements, pursuant to ITB 31.

29.3. After the Proposal is deemed substantially responsive, the evaluation process will consist of two stages: (i) evaluation of the Technical Proposal in accordance with ITB 33 and (ii) Evaluation of the Financial Proposal in accordance with ITB 34.

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30. Deviation, Reservation and Omission

30.1. During the evaluation of Proposal, the following definitions apply:

a) "Deviation" is a departure from the requirements specified in the Request of Proposal;

b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Request of Proposal; and

c) "Omission" is the failure to submit part or all of the information or documentation required in the Request of Proposal.

31. Determination of Responsiveness

31.1. The Employer's determination of a bid's responsiveness is to be based on the contents of the Proposal itself, as defined in ITB 11.

31.2. A substantially responsive Proposal is one that meets all the requirements, terms, conditions and specifications of the Request of Proposal without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,

a) if accepted, would

i. affect in any substantial way the scope, quality, or performance of the Services specified in the Schedules in Section VI; or

ii. limit in any substantial way, inconsistent with the Request of Proposal, the Employer's rights or the Bidder's obligations under the proposed Contract; or

b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Proposal.

31.3. If a Proposal is not substantially responsive to the requirements of the Request of Proposal, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

31.4. If a Proposal is not substantially responsive, the Employer will notify the Bidder that its Proposal has been rejected.

32. Nonmaterial Nonconformities

32.1. Provided that a Proposal is substantially responsive, the Employer may waive any nonconformities in the Proposal that do not constitute a material deviation, reservation or omission.

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32.2. Provided that a Proposal is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Proposal related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the bid. Failure of the Bidder to comply with the request may result in the rejection of its bid.

32.3. Provided that a Proposal is substantially responsive, the Employer shall rectify nonmaterial nonconformities related to the Proposal Price. To this effect, the Proposal Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component.

33. Technical Proposal Evaluation

33.1. For those Proposal that are found to be substantially responsive pursuant to ITB 31, the Employer shall evaluate the Technical Proposals using the following evaluation methodology:

a) the Employer shall score Technical Proposals by applying the point system specified in Section III for each evaluation criterion. Each proposal will be given an aggregate technical score (St) by adding the scores assigned under each evaluation criterion;
b) A proposal shall be rejected at this stage if it fails to achieve the minimum aggregate technical score specified in the PDS; and
c) The Employer will apply any additional steps to the evaluation methodology as may be indicated in the PDS.
d) The Employer, with the assistance of Owner's Engineer will carry out the Technical Proposal Evaluation according to the evaluation criterion specified in Section III.
e) Bidders will then be sorted according to the aggregate technical scores (St) awarded based on the evaluation criterion specified in Section III.

34. Financial Proposal Evaluation

34.1. Only Proposal that, have been found substantially responsive in accordance with ITB 31 and have met the minimum technical score specified in the PDS pursuant to ITB 33.1, shall have their Financial Proposals evaluated.

34.2. To evaluate a Financial Proposal, the Employer shall consider:

a) price adjustment for correction of arithmetic errors in accordance with ITB 35;
b) The Employer shall apply any additional steps to the evaluation methodology as may be indicated in the PDS;

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c) converting the amount resulting from applying (a) to (b) above, if relevant, to a single currency in accordance with ITB 36;

d) adjustment for nonconformities in accordance with ITB 32.

e) If a Financial Proposal is seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed analyses for any or all items of the Technical and Financial Proposals, to demonstrate the internal consistency of those prices with the methodologies and staffing proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.

34.3. The Employer will determine the Successful Bidder by the following procedures:

The financial scores (Sf) of each Financial Proposal will be computed as indicated in the PDS. Proposal will be ranked according to their combined technical (St) and financial (Sf) scores using the weights (T = the weight given to the Technical Bid; P = the weight given to the Financial Proposal; where T + P must equal 1) indicated in the PDS: S = St x T + Sf x P. The Bidder with the highest combined technical and financial score is the Successful Bidder.

35. Correction of Arithmetical Errors

35.1. Provided that the Proposal is substantially responsive, the Employer shall correct arithmetical errors on the following basis:

a) if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity in the Technical Proposal, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;

b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and

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c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to a) and b) above.

35.2. If the Bidder that submitted the successful Proposal does not accept the correction of errors, its Proposal shall be disqualified.

36. Conversion to Single Currency

36.1. For evaluation and comparison purposes, the currency(ies) of the Proposal shall be converted into a single currency as specified in the PDS. The source of the exchange rate shall be as specified in the PDS. The date for the exchange rate shall be the deadline for submission of proposals pursuant to ITB 22.1.

37. Employer's Right to Accept Any Proposal and to Reject Any or All Proposal

37.1. The Employer reserves the right to accept or reject any Proposal and to annul the bidding process and reject all Proposal at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all Proposal submitted and specifically, bid securities, shall be promptly returned to the Bidders.

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F. Award of Contract

38. Award Criteria

38.1. The Employer shall award the Contract to the Successful Bidder as determined under ITB 34.3, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

39. Notification of Award

39.1. Prior to the expiration of the period of Proposal validity, the Employer shall notify the successful Bidder, in writing, that its Proposal has been accepted. The notification letter (hereinafter and in the Conditions of Contract and Contract Forms called the "Letter of Acceptance") shall specify the sum that the Employer will pay the Contractor in consideration of the execution and completion of the Services (hereinafter and in the Conditions of Contract and Contract Forms called "the Contract Price") and the requirement for the Contractor to remedy any defects therein as prescribed by the Contract. At the same time, the Employer shall also notify all other Bidders of the results of the bidding.

39.2. Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.

39.3. The Employer shall promptly respond in writing to any unsuccessful Bidder who, after notification of award in accordance with ITB 39.1, requests in writing the grounds on which its Proposal was not selected.

39A. Establishment of a Company

39A.1 The PDS specifies whether the Successful Bidder will be required to incorporate in the Employer's Country as a "special vehicle" company or joint venture and the additional requirement that the Successful Bidder shall comply if required to incorporate locally as a "special vehicle" company or joint venture.

40. Signing of Contract

40.1. Promptly after notification, the Employer shall send the successful Bidder the Contract Agreement.

40.2. The "special vehicle" company Successful Bidder shall sign, date and return the Contract Agreement to the Employer within the timeframe specified in the PDS.

40.3. Deleted

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41. Performance Security

41.1. The successful Bidder shall furnish the performance security after receipt of notification of award from the Employer, within 28 days upon the Bidder's receipt of the Letter of Acceptance and in accordance with the conditions of contract. The Bidder shall use for that purpose the Performance Security Form included in Section IX, Annex to the Particular Conditions - Contract Forms, or another form acceptable to the Employer. If the performance security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. A foreign institution providing a bond shall have a correspondent financial institution located in the Employer's Country.

41.2. Failure of the successful Bidder to submit the abovementioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security. In that event the Employer may award the Contract to the next highest scoring Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.

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Section II. Proposal Data Sheet

For Information Only

A. Introduction

ITB 1.1	The Identification Number of the invitation for Proposal is: RNPL/1320/2022/0337
ITB 1.1	The Employer is: RPCL-NORINCO Intl. Power Limited (RNPL)
ITB 1.1	The name of the project is: Patuakhali 1320 (2×660) MW Coal-Fired thermal power Plant.
ITB 4.2(a)	The individuals or firms in a joint venture or association shall be jointly and severally liable.

B. Request of Proposal

ITB 6.1	For clarification purposes only, the Employer's address is: Attention: Company Secretary Address: Atlanta Trade Center (7th Floor), House # 01, Road # 1/A, Sector# 04, Uttara, Dhaka-1230, Bangladesh. Telephone: +88-02-48956157, +8801717939084 E-mail: cs@rnpl.com.bd with copy to pd1320rnpl@gmail.com Communications may be sent by: Mail / Courier / E-Mail only
ITB 6.2	N/A
ITB 6.4	A Pre-Proposal meeting shall take place at the following date, time and place: Date: N/A Time: N/A Place: N/A A site visit conducted by the Employer shall not be organized
ITB 7.1	The Employer has not established a Data Room.

C. Preparation of Proposal

ITB 10.1	The language of the Proposal is: English
ITB 11.1(vii)	All necessary supporting documents as per requirement in Section III and Section IV.
ITB 16.1	A bid security shall be furnished. The amount and currency of the bid security shall be USD One Million (USD1,000,000.00)
ITB 16.2	Unconditional guarantee issued by Insurance company will not be acceptable.
ITB 16.3(d)	Other type of acceptable securities: N/A
ITB 16.9	A bid security is required.
ITB 18.1(a)	The currency of the Employer's country is: Bangladeshi Taka (BDT)
ITB 18.1(b)	The only acceptable currency of the outside of the Employer's country is: USD
ITB 19.1	The Proposal validity period shall be 180 days.
ITB 20.1	In addition to the original of the Technical and Financial Proposals, the number of copies of the Technical Proposal is: four (4) and the number of copies of the Financial Proposal is: four (4) and two (2) soft copies in DVD / CD – both searchable and signed versions
ITB 20.3	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: Power of Attorney.

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D. Submission and Opening of Proposal

ITB 22.1 The date and time for submission of Proposal are:
Date: 22 August, 2022
Time: 12.00 PM (Bangladesh Standard Time)
For Proposal submission purposes only, the Employer's address is:
Attention: The Company Secretary
Address: Atlanta Trade Center (7th Floor), House # 01, Road # 1/A, Sector # 04, Uttara, Dhaka-1230, Bangladesh.
Bidders Shall not have the option of submitting their Proposal electronically.
If bidders have the option of submitting their Proposal electronically, the electronic proposal submission procedures shall be: **Not Applicable**

ITB 25.1 The opening of the Technical Proposals shall take place at:

Address: Atlanta Trade Center (7th Floor), House # 01, Road # 1/A, Sector # 04, Uttara, Dhaka-1230, Bangladesh.

Date: 22 August, 2022

Time: 01.00 PM (Bangladesh Standard Time)

If bidders have the option of submitting their Proposal electronically, the electronic Proposal opening procedures shall be: **Not Applicable**

ITB 26.3 The opening of the Financial Proposals shall take place at:

Address: Atlanta Trade Center (7th Floor), House # 01, Road # 1/A, Sector # 04, Uttara, Dhaka-1230, Bangladesh.

Date: Will be notified later.

Time: Will be notified later.

If bidders have the option of submitting their Proposal electronically, the electronic Proposal opening procedures shall be: **Not Applicable**

E. Evaluation and Comparison of Proposal

ITB 33.1(b) The minimum aggregate technical score is: Seventy (70)

ITB 33.1(c) The Employer will apply the following additional steps to the evaluation methodology *Not Applicable*

ITB 34.2(b) The Employer will apply the following additional steps to the evaluation methodology *Not Applicable*

ITB 34.3(b) The formula for determining the financial scores is the following:

Sf = 100 x Fm / F, in which Sf is the financial score, Fm is the lowest price and F the price of the proposal under consideration.

The weights given to the Technical and Financial Proposals are: T = 0.70 and F = 0.30

ITB 36.1 The currency that shall be used for Proposal evaluation and comparison purposes to convert all Proposal prices expressed in various currencies into a single currency is: *Bangladeshi Taka*

The source of exchange rate shall be: Bangladesh Bank Selling Rate

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F. Award of Contract

ITB 39A.1	The Successful Bidder shall incorporate a company in the Employer's Country.
ITB 40.2	The "special vehicle" company Successful Bidder shall sign, date and return the Contract Agreement to the Employer within twenty-eight (28) days.
ITB 40.3	Deleted.
ITB 41.1	The performance security will be in the form of a performance bond in the amount(s) of USD Twenty Million (USD20,000,000) or 20% of contact value which one is higher.

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Section III. Evaluation and Qualification Criteria

For Information Only

Section III. Evaluation and Qualification Criteria

This Section contains all the criteria that the Employer shall use to evaluate Proposal and qualify Bidders. No other factors, methods or criteria shall be used. The Bidder shall provide all the information requested in the forms included in Section IV.

i. Eligibility and Qualifications

No.	Subject	Requirement	Single Entity	Joint Venture			Submission Requirements
				All Parties Combined	Each Partner	One Partner	
1. Eligibility							
1.1	Nationality	Nationality in accordance with ITB Sub-Clause 4.3.	Must meet requirement	Existing or intended JV must meet requirement	Must meet requirement	N/A	Forms ELI –1.1 and 1.2, with attachments
1.2	Conflict of Interest	No conflicts of interest in ITB Sub-Clause 4.4.	Must meet requirement	Existing or intended JV must meet requirement	Must meet requirement	N/A	Application Submission Form
1.3	Government Owned Entity	Bidder required to meet conditions of ITB Sub Clause 4.6	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Forms ELI –1.1 and 1.2, with attachments
1.4	United Nations resolution o Employer's Country law	Not having been excluded as a result of the Borrower's country laws or official regulations, or by an act of compliance with UN Security Council resolution, in accordance with ITB 4.7	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Forms ELI –1.1 and 1.2, with attachments

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No.	Subject	Requirement	Single Entity	Joint Venture			Submission Requirements
				All Parties Combined	Each Partner	One Partner	
2. Historical Contract Non-Performance							
2.1	History of Non-Performing Contracts	Non-performance of a contract did not occur within the last three (3) years prior to the Proposal Closing Date based on all information on fully settled disputes or litigation. A fully settled dispute or litigation is one that has been resolved in accordance with the Dispute Resolution Mechanism under the respective contract, and where all appeal instances available to the Bidder exhausted.	Must meet Requirement by itself or as partner to past or existing JV	N / A	Must meet requirement by itself or as partner to past or existing JV	N / A	Form CON - 2
2.2	Pending Litigation	All pending litigation shall in total not represent more than fifty percent (50%) of the Bidder's net worth and shall be treated as resolved against the Bidder.	Must meet Requirement by itself or as partner to past or existing JV	N / A	Must meet requirement by itself or as partner to past or existing JV	N / A	Form CON - 2
3. Financial Performance							
3.1	Financial Performance	Submission of audited balance sheets or if not required by the law of the Bidder's country, other financial statements acceptable to the Employer, for the last Five (5) years prior to the Proposal Closing Date to demonstrate: (a) the current soundness of the Bidder financial position and its prospective long-term profitability, and (b) capacity to have a cash flow amount of US$ Thirty (30) Million equivalent	Must meet requirement (a)Must meet requirement (b)Must meet requirement	N / A (a) N / A (b) Must meet requirement	Must meet requirement (a) Must meet requirement (b) N / A	N / A (a) N / A (b) N / A	Form FIN - 3.1 with attachments

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3.2	Financial Qualifications	Minimum average annual turnover of US$ One Hundred and Fifty (150) million, calculated as total certified payments received for contracts in progress or completed, within the last Five (5) years prior to the Proposal Closing Date	Must meet requirement	Must meet requirement	N / A	Must meet requirement	Form FIN - 3.2

No.	Subject	Requirement	Single Entity	Joint Venture			Submission Requirements
				All Parties Combined	Each Partner	One Partner	
4. Experience							
4.1	General Experience	Experience in Operation and Maintenance of Thermal Power Plants for at least ten (10) years prior to the Proposal Closing Date.	Must meet requirement	Must meet requirement	N / A	Must meet requirement	Form EXP-4.1
4.2(a)	Specific Experience	Currently carrying out Operation and Maintenance of at least two (2) Units of Supercritical Coal Fired Power Plants of Unit Size 600MW or larger capacity and at least one unit at over-seas. The Units must be in operation for at least 3 years and continuous operation for at least one (1) year prior to the Proposal Closing Date without any major unscheduled shutdowns (major defined as shutdown that requires at least seven (7) days of shutdown). The Units with similar configuration (similar configuration defined as Pulverized Coal type boiler having tangential combustion) will earn extra points. Bidders with Ultra-Supercritical Coal Fired Power Plants of Unit Size 600MW or larger capacity will earn extra points. Bidders with additional experience will earn extra points. Bidders with additional Overseas O&M experience at same capacity Thermal power plant for at least one (1) year will earn extra points.	Must meet requirement	Must meet requirement	N / A	N/A	Form EXP 4.2(a) and Letter from Power Plant Owner

For Information Only

No.	Subject	Requirement	Single Entity	Joint Venture			Submission Requirements
				All Parties Combined	Each Partner	One Partner	
4.2(b)		Must have good working relationship with the following major OEMs of Patuakhali 130(2×660) MW coal-Fired Thermal Power plant Project: ➢ Harbin Boiler ➢ Dongfang Turbine ➢ Dongfang Generator ➢ Shanghai Foxboro DCS	Must meet requirement	Must meet requirement	N / A	N/A	Letter from OEMs
4.2(c)		Shall have capacity for Power Plant Simulation Training	Must meet requirement	Must meet requirement	N / A	N/A	Letter from Training Certification Institution

5. Management Staff

Before entering the key post personnel of the operation and maintenance unit, the owner shall arrange the corresponding personnel to interview and evaluate them (see the post qualification and skill standards for the evaluation standards). Those who fail shall not take up the post. For those who do not meet the requirements for working after the interview and examination, the operation and maintenance unit shall replace the new personnel within 15 days after receiving the notice from the owner until the personnel meet the post requirements. If the replacement personnel still do not meet the post qualification requirements, and the unqualified proportion of key technical positions is more than 15%, the owner may confiscate the performance guarantee and terminate the operation and maintenance contractor.

For Information Only

No.	Subject	Requirement	Single Entity	Joint Venture			Submission Requirements
				All Parties Combined	Each Partner	One Partner	
5.1		1. **Project manager (1 Person):** a) Bachelor degree or above, major in electric power related field; b) At least 15 years working experience in large coal-fired power plants, at least 3 years of working experience in the same position, at least 1 year of overseas working experience of the same type of power plants; c) Familiar with the engineering project management process, have the ability to establish operation and maintenance projects; d) Strong project management and coordination ability, rich project management experience, good team spirit and communication skills; e) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.	Must Meet requirements	Must Meet Requirements	N/A	N/A	Forms per 5.1
		2. **Deputy Project Manager (Production) (1 person)**: a) Bachelor degree or above, major in electric power related field; b) At least 15 years of working experience in large coal-fired power plants, at least 2 years of working experience in the same position, at least 1 year of overseas working experience in the same type of power plants; c) Proficient in electric power production and operation, equipment inspection, equipment maintenance and other professional knowledge;	Must Meet requirements	Must Meet Requirements	N/A	N/A	Forms per 5.1

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			d) Rich technical experience, with good team spirit and communication skills; e) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.					
			3. **Deputy Project Manager (Management) (1 person)**: a) Bachelor degree or above, major in electric power related field; b) At least 15 years of working experience in large coal-fired power plants, at least 2 years of working experience in the same position, at least 1 year of overseas working experience of the same type of power plants; c) Proficient in the engineering project management process; d) Strong project management and coordination ability, rich project management experience, good team spirit and communication skills; e) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.	Must Meet requirements	Must Meet Requirements	N/A	N/A	Forms per 5.1
			4. **Lead Engineering Manager (1 person)**: a) Bachelor degree or above, major in electric power related field; b) Engineering series intermediate or above professional and technical qualification; c) At least 15 years of working experience in large coal-fired power plants, at least 3 years of working experience in the same position, and at least 1 year of	Must Meet requirements	Must Meet Requirements	N/A	N/A	Forms per 5.1

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			overseas working experience in the same type of power plants; d) Familiar with the current situation and common accidents, obstacles and abnormalities in operation of the same units at home and abroad; with strong language expression, public relations and communication skills; e) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.					
			5. **HSE Manager (1 person):** a) Bachelor degree or above, safety major or related major; b) At least 10 years of working experience in thermal power plants, at least 3 years HSE management experience in power plants, at least 1-year HSE management experience in overseas power plants. c) Have the engineer certificate of National Registered Safety Officer. d) Familiar with HSE management procedures and methods; e) Have text writing ability, have planning, coordination, communication and management literacy; f) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing 6. **Section Manager for Production and Technology Department (1 person):** a) Bachelor degree or above, major in electric power related field;	Must Meet requirements	Must Meet Requirements	N/A	N/A	Forms per 5.1

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			b) Engineering series intermediate or above professional and technical qualification; c) At least 10 years of working experience in large coal-fired power plants, at least 3 years of working experience in the same position; d) Good planning, organization, coordination, and communication skills; e) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing. 7. **Section Manager for Generation Department (1 person):** a) Bachelor degree or above, major in electric power related field; b) Engineering series intermediate or above professional and technical qualification; c) At least 10 years of management or related work experience in ultra-supercritical unit operation or 15 years of similar work experience in thermal power plants; d) At least 3 years working experience in the same position or at least 5 years working experience in shift chief - operator or operation specialist; e) Good planning, organization, coordination, and communication skills; f) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing					

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			8. **Chief Shift Operator (4 personnel):** a) Bachelor degree or above, major in electric power related field; b) Have intermediate or equivalent or above professional and technical position qualifications; c) More than 7 years of working experience in large coal-fired power plants and more than 5 years of working experience in centralized control operation of ultra-supercritical units; d) At least 3 years of shift chief-operator, specialist work experience or at least 5 years of working experience of main duty operator (unit leader), with whole-process production preparation work experience; e) Proficient in the whole plant thermal and electrical system, and master the start-stop of the main equipment and system, normal maintenance and accident treatment; f) Proficient in anti-accident measures and safety measures under special operating conditions; g) Master the interlock protection and control principle of boiler, steam engine and electrical equipment; h) Familiar with relevant technical standards, management standards, rules and regulations; i) Familiar with the principle and logic of automatic control and relay protection device; j) Strong planning, organization, coordination and communication skills,					

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			certain leadership skills, good language and writing skills; k) Have a high sense of responsibility, analysis and judgment ability, risk control ability, emergency handling ability, organization and coordination ability. l) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing. 9. **Section Manager for Equipment and Maintenance Department (1 person):** a) Bachelor degree or above, major in electric power related field; b) Engineering series intermediate or above professional and technical qualification; c) At least 10 years of management or related work experience in ultra-supercritical unit maintenance or 15 years of similar work experience in thermal power plants; d) At least 3 years working experience in the same position or at least 5 years working experience in equipment maintenance specialist; e) Good planning, organization, coordination, and communication skills; f) Master at least working principle, structure, maintenance process, test method, abnormal analysis and treatment of main and auxiliary machines in a profession; g) Have a strong execution force and have a good written expression ability, can					

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			skillfully use English for communication, speaking and writing 10. **Main Operator on Duty (8 persons):** a) Bachelor degree or above, major in electric power related field; b) At least 3 years of working experience in main control and operation of ultra-supercritical units; c) Assistance level or above professional and technical position qualifications; d) Proficient in the main control operation procedures, master the professional knowledge of thermal power plant steam turbine, furnace, electricity, control and instrument, water conversion, environmental protection, coal transport, ash removal; e) Strong accident handling ability; f) Have a strong execution force and have general English listening, speaking, reading and writing skills. 11. **Maintenance engineer (9 persons):** a) College degree or above, major in electric power related field; b) At least 10 years of working experience in thermal power plants and at least 5 years professional technical maintenance work experience or similar working experience in the maintenance of thermal power plants; c) At least 3 years of working experience in the same position; d) Master the theoretical knowledge of the relative professional principle and its maintenance Knowledge of the structure, performance characteristics and important parameters of the main					

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			equipment of relative professional and thermal system and important auxiliary equipment of thermal power plants; e) With text writing ability, able to prepare technical plan, summary and report, plan coordination and communication ability; f) Understand the technical management experience of relevant brother units and the management trends and development trends of domestic and foreign majors; g) Strong accident analysis, judgment, comprehensive problem-solving ability and organization, command, coordination ability; h) Have general English reading and fluent speaking and writing ability. i) Have strong English reading and fluent speaking and writing ability. **12. <u>Operation engineer (6 persons):</u>** a) College degree or above, major in electric power related field; b) At least 10 years of working experience in thermal power plants and at least 5 years professional technical operation work experience or similar working experience in the operation of thermal power plants; c) At least 3 years of working experience in the same position; d) Master the theoretical knowledge of the relative professional principle and its operation Knowledge of the structure, performance characteristics and important parameters of the main equipment of relative professional and					

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			thermal system and important auxiliary equipment of thermal power plants; e) With text writing ability, able to prepare technical plan, summary and report, plan coordination and communication ability; f) Understand the technical management experience of relevant brother units and the management trends and development trends of domestic and foreign majors; g) Strong accident analysis, judgment, comprehensive problem-solving ability and organization, command, coordination ability h) Have general English reading and fluent speaking and writing ability.					

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ii. Evaluation Criteria

The Employer will evaluate the Technical Proposals using the following criteria:

Criteria		Maximum Points	Minimum Required Score
General Experience	Section 3, Clause 4.1	10 Points	7 Points

Criteria		Maximum Points	Minimum Required Score
Special Experience	Section 3, Clause 4.2 as per breakdown below: Clause 4.2 (a)	40 Points	28 Points

Criteria	Points
Currently carrying out Operation and Maintenance of at least two (2) Units of Supercritical Coal Fired Power Plants of Unit Size 600MW or larger capacity and at least one unit at over-seas The Units must be in operation for at least 3 years and continuous operation for at least one (1) year prior to the Proposal Closing Date without any major unscheduled shutdowns (major defined as shutdown that requires at least seven (7) days of shutdown).	25 Points
The Units with similar configuration (similar configuration defined as Pulverized Coal type boiler having tangential combustion) will earn extra points.	1 Point per Project up to a maximum of 3 Projects

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	Bidders with Ultra-Supercritical Coal Fired Power Plants of Unit Size 600MW or larger capacity will earn extra points.	1 Point per Project up to a maximum of 2 Projects		
	Bidders with additional experience will earn extra points.	1 Point per Project up to a maximum of 3 Projects		
	Bidders with additional Overseas O&M experience at same capacity coal-fired Thermal power plant for at least one (1) year will earn extra points	1 Point per Project up to maximum of 2 Projects		

Clause 4.2 (b):

Criteria	Points
Must have good working relationship with Dorgfang and Harbin and Foxboro Shanghai (major equipment OEMs of Patuakhali 1320(2×660) MW Coal-Fired thermal power Plant Project).	3 Points

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<table>
<tr><td></td><td>Clause 4.2 (c):<table><tr><th>Criteria</th><th>Points</th></tr><tr><td>Shall have capacity for Power Plant Simulation Training.</td><td>2 Points</td></tr></table></td><td></td><td></td></tr>
<tr><td>Methodology and Approach, Work Plan and Staffing Plan During Mobilization Period</td><td>Section 1, ITB 12</td><td>3 Points</td><td>2 Points</td></tr>
<tr><td>Methodology and Approach, Work Plan and Staffing Plan after Commercial Operation Period (COD)</td><td>Section 1, ITB 12</td><td>7 Points</td><td>5 Points</td></tr>
<tr><td>Key Staff</td><td>Section 3, Clause 5.1 Qualifications and competence of the Key Staff as per breakdown below:<table><tr><th>Position</th><th>Points</th></tr><tr><td>Project Manager (1 person)</td><td>3 Points</td></tr><tr><td>Deputy Project Manager (Production) (1 person)</td><td>2 Points</td></tr><tr><td>Deputy Project Manager (Management) (1 person)</td><td>1Point</td></tr><tr><td>Lead Engineering Manager (1 person)</td><td>3 Points</td></tr><tr><td>HSE Manager (1 person)</td><td>1 Point</td></tr><tr><td>Section Manager for Production and Technology Department (1person)</td><td>2 Points</td></tr><tr><td>Section Manager for Generation Department (1 person)</td><td>2 Points</td></tr><tr><td>Chief Shift Operator 1 (1 person)</td><td>1 Point</td></tr></table></td><td>40 Points</td><td>28 Points</td></tr>
</table>

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	Chief Shift Operator 2 **(1 person)**	1 Point		
	Chief Shift Operator 3 **(1 person)**	1 Point		
	Chief Shift Operator 4 **(1 person)**	1 Point		
	Section Manager for Equipment and Maintenance Department **(1person)**	2 Points		
	Main Operator on Duty 1 **(1 person)**	0.5 Point		
	Main Operator on Duty 2 **(1 person)**	0.5 Point		
	Main Operator on Duty 3 **(1 person)**	0.5 Point		
	Main Operator on Duty 4 **(1 person)**	0.5 Point		
	Main Operator on Duty 5 **(1 person)**	0.5 Point		
	Main Operator on Duty 6 **(1 person)**	0.5 Point		
	Main Operator on Duty 7 **(1 person)**	0.5 Point		
	Main Operator on Duty 8 **(1 person)**	0.5 Point		
	Steam Turbine Engineer (including HVAC) （Maintenance） **(1 person)**	1 Point		
	Boiler Engineer （Maintenance） **(1 person)**	1.5 Points		
	Electrical Engineer （once） （Maintenance） **(1 person)**	1 Point		

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	Electrical Engineer （twice） （Maintenance） (1 person)	1 Point		
	Control and instrument Engineer （thermomechanical） **(1 person)**	1 Point		
	Chemical Water Engineer （Maintenance） **(1 person)**	1Point		
	Coal Handling System Engineer （Maintenance） **(1 person)**	1Point		
	Desulfurization and Ash Removal Engineer （Maintenance） **(1 person)**	1Point		
	Steam Turbine Engineer (including HVAC) （Operation） **(1 person)**	1 Point		
	Boiler Engineer （Operation） **(1 person)**	1.5 Points		
	Electrical Engineer （Operation） **(1 person)**	1 Point		
	Control and instrument Engineer （DCS） **(1 person)**	1 Point		
	Chemical Water Engineer （Operation） **(1 person)**	1Point		
	Coal Handling System Engineer （Operation） **(1 person)**	1Point		
	Desulfurization and Ash Removal Engineer （Operation） **(1 person)**	1Point		

Aggregate Technical Score (St) is equal to the sum of scores earned by the bidder for each of the categories specified above
The Employer will evaluate the Financial Proposals using the following criteria: As stipulated in ITB 34, 35 and 36.

For Information Only

Section IV. Standard Forms

For Information Only

Letter of Proposal - Technical Proposal Form

Date: _____
Request for Proposals No.: _____

To: [*Name and address of Employer*]

Ladies and/or Gentlemen,

We, the undersigned, offer to provide the Operation and Maintenance Services for [*Insert title of assignment*] in accordance with your Request for Proposal dated [*Insert Date*], including Addendum Nos. *[insert numbers]* and our Proposal. We are hereby submitting our Proposal, which includes this Technical Proposal and a Financial Proposal sealed under a separate envelope.

We agree to abide by this Technical Proposal, which consists of this letter and Attachments 1 through *[number]* hereto, for a period of *[number]* days from the date fixed for submission of proposals as stipulated in the Request for Proposal and it shall remain binding on us, provided that we are invited to negotiate a contract with you before the expiration of that period.

If negotiations are held during the period of validity of the Proposal, we undertake to negotiate on the basis of the proposed staff. Our Proposal is binding upon us and subject to the modifications resulting from Contract negotiations.

If our proposal is accepted, we commit to obtain a performance security in accordance with the Request of Proposal;

We understand you are not bound to accept any Proposal you receive.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Name _____ In the capacity of _____

Signed _____
Duly authorized to sign the Proposal for and on behalf of _____
Dated on _____

Attachments: *[In accordance with ITB Sub-Clause 11.1, plus any additional attachment either specified by the Employer in the Proposal Data Sheet or included by the Bidder.]*

For Information Only

Form TECH – Attachment to the Technical Proposal

Description of the Methodology and Work Plan

(Separately for Mobilization Period and after COD period)

[in accordance with ITB 12.1]

I. Detailed Work Plan (Separately for Mobilization Period and after COD period).

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II. Detailed Staffing Plan (Separately for Mobilization Period and after COD period)

The Contractor must submit the Detailed Staffing Plan in accordance with the following requirements:

No.	Dept.	System	Position	Qty.
1.1	Leadership	Management	Project Manager	1
1.2			Deputy Project Manager (Production)	1
1.2			Deputy Project Manager (Management)	1
1.4			Lead Engineering Manager	1
2.1	General Administration Department	Management	Section Manager	
2.2		Member	Commercial Manager	1
2.3			Archives Manager	
2.4			Integrated Services Manager	
2.5			Personnel Manager	
2.6			Budget Control Manager	
2.7			Cashier	
2.8			Translator	
3.1	Safety Supervision Department	Management	HSE Manager	1
3.2		Member	Safety Supervisor	
4.1	Production & Technology Department	Management	Section Manager	1
4.2			Deputy Manager / Assistant	
4.3		Member	Steam Turbine Engineer (including HVAC)	
4.4			Boiler Engineer	
4.5			Electrical Engineer	
4.6			Thermal Engineer	
4.7			Chemical Water Engineer	

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4.8			Coal Handling System Engineer	
4.9			Desulfurization and Ash Removal Engineer	
4.10	Production & Technology Department	Member	Metal Welding Supervisor	
4.11			Civil Engineer	
4.12			Laboratory Technician (including laboratory)	
4.13			Laboratory Technician	
5.1	Power Generation Department	Management	Section Manager	1
5.2			Deputy Manager / Assistant	
5.3			Training and Statistician Officer	
5.4		Main Control Operation	Shift Chief Operator	1
5.5			Main Operator on Duty	
5.6			Deputy Operator on Duty	
5.7			Inspection and Patrol Operator	
5.8		Chemical Operation	Main Operator on Duty	
5.9			Deputy Operator on Duty	
5.10			Inspection and Patrol Operator	
5.11		Desulfurization and Ash Removal	Main Operator on Duty	
5.12			Deputy Operator on Duty	
5.13			Inspection and Patrol Operator	
5.14		Coal Transportation shift	Fuel Manager	
5.15			Main Operator on Duty	
5.16			Deputy Operator on Duty	
5.17			Inspection and Patrol Operator	
5.18			Ship Unloader Operator	
5.19			Stacker Reclaimer Operator (4 silos)	

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5.20			Coal Pusher Operator	
5.21			Coal Yard Cleaner	
6.1	Equipment & Maintenance Department	Management	Section Manager	1
6.2		Turbine Maintenance shift (including Water treatment equipment)	Shift Leader	
6.3			Technician	
6.4			Chief of Operations	
6.5			Check Man	
6.6		Boiler Maintenance Shift (including desulphurization and ash removal)	Shift Leader	
6.7			Technician	
6.8			Chief of Operations	
6.9			Check Man	
6.10		Electrical Maintenance Shift (once/twice)	Shift Leader	
6.11			Technician	
6.12			Chief of Operations	
6.13			Check Man (Communication)	
6.14		Thermal Maintenance Shift	Shift Leader	
6.15			Technician	
6.16			Chief of Operations	
6.17			Check Man (Information)	
6.18		Coal Handling Maintenance Shift	Shift Leader	
6.19			Technician	
6.20			Chief of Coal Transportation Operations	
6.21			Coal Transportation Check Man	
6.22		Comprehensive Operation Shift	Shift leader (Welding Major)	
6.23			Welder (at least 1 high pressure Welder)	

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6.24			Framer	
6.25			Anticorrosion and Heat Preservation	
6.26			Crane Operator	
6.27			Local Auxiliary (fixed)	
6.28	Equipment & Maintenance Department	Comprehensive Operation Shift	Machine Shop Operator Concurrent Workshop Manager	
7.1	Material & Procurement Department	Management	Section Manager	1
7.2			Fuel Scheduling & Dispatcher	
7.3			Coal Yard Manager	
7.4			Calibrator (including Weighman)	
7.5			Sampler	
7.6			Procurement Plan & Purchase Manager (Equipment and Materials)	
7.7			Warehouse Keeper	
7.8		Operation Support	Production Support Manager	
7.9			Periodic Discharge of Stone Coal	
7.10			Ash Carrier	
7.11			Gypsum treatment (Transportation & Handling)	
7.12			Comprehensive Treatment of Fly Ash (Ash Discharge)	

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The Bidder shall provide details of the proposed personnel and their experience records in the relevant Information Forms included in Section 4 (Bidding Forms).

Form of Bid Security

(Bank Guarantee)

[Bank's Name and Address of Issuing Branch or Office]

Beneficiary: _____ *[Name and Address of Employer]*

Date: _____

BID GUARANTEE No.: _____

We have been informed that _____ *[name of the Bidder]* (hereinafter called "the Bidder") has submitted to you its Proposal dated _____ (hereinafter called "the Proposal") for the execution of _____ *[name of contract]* under Request for Proposals No. _____ ("the RFP").

Furthermore, we understand that, according to your conditions, Proposals must be supported by a bid guarantee.

At the request of the Bidder, we _____ *[name of Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ *[amount in figures]* (_____) *[amount in words]* upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

has withdrawn its Proposal during the period of proposal validity specified by the Bidder in the Letter of Proposal; or

having been notified of the acceptance of its Proposal by the Employer during the period of proposal validity, (i) fails or refuses to execute the Contract Agreement or (ii) fails or refuses to furnish the performance security, in accordance with the ITB.

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the contract signed by the Bidder and the performance security issued to you upon the instruction of the Bidder; and (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy your notification to the Bidder of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of the Bidder's bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

_____

[signature(s)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product

For Information Only

Letter of Proposal - Financial Proposal Form

Date: _____

Request for Proposals No.: _____

To: [*Name and address of Employer*]

Ladies and/or Gentlemen.

We, the undersigned, offer to provide the Operation and Maintenance Services for *[Insert title of assignment]* in accordance with your Request for Proposal dated *[Insert Date]*, including Addendum Nos. *[insert numbers]* and our Technical Proposal.

Our Financial Proposal which consists of this letter and Attachments 1 through *[number]* hereto, shall be valid for a period of _____ days from the date fixed for submission of proposals; it shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal.

We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract.

Name of Recipient	Address	Reason	Amount
_____			
_____			
_____			

(If none has been paid or is to be paid, indicate "none.")

We understand that you are not bound to accept any proposal that you may receive.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Name _____ In the capacity of _____

Signed _____

Duly authorized to sign the Proposal for and on behalf of _____

Dated on _____ day of _____, _____

Attachments: *[In accordance with ITB Sub-Clause 13.1, plus any additional attachment either specified by the Employer in the Proposal Data Sheet or included by the Bidder]*

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Proposal Price Form

Contractor's Base Remuneration

For Mobilization Period (Pre-COD):

Description	Unit/Period	Foreign Currency Amount	BDT Amount
Base Remuneration including salary, bonuses, holiday, per diem and related expenses of Staff as per Detailed Staffing Plan	Lump Sum		
Total Excluding Taxes in Bangladesh	Mobilization period		

For After COD Period

Description	Period	Foreign Currency Amount	BDT Amount
Base Remuneration including salary, bonuses, holiday, per diem and related expenses of Staff as per Detailed Staffing Plan	Per Year		
Total Excluding Taxes in Bangladesh (A)	Per Year		
Monthly Payments = (A) / 12	Per Month		
Total Excluding Taxes in Bangladesh After COD period	Per Five Years		

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Breakdown of Base Remuneration

Item	Description			Currency	Qty (1)	Unit Price (2)	Cost (3)=(1)*(2)	Grand summery	
	Department	Description of System	Position					BDT	FC
1.1	Leader	Leadership	Project Manager	BDT	1				
				FC					
1.2			Deputy Project Manager (Production)	BDT	1				
				FC					
1.3			Deputy Project Manager (Management)	BDT	1				
				FC					
1.4			Lead Engineering Manager	BDT	1				
				FC					
2.1	General Administration Department	Management	Section Manager	BDT					
				FC					
2.2		Member	Commercial Manager	BDT	1				
				FC					
2.3			Archives Manager	BDT					
				FC					
2.4			Integrated Services Manager	BDT					
				FC					
2.5			Personal Manager	BDT					
				FC					
2.6			Budget Control Manager	BDT					
				FC					

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2.7			Cashier	BDT					
				FC					
2.8			Translator	BDT					
				FC					
3.1	Safety Supervision Department	Member	HSE Manager	BDT	1				
				FC					
3.2			Safety Supervisor	BDT					
				FC					
4.1	Production & Technology Department	Management	Section Manager	BDT	1				
				FC					
4.2			Deputy Manager / Assistant	BDT					
				FC					
4.3		Member	Steam Turbine Engineer (Including HVAC)	BDT					
				FC					
4.4			Boiler Engineer	BDT					
				FC					
4.5			Electrical Engineer	BDT					
				FC					
4.6			Thermal Engineer	BDT					
				FC					
4.7			Chemical Water Engineer	BDT					
				FC					
4.8			Coal Handling System Engineer	BDT					
				FC					
4.9			Desulfurization and Ash Removal Engineer	BDT					
				FC					

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4.10			Metal wielding Supervisor	BDT					
				FC					
4.11			Civil Engineer	BDT					
				FC					
4.12			Laboratory Technician (including laboratory)	BDT					
				FC					
4.13			Laboratory Technician	BDT					
				FC					
5.1	Power Generation Department	Management	Section Manager	BDT	1				
				FC					
5.2			Deputy Manager / Assistant	BDT					
				FC					
5.3			Training & Statistician Officer	BDT					
				FC					
5.4		Main Control Operation	Shift Chief Operator	BDT	1				
				FC					
5.5			Main Operator on Duty	BDT					
				FC					
5.6			Deputy Operator on Duty	BDT					
				FC					
5.7			Inspection & Patrol Operator	BDT					
				FC					
5.8		Chemical Operation	Main Operator on Duty	BDT					
				FC					
5.9			Deputy Operator on Duty	BDT					
				FC					

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5.10			Inspection & Patrol Operator	BDT					
				FC					
5.11		Desulfurization and Ash Removal	Main Operator on Duty	BDT					
				FC					
5.12			Deputy Operator on Duty	BDT					
				FC					
5.13			Inspection & Patrol Operator	BDT					
				FC					
5.14		Coal Transportation Shift	Fuel Manager	BDT					
				FC					
5.15			Main Operator on Duty	BDT					
				FC					
5.16			Deputy Operator on Duty	BDT					
				FC					
5.17			Inspection & Patrol Operator	BDT					
				FC					
5.18			Ship Unloader Operator	BDT					
				FC					
5.19			Stacker Reclaimer Operator (4 Silos)	BDT					
				FC					
5.20			Coal Pusher Operator	BDT					
				FC					
5.21			Coal Yard Cleaner	BDT					
				FC					
6.1	Equipment & Maintenance Department	Management	Section Manager	BDT	1				
				FC					
6.2			Shift Leader	BDT					

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		Turbine Maintenance Shift (Including Water Treatment Equipment)		FC					
6.3			Technician	BDT					
				FC					
6.4			Chief of Operation	BDT					
				FC					
6.5			Check Man	BDT					
				FC					
6.6		Boiler Maintenance Shift (Including Desulfurization &Ash Removal)	Shift Leader	BDT					
				FC					
6.7			Technician	BDT					
				FC					
6.8			Chief of Operation	BDT					
				FC					
6.9			Check Man	BDT					
				FC					
6.10		Electrical Maintenance Shift (Once/Twice)	Shift Leader	BDT					
				FC					
6.11			Technician	BDT					
				FC					
6.12			Chief of Operation	BDT					
				FC					
6.13			Check Man (Communication)	BDT					
				FC					
6.14		Thermal Maintenance Shift	Shift Leader	BDT					
				FC					
6.15			Technician	BDT					
				FC					

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6.16			Chief of Operation	BDT					
				FC					
6.17			Check Man (Information)	BDT					
				FC					
6.18		Coal Handling Maintenance Shift	Shift Leader	BDT					
				FC					
6.19			Technician	BDT					
				FC					
6.20			Chief of Coal Transportation Operations	BDT					
				FC					
6.21			Coal Transportation Operations	BDT					
				FC					
6.22		Comprehensive Operation Shift	Shift Leader (Welding Major)	BDT					
				FC					
6.23			Welder (at least 1 High Pressure Welder)	BDT					
				FC					
6.24			Framer	BDT					
				FC					
6.25			Anticorrosion & Heat Preservation	BDT					
				FC					
6.26			Crane Operator	BDT					
				FC					
6.27			Local Auxiliary (Fixed)	BDT					
				FC					
6.28			Machine Shop Operator Concurrent Workshop Manager	BDT					
				FC					

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7.1	Material & Procurement Department	Management	Section Manager	BDT	1				
				FC					
7.2			Fuel Scheduling & Dispatcher	BDT					
				FC					
7.3			Coal Yard Manager	BDT					
				FC					
7.4			Calibrator (Including Weighman)	BDT					
				FC					
7.5			Sampler	BDT					
				FC					
7.6			Procurement Plan & Purchase Manager (Equipment & Materials)	BDT					
				FC					
7.7			Warehouse Keeper	BDT					
				FC					
7.8		Operation Support	Production Support Manager	BDT					
				FC					
7.9			Periodic Discharge of Stone Coal	BDT					
				FC					
7.10			Ash Carrier	BDT					
				FC					
7.11			Gypsum Treatment (Transportation & Handling)	BDT					
				FC					
7.12			Comprehensive Treatment of Fly Ash (ash Discharge)	BDT					
				FC					

Note: Local Currency Portion shall include Tax and VAT.

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Bidder Information Form (Form ELI-1.1)

Date: *[insert day, month, year]*
Page *[insert page number]* of *[insert total number]* pages

Bidder's legal name *__[insert full legal name]____*
In case of Joint Venture (JV), legal name of each partner: *___[insert full legal name of each partner in JV] ____*
Bidder's Actual or Intended country of constitution: *__[indicate country of Constitution]__*
Bidder's actual or Intended year of constitution: *___[indicate year of Constitution]__*
Bidder's legal address in country of constitution: *___[insert street/ number/ town or city/ country]____*
Bidder's authorized representative information Name: *__[insert full legal name]____* Address: *___[insert street/ number/ town or city/ country]____* Telephone/Fax numbers: *[insert telephone/fax numbers, including country and city codes]* E-mail address: *___[indicate e-mail address]___*
Attached are copies of original documents of: ☐ Articles of Incorporation or Documents of Constitution, and documents of registration of the legal entity named above, in accordance with ITB 4.1. ☐ In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1. ☐ In case of Government owned entity, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.6.

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Bidder's Party Information Form (Form ELI-1.2)

[The following form shall be filled in for the Bidder's parties including partner(s) of a joint venture, subcontractors, suppliers and other parties]

Date: *[insert day, month, year]*
Page *[insert page number]* of *[insert total number]* pages

JV Bidder legal name: *__[insert full legal name]____*
Bidder's Party legal name: *___[insert full legal name of Bidder's Party]* _____
Bidder's Party country of registration: *__[indicate country of registration]__*
Bidder Party's year of constitution: *___[indicate year of constitution]__*
Bidder Party's legal address in country of constitution: *___[insert street/ number/ town or city/ country]____*
Bidder Party's authorized representative information Name: *__[insert full legal name]____* Address: *___[insert street/ number/ town or city/ country]____* Telephone/Fax numbers: *[insert telephone/fax numbers, including country and city codes]* E-mail address: *[indicate e-mail address]*
Attached are copies of original documents of: ☐ Articles of Incorporation or Documents of Constitution, and Registration Documents of the legal entity named above, in accordance with ITB 4.1 and 4.2. ☐ In case of a Government owned entity, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.6.

For Information Only

Historical Contract Non-Performance (Form CON-2)

[The following table shall be filled in for the Bidder and for each partner of a Joint Venture]

Bidder's Legal Name: *[insert full name]*
Date: *[insert day, month, year]*
Joint Venture Party Legal Name: [*insert full name]*
Page *[insert page number]* of *[insert total number]* pages

For Information Only

A.1 Non-Performing Contracts in accordance with Section III, Qualification Criteria and Requirements			
☐ Contract non-performance did not occur during the *[number]* years specified in Section III, Qualification Criteria and Requirements, Sub-Factor 2.1. ☐ Contract(s) not performed during the *[number]* years specified in Section III, Qualification Criteria and Requirements, requirement 2.1			
Year	**Nonperformer Portion of Contract**	**Contract Identification**	**Total Contract Amount (current value, US$ equivalent)**
[insert year]	*[insert amount and percentage]*	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Employer: *[insert full name]* Address of Employer: *[insert street/city/country]* Reason(s) for non-performance: *[indicate main reason(s)]*	*[insert amount]*
A.2 Pending Litigation, in accordance with Section III, Qualification Criteria and Requirements			
☐ No pending litigation in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.2. ☐ Pending litigation in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.2 as indicated below.			
Year	**Outcome as Percent of Total Assets**	**Contract Identification**	**Total Contract Amount (current value, US$ equivalent)**
[insert year]	*[insert percentage]*	Contract Identification: *[indicate complete contract name, number, and any other identification]* Name of Employer: *[insert full name]* Address of Employer: *[insert street/city/country]* Matter in dispute: *[indicate main issues in dispute]*	*[insert amount]*

Financial Situation (Form FIN-3.1)

[The following table shall be filled in for the Bidder and for each partner of a Joint Venture]

Bidder's Legal Name: *[insert full name]* Date: *[insert day, month, year]*
Bidder's Party Legal Name: *[insert full name]*
Page *[insert page number]* of *[insert total number]* pages

1. Financial data

Financial Information in USD Equivalent in 000s	**Historic Information for Previous Five (5) years A.3 (USD Equivalent in 000s)**				
	Year 1	Year 2	Year 3	Year 4	Year 5
Information from Balance Sheet					
Total Assets (TA)					
Total Liabilities (TL)					
Net Worth (NW)					
Current Assets (CA)					
Current Liabilities (CL)					
Information from Income Statement					
Total Revenue (TR)					
Profits Before Taxes (PBT)					
Profits After Taxes (PAT)					
Information from Cash Flow Statement					
Cash in Flow					
Cash out Flow					

2. Financial documents

The Bidder and its parties shall provide copies of the balance sheets and/or financial statements for [number] years pursuant Section III, Qualifications Criteria and Requirements, Sub-Factor 3.1. The financial statements shall:

(a) reflect the financial situation of the Bidder or partner to a JV, and not sister or parent companies.

(b) be audited by a certified accountant.

(c) be complete, including all notes to the financial statements.

(d) correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

Attached are copies of financial statements (balance sheets, including all related notes, and income statements) for the *[number]* years required above; and complying with the requirements.

For Information Only

General Turnover Information (Form FIN-3.2)

[The following table shall be filled in for the Bidder and for each partner of a Joint Venture]

Bidder's/Joint Venture Partner's Legal Name: *[insert full name]*
Date: *[insert day, month, year]*
Bidder's Party Legal Name: *[insert full name]*
Page *[insert page number]* of *[insert total number]* pages

Annual turnover data		
Year	Amount and Currency	US$ equivalent
[indicate year]	*[Insert amount and indicate currency. Include partial accounting for the year up to the date of Proposal Closing]*	*[insert amount converted to U.S. dollars at the rate of exchange at the end of the period reported]*
Year 1		
Year 2		
Year 3		
Year 4		
Year 5		
Average Annual Turnover *		

* Average annual turnover calculated as total certified payments received for contracts in progress or completed, divided by the number of years specified in Section III, Qualification Criteria and Requirements, Sub-Factor 3.2.

For Information Only

General Sector Experience (Form EXP-4.1)

[The following table shall be filled in for the Bidder and each partner of a Joint Venture]

Bidder's/Joint Venture Partner's Legal Name: *[insert full name]*
Date: *[insert day, month, year]*
Bidder JV Party Legal Name: *[insert full name]*
Page *[insert page number]* of *[insert total number]* pages

[Identify contracts that demonstrate work over the past ten (10) years pursuant to Section III, Qualification Criteria and Requirements, Sub-Factor 4.1. List contracts chronologically, according to their commencement (starting) dates]

Starting Month / Year	Ending Month / Year	Contract Identification	Details of Power Plant
[indicate month/ year]	*[indicate month/ year]*	Contract Name: *[insert full name]* Brief Description of the Services performed by the Bidder: *[describe Services performed briefly]* Amount of Contract: *[insert amount in US$ equivalent]* Name of Employer: *[indicate full name]* Address: *[indicate street/number/town or city/country address]* Contact Person: *[indicate name, position, email address]*	Capacity: No. of Units / Blocks: Type of Power Plant: *[Open Cycle / Combined Cycle / Coal Fired / Oil Fired / Gas Fired / Hydro]*
		Contract Name: Brief Description of the Services performed by the Bidder: Amount of Contract: Name of Employer: Address: Contact Person:	Capacity: No. of Units / Blocks: Type of Power Plant:
		Contract Name: Brief Description of the Services performed by the Bidder: Amount of Contract: Name of Employer: Address: Contact Person:	Capacity: No. of Units / Blocks: Type of Power Plant:
		Contract Name: Brief Description of the Services performed by the Bidder: Amount of Contract: Name of Employer: Address: Contact Person:	Capacity: No. of Units / Blocks: Type of Power Plant:

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		Contract Name: Brief Description of the Services performed by the Bidder: Amount of Contract: Name of Employer: Address: Contact Person:	Capacity: No. of Units / Blocks: Type of Power Plant:
		Contract Came: Brief Description of the Services performed by the Bidder: Amount of Contract: Name of Employer: Address: Contact Person:	Capacity: No. of Units / Blocks: Type of Power Plant:
		Contract Came: Brief Description of the Services performed by the Bidder: Amount of Contract: Name of Employer: Address: Contact Person:	Capacity: No. of Units / Blocks: Type of Power Plant:
		Contract Came: Brief Description of the Services performed by the Bidder: Amount of Contract: Name of Employer: Address: Contact Person:	Capacity: No. of Units / Blocks: Type of Power Plant:
		Contract Came: Brief Description of the Services performed by the Bidder: Amount of Contract: Name of Employer: Address: Contact Person:	Capacity: No. of Units / Blocks: Type of Power Plant:
		Contract Came: Brief Description of the Services performed by the Bidder: Amount of Contract: Name of Employer: Address: Contact Person:	Capacity: No. of Units / Blocks: Type of Power Plant:

For Information Only

Similar Sector Experience (Form EXP-4.2(a))

[The following table shall be filled in for contracts performed by the Bidder and each partner of a Joint Venture]

Bidder's/Joint Venture Partner's Legal Name: *[insert full name]*
Date: *[insert day, month, year]*
JV Party Name: *[insert full name]*
Page *[insert page number]* of *[insert total number]* pages

[*Identify contracts that demonstrate work over the past [number] years pursuant to Section III, Qualification Criteria and Requirements, Sub-Factor 4.2 (a). List contracts chronologically, according to their commencement (starting) dates.]*

Similar Contract No. 1 of xxx	**Information**	
Contract Identification	*_[insert contract name and number, if applicable]_*	
Award date	*_[insert day, month, year]_*	
Completion date	*_[insert day, month, year]_*	
Number of Units	*_[insert Number of Units]_*	
Type of Coal Fired Power Plant	*_[Sub-Critical / Super Critical / Ultra Super Critical]_*	
Type of Boiler Firing	*_[insert Type of Firing]_*	
Role in Contract	*Operation / Maintenance / Operation and Maintenance*	
Total Contract Amount	US$ *__[insert total contract amount in US$ equivalent]*	
If partner in a JV, or subcontractor, specify participation in total contract amount	*[insert a percentage amount]*	*[insert total contract amount in US$ equivalent]*
Employer's Name:	*___[insert full name]___*	
Address: Telephone number Contact Person:	*[indicate street / number / town or city / country] [insert telephone numbers, including country and city area codes] [insert name, position and email]*	

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Personnel Capabilities for Key Staff (Form PER-5.1)

[Bidders should provide the names of candidates qualified to meet the specified requirements stated for each position pursuant to Section III, Qualification Criteria and Requirements, Sub-Factor 5.1]

Name of Candidate's Employer

1.	Title of position*
	Name of prime candidate
	Name of alternate candidate
2.	Title of position*
	Name of prime candidate
	Name of alternate candidate

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Key Staff Summary (Form PER-5.1)

[Bidders should demonstrate how each of the candidates listed in Form PER 5.1 are qualified to meet the specified requirements stated for each position pursuant to Section III, Qualification Criteria and Requirements, Sub-Factor 5.1. One form should be filled out for each candidate proposed]

Name of Candidate's Employer	

Position		
Candidate Information	Name of Candidate	Date of Birth
	Professional Qualifications	
Present Employment	Name of Employer	
	Address of Employer	
	Telephone	Contact (manager/personnel officer)
	Email	Years with Present Employer
	Details of Power Plant, Job Title and Responsibilities	

[Summarize professional experience in reverse chronological order. Indicate particular technical experience relevant to the project.]

Present Employment	Name of Employer	
	Address of Employer	
	Start Date	End Date
	Details of Power Plant / Industrial Project, Job Title and Responsibilities	

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Section V. Eligible Countries

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No Nationality restrictions apply, other than any restrictions arising from ITB4.7

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PART 2 – Service Requirements

For Information Only

Section VI. Schedule of Service Requirements

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Schedule A: Recitals and Objectives

Article 1: Recitals

"RPCL-NORINCO INTL Power Limited" (RNPL), a Joint Venture of Rural Power Company Limited, Bangladesh and NORINCO International Cooperation Ltd., China, incorporated to implement on BOO basis the "Patuakhali 1320 (2×660) MW Coal Fired Thermal Power Plant" (the Plant) at Patuakhali, Bangladesh, upon approval of the Government of the People's Republic of Bangladesh. The Power Station will be an ultra-supercritical pulverized coal fired thermal power generating plant.

The Project site is located at Nishanbaria, Londa and Dhankhali Mouza, Dhankhali Union, Kalapara Upazila, Patuakhali district, Bangladesh, with average elevation 1.5 m PWD. The project site is 7 kms by rural road from Kalapara, which is connected with Patuakhali by highways, 62 km away. The site is located abutting the Rabnabad Channel around 30 km from Bay of Bengal through waterways. The site is in close proximity to Payra port. The Latitude and Longitude of the site is 22° 1'30.55"N, 90°18'4.02"E.

The construction of this Plant is about 60.81% completed up to May 2022 and is expected to start operation at December 2023. As Ultra Supercritical Coal Fired Power Plant is a new technology in Bangladesh, there is limited resources and man-power available to operate and maintain this complex power plant. Hence, now Employer intends to appoint an experienced and qualified Contractor to carry out the Operation and Maintenance of this 1,320 (2 x 660) MW during beginning of commissioning until COD and after COD 5 years and also to train and transfer technology to Operators and Maintenance Personnel of Employer so that they will be able to carry out the routine Operation and Maintenance independently by the end of this Operation and Maintenance Contract.

General Information and Technical data of Patuakhali 1320 (2×660) MW Coal Fired Thermal Power Plant are summarized as follow:

Expected Initial Operation Date: (One Unit)	August 2023
Expected Commercial Operation Date: (Two Units)	December 2023
Gross Electric Power Output: (at 100% MCR Per Unit)	• 660MW (100%) • 495 MW (75%) • 330 MW (50%)
Auxiliary Power Consumption: (at MCR per Unit)	• 36.6 MW (100%) • 29.6 MW (75%) • 22.6 MW (50%)

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Weighted Plant Net Heat Rate: (per Unit)	• 8507.5 KJ/KWh (100%) • 8761.6 KJ/KWh (75%) • 9437.4 KJ/KWh (50%) (This parameter could be change as per performance guarantee test result)
Maximum Limestone Consumption: (at MCR Per Unit)	• 2.69 Tons/hr
Generator:	Dongfang Electric Co. Ltd • Model: QFSN-660-2-22A(DEC)
Boiler:	Harbin Boiler Company Ltd Model: HG1937/28.25-HM14
Turbine:	Dongfang Electric Company Ltd. Model: N660-27/600/610(DTC)

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Article 2: Objectives

The Objectives of this Operation and Maintenance Contract are but not limited to :

1. Advice Employer and carryout necessary checks along with Owner's Engineer in taking over from EPC Contractor of the Patuakhali 1320 (2 x 660) MW Coal Fired Thermal Power Plant and associated facilities.
2. Carryout routine Operation and Maintenance of 1,320MW (2 x 660MW) Ultra Supercritical Coal Fired Power Plant after Employer takes over the facilities.
3. Carryout scheduled and unscheduled maintenance of 1,320MW (2 x 660MW) Ultra Supercritical Coal Fired Power Plant after Employer takes over the facilities.
4. Provide all spare parts, tools and consumables required for the performance of the O&M Works. Assist the Employer with Spare parts and Materials inventory management. Contractor to note that spare parts, tools and consumables required during the two (2) years Defect Liability Period shall be provided by the EPC Contractor. Contractor is expected to coordinate with the EPC Contractor to timely procurement and delivery to Site.
5. Ensure Guarantees and commitments as per PPA are met.
6. Ensure compliance with other statutory requirements including but not limited to requirements of Department of Environment, Payra Port Authority, Depart of Communications, Power Grid Company of Bangladesh, Bangladesh Power Development Board, etc.
7. Administrative Management and Technical Supervision of works to further improve performance in specific aspects of the power plant with the Employer's approval.
8. Assist the Employer with the management of security works within the power plant, ensure the security of the site.
9. To ensure the habitability of the site, the contractor shall take part in the management of logistic works within the power plant, including but not limited to: dining room management, dorm room management, hospital or clinic management, cleaning work management, vehicle management etc.
10. Carry out training and transfer technology to Operators and Maintenance Personnel of RNPL so that they will be able to carry out the routine Operation and Maintenance independently by the end of this Operation and Maintenance Contract.
11. To ensure obligations and commitments as per Facility Agreement.

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Schedule B: Services

Article 1: Definitions

Unless otherwise required by the context in which a defined term appears, the following terms shall have the meanings specified in this Article 1. Terms that are defined in other Articles shall have the meanings given to them in those Articles.

- "Annual Budget" has the meaning set forth in Article 5.2(I).
- "Annual Facility Operating Plan" has the meaning set forth in Article 5.2.
- "Annual Operating Fee" means an annual operating fee paid to Contractor during each Contract Year as set forth in Article 4.2.
- "Bankruptcy" means a situation in which
  a) a party's actions under applicable debtor relief laws demonstrate an inability to pay its debts as they mature or a need for protection from its creditors;
  b) a court of competent jurisdiction approves a petition filed against a party, which petition sought relief for the party's creditors, and the action of the court remains in effect for an aggregated period of 60 days (whether or not consecutive);
  c) a party admits in writing its inability to pay its debts as they mature;
  d) a party gives notice to any person or entity of its current (or pending) insolvency or suspension of operations; or
  e) a party makes an assignment for the benefit of creditors or takes other similar action for the protection or benefit of its creditors.
- "Business Day" means any day other than a Friday, Saturday or other day on which commercial banks are authorized or required to close in Republic of Bangladesh.
- "Contract Year" means:
  a) in respect of the first Contract Year, the period commencing at the beginning of the Commercial Operations Date and ending as of the end of the Day immediately preceding the Financial Year subsequent to the Commercial Operations Date; and
  b) thereafter, the period commencing at the beginning of each Financial Year subsequent to the Commercial Operations Date and ending as of the end of the Day of each Financial Year.
- "Contracted Facility Capacity" means the net electric power generating capacity (only with coal burner) of the Facility operating on a continuous basis that the Employer commits to deliver hereunder.
- Commercial Operations Date (COD): "Commercial Operations Date" means the date following the Day on which the Facility is commissioned.
- "Declared Capacity" means, for each hour, the net capacity after Commercial Operations Date, respectively and notified to the National Load Dispatch Center by the Employer which shall equal to then-prevailing Dependable Capacity less any reductions due to any Scheduled Outage, Forced Outage, or Maintenance Outage, as the case may be. Provided that in case of Force Majeure Events and outage of PGCB and/or BPDB system, Declared Capacity shall be equal to the Dependable Capacity except for Scheduled Outages and Maintenance Outages for the purpose of determination of Availability Factor for the Month or Availability Factor for the Year, as the case may be.
- "Dependable Capacity" means at any given time the net amount of capacity, expressed in kW, as determined by the most recent Dependable Capacity Test.

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- "Dependable Capacity Test" means the test scheduled to determine the Dependable Capacity of the Facility by measuring at the Delivery Point, the average Net Energy Output.

- Defect Liability Period (DLP): "Defect Liability Period" means the period of validity of the warranties given by the EPC Contractor commencing at successful completion of Reliability Run, during which the EPC Contractor is responsible for defects with respect to the Facilities. The scopes of all parties during DLP is mentioned in Appendix A2.
- "Facility" means the Coal fired power station of 1320MW (2×660MW) capacity, to be constructed and owned by the Employer on the Site, all permanent structures, all work intended to perform a continuing function at the Site, including without limitation or regard to level of development, the land, all energy producing equipment and its auxiliary equipment and all transmission facilities on the Employer's side of the Delivery Point, water intake and discharge facilities(if any), water treatment facilities, solid waste disposal facilities, Coal receiving, handling and storage facilities, the Metering System, the electrical interconnection facilities, together with the residential facilities made available to the Employees of the Employer, the Contractor and any subcontractors.
- "Financial Year" means the period commencing from 1st July and ending on 30th June.
- "Forced Outage" means an interruption or a reduction in the generating capability of the Facility, during the operational period as the case may be that is not the result of any or all of the following:
    - a request by the Government Authorities;
    - a Scheduled Outage or a Maintenance Outage;
    - a Force Majeure Event;
    - a condition caused by the Government
- "Forced Outage Energy" means the sum of the products of the reduction in the generating capability of the Facility (from the then prevailing Dependable Capacity) as a result of each Forced Outage occurring during the relevant Contract Year, expressed in MW; multiplied by the number of hours that each such Forced Outage was in effect during the relevant Contract Year;
- "Force Majeure Event" has meaning set forth in Section 7, Clause 1.1.7.
- "key technical positions" means Management and technical personnel who play a key role in power generation refer to the description in clause 2, Schedule E for details
- "Lender(s)" means

    a) any person that has made loans to Employer, its successors or permitted assigns for the financing or refinancing of the Facility (or any part thereof) or which loans are secured by the Facility (or any part thereof),

    b) the holder(s) of indebtedness evidencing any such loans or any person or entity lawfully acting on behalf of such holders, or any person or entity that purchases the Facility in connection with a sale-leaseback or other lease arrangement in which Employer is the lessee of the Facility pursuant to a net lease.

    c) any person or entity that purchases the Facility in connection with a sale-leaseback or other lease arrangement in which Employer is the lessee of the Facility pursuant to a net lease.

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- "Metering System" means all meters and metering devices owned by the Employer and used to measure Dependable Capacity and Net Energy Output;
- "Maintenance Outage" means an interruption or reduction of the Facility's generating capability, on or after the Initial Operations Date or Commercial Operations Date, as the case may be, that is not a Scheduled Outage and has been scheduled under maintenance outage for the purpose of performing work on specific components, which should not, in the reasonable opinion of the Company, be postponed until the next Scheduled Outage;
- "Maintenance Outage Energy" means the sum of the products of the reduction in the Facility's generating capability (from the Contract Facility Capacity) as a result of each Maintenance Outage occurring during the relevant Contract Year, expressed in MW; multiplied by the number of hours that such Maintenance Outage was in effect during the relevant Contract Year;
- Mobilization Period: The "mobilization period" will be considered from the effective date of the O&M contract to Commercial operation Date (COD) of the Plant.
- "Operation & Maintenance" or "O&M" means combination of technical and administration actions intended to enable the Plant to perform a required function.
- "Operating Procedures" means the procedures issued by the Contractor and approved by the Employer.
- "O&M Manual" means the manual relating to operating and maintaining the Facility as provided under the EPC CONTRACTOR Works describing the procedures for operation and maintenance of the Facility(s) under the Contract.
- "Operating Manuals" means the operating data, design drawings, specifications, vendors' manuals, warranty requirements, procedures (including those for maintenance of the Facility and environmental and safety compliance) and similar materials with respect to the Facility.
- "Performance Guarantees" means the minimum value of minimum Gross Output of the Unit and maximum Net Heat Rate of the Plant guaranteed by the Contractor.
- "Plant" means and includes all and complete machinery, apparatus, equipment, materials, Spare Parts, articles, and things of all kinds to be provided under the Contract which will form part of the Facility.
- "Procedures Manual" has the meaning set forth in Article 5.1.
- "Project Agreements" means the agreements relating to the Facility, including any Power Purchase Agreement, Interconnection Agreement, Loan Agreements, this Agreement and all other agreements applicable to the Facility, permits, and licenses required for the operation, maintenance and management of the Facility, as identified in writing by Employer.
- "Prudent Utility Practice" means:
  a) any of the practices, methods, and acts engaged in or approved by a significant portion of the electric utility industry in the country and geographic region where the Facility is located during the relevant time period, or
  b) practices, methods and acts that, in the exercise of reasonable judgment on the facts known (or that reasonably should have been known) at the time a decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition.
- "Reference Rate" means the three-month US Dollar Rate published by London Interbank Offered Rate (LIBOR) or SOFR.
- "Reimbursable Costs" has the meaning set forth in Article 4.3.

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- "Scheduled Outage" means a planned interruption of the generating capacity of the Facility that:
  a) is not a Maintenance Outage.
  b) has been scheduled and allowed by the Employer, and
  c) is for inspection, testing, overhauls, preventive and corrective maintenance, repairs, replacement or improvement of the Facility;

- "Scheduled Outage Energy" means the sum of the products (a) reduction in the Facility's generating capacity (from the Contracted Facility Capacity) as a result of each Scheduled Outage during the relevant Contract Year, expressed in MW, multiplied by(b)the number of hours that such Scheduled Outage was in effect during the relevant Contract Year;
- "Services" has the meaning set forth in Article 2.1.
- "Three-Year Budget" has the meaning set forth in Article 5.2(v).

ARTICLE 2: Services

2.1 Scope of Services:

2.1.1 Physical Boundaries:

a) Boundary of the Plant: Inside the wall of the Plant, from the gate of the power plant, including all facilities, systems, buildings, dining room and dorm room etc.
b) Boundary from the Port (Jetty): Where all coal is unloaded, include ship docking.
c) Boundary of Electrical System: From start-up/standby transformer to 440kV knife switch of the power grid.
d) Boundary of the Water System: From seawater intake to waste-water outlets.

2.1.2. Contractor's General Scope of Work

The following are the general scope of the O&M Works to be performed by the Contractor which shall including but not limited to:

a) Operation and maintenance work of all main systems including but not limited to Boiler, Turbine, Generator, DCS, and all auxiliary systems including but not limited to ash handling system, coal handling system, water treatment system, compressed air system, FGD system, transformers, hydrogen plant, waste-water treatment, coal yard management, jetty, etc.
b) Maintenance works shall at least consist of specialty system as following, including but not limit to:
   - Turbine and its auxiliary systems.
   - Boiler and its auxiliary systems.
   - Electric maintenance.
   - BOP system maintenance (which includes: coal handling system, ash handling system, water treatment system, FGD system, hydrogen plant, waste-water treatment etc.
   - Relay Protection.
   - Automatic control system maintenance.
   - Communication systems (network, telephone) provided by the Employer.
   - Jetty & Equipment

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c) The Contractor shall procure the spare parts and consumables and assist the Employer with the inventory management works, including but not limited to:
   - Furnishing spare parts list for the Plant, including spare parts for overhauls;
   - Furnishing spare parts procurement plan on a timely basis;
   - Standardize the procurement procedure;
   - Standardize spare parts inventory management procedure consists with MIS (Management Information System) provided by the Employer;
   - For inventory management works, the contractor shall do its best to prevent theft, fire hazard, warehouse flood.
   - The Contractor shall provide experienced staff for inventory management works.

d) The Contractor shall be responsible for the training of Employer's personnel.

2.1.3. Operational & Maintenance Works

The Contractor shall be required to perform the contracted scope of work within the following guidelines:

- Execute Operation and Maintenance Work for period that from Mobilization period and after COD 5 years.
- Provide routine, minor, medium, and major maintenance.
- Facility shall be staffed on a 24 x 7 bases.
- Contractor shall be responsible for furnishing entire spare parts, tools and consumables until end of the Contract period, including major overhaul.
- Meet the standard of HSE in accordance with regulations and legislation applicable in Bangladesh.
- Contractor shall be responsible for the training of Employer's personnel.
- The bidder is also responsible for cleaning, greening and security services throughout the plant, living camp area.
- Maintenance of facilities within the scope of temporary facility fence will be marked in the general drawing. Facilities within the second acquisition, including but not limited to the plant (plant, wharf, coal yard, ash yard, oil tank) and the auxiliary facilities outside the plant (400KV external transmission line, backup power transmission line), attached with the general drawing of the plant, scope within the wall and facilities outside the wall belonging to the power station are the responsibility of the operation and maintenance bidder).

The Operation and Maintenance Period shall commence on the Signing Contract Date and continue until the expiry or termination of the Contract. The Contractor shall perform services in the following periods as described herein:

a) Mobilization Period

Contractor shall provide one (1) month notification to Employer prior start of the mobilization period. The Contractor shall perform the following O&M Services during the Mobilization Period including but not limited to:

I. Obtain with the assistance of the Employer any permits and licenses required by Contractor to perform the services hereunder, including any

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Governmental or administrative authorizations required for business registration, employment, immigration and work permits.

II. Develop and submit to Employer a detailed work plan for O&M Mobilization Period and initial Contract Year. This shall include plan and procedures for witness of testing and commissioning and taking over from the EPC Contractor.

III. Develop and submit to Employer detailed procedures for New Defects Reporting that may come up during Defects Liability Period.

IV. Develop manuals and procedures for operations, maintenance, administration, training, occupational health and safety, quality assurance, quality control, chemistry, and environmental management, including the preparation of all Facility Operating Procedures, for Employer's review and approval. The procedures shall include the following but not limited to:
   - Yearly Dependable Capacity Test Procedure
   - Procedure and Formats for Reporting to Employer and other statutory authorities
   - Plan and Budgeting procedure, including fuel management, maintenance activity, etc.
   - Payment and Invoicing procedure

V. Develop a maintenance program including areas such as preventive and predictive maintenance procedures, work identification and approval methods, historical tracking of equipment maintenance, spares inventory management, personnel training, and parts supply arrangement.

VI. Develop a maintenance plan that includes routine, predictive, and preventive maintenance schedules and procedures such as outage planning and procedures for unscheduled outages and other matters.

VII. Purchase initial office supplies, as required by the equipment manufactures and Facility activities.

VIII. Purchase, install and configure computers for use by plant staff as needed to support position specific requirements, including personal computers, printers, copiers, fax machines, word processing, spreadsheet, scheduling, presentation, anti-virus, etc.

IX. Initiate all workforce management and reporting systems (human resources, payroll and accounting, etc.).

X. Implement routine back-up and off-site storage of all computer data in a secure location selected in accordance with the practices of a Reasonable and Prudent Operator. The off-site location will be selected according to recommendations of the software provider and Employer. Contractor shall provide non-exclusive perpetual rights to the software products. All data, drawings, files, etc. developed or collected as part of the operation of the facility shall remain the property of Employer and shall be turned over at the time of termination or upon other reasonable notice by Employer.

XI. Develop Health, Safety, Security and Environment procedures, prior to the performance of any Services, including without limitation, the training of 'Authorized Persons' to perform and/or supervise potentially hazardous work on electrical installations, in confined spaces, at heights, with

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chemicals, and when engaging in welding and cutting operations i.e. 'hot work'.

XII. With the assistance of Employer, develop site security and emergency communication and evacuation procedures.

XIII. Prepare and submit to Employer for approval Annual Budget, Three-Year Budget and Annual Facility Operating Plan. The Annual Facility Operating Plan shall follow manufacturers' recommendations and technical limits and shall specify optimum running conditions for the plant and barred operating conditions which could damage the equipment.

XIV. Obtain, prior to the performance of any Services, the insurance policies set forth in the Contract.

XV. Specify, procure, and maintain hand tools, as well as any necessary special clothing, safety gear and Personnel Protection Equipment (PPE) as may be necessary to operate and maintain the Facility safely.

XVI. Assist Employer with the receipt, inspection, storage and management of spare parts including developing long term spare parts tracking policies and procedures for use at the Facility.

XVII. Develop and put in place policies for ensuring a high availability of all critical parts and other components required for planned maintenance.

XVIII. Assist Employer with the receipt and build-up of the initial Fuel inventories.

XIX. Designate and employ Plant Key Personnel with the experience and qualifications required to manage the Facility during the Mobilization and Operation Periods.

XX. Develop job descriptions, staff hiring schedules and recruitment procedures. Hire and train Personnel to an appropriate skills and experience level to safely operate, maintain and monitor the Facility including, without limitation, security, safety, fire prevention and emergency response training and to coordinate plant start-up and commissioning with the Employer and the Off-taker and Authorized Persons following commissioning.

XXI. Develop a site security program in coordination with Employer.

XXII. Develop and implement a plant specific operations and maintenance training and qualification/ requalification program.

XXIII. Protect and maintain warehouse, workshops and other areas and spaces provided by Employer at the Facilities as required under O&M Works to perform the Services.

XXIV. Develop an Environmental Management Program that will ensure that all environmental monitoring requirements are met in accordance with required and applicable laws.

XXV. Other related work.

b) General O&M Services:

The Contractor shall perform the following Services during the Contract period including but not limited to:

I. Provide all O&M personnel, supervision, administration, equipment, tools, heavy equipment, consumables, spare parts, repairs, maintenance, replacements, installation, and all other work and activities required to ensure the proper function of the Facility(s).

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II. Provide all services necessary to operate and maintain the Facility in good operating condition with the objective of achieving the required availability during the term as defined in the Contract and in accordance Article 2.2.

III. During the work performance period, the Contractor shall use its expertise to develop plans for optimizing the overall performance of the Plant, including but not limited to, optimization of operation works, make suggestions of system upgrade, optimization of the structure of the workforce, optimization of work-flow.

IV. Perform regular performance test to confirm Performance Guarantee as specified in Performance Guarantees (Schedule D) with the testing equipment/device which is provided by the Employer and shall keep the testing equipment/device in intact condition.

V. Respond in a timely manner (but in no event shall the time to respond exceed five (5) working days) to written requests by Employer for information about the Services.

VI. Assume care, custody, control, and responsibility for the security of the Facility(s) and the day-to-day operation and maintenance of the Facility on a twenty-four (24) hours a day, seven (7) days a week basis, and provide technical and administrative support as required for the Facility(s) operation and maintenance.

VII. Assist the Employer with the receipt and management of coal (including unloading and implement coal-mix consumption plan), limestone, treated water (if applicable) and fuel oil, including but not limited to, record-keeping, ordering, receiving, sampling and laboratory analysis. Laboratories and equipment for on-site gauge calibration which is provided by the Employer shall be accredited and/or meet the requirements of other applicable regulating standards or organizations.

VIII. Assist the Employer with the management of an Environmental Management Program that will ensure that all environmental monitoring requirements are met in accordance with the requirements detailed in the Environmental Guidelines and the applicable Laws of Bangladesh. The Environmental Management Program must be updated from time to time, as the need arises and as regulations change.

IX. Provide regular environmental monitoring report as required by the Employer.

X. Review Facility permits and applicable Laws to develop a comprehensive regulatory and permit compliance matrix for the Facility that establishes reporting and compliance requirements in connection with the Operation and Maintenance of the Facility.

XI. Develop, implement and maintain a maintenance, inspection and repair management program which (a) meets all applicable manufacturer warranty terms and conditions, preventive and predictive maintenance, inspection and repair requirements, recommendations and specifications, (b) meets Reasonable and Prudent Operator Practices, and (c) includes provisions for continuously improving such program.

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XII. Develop, implement, and maintain emergency preparedness procedures that allow an immediate and appropriate response to events such as major equipment failures, fires, explosions, bomb threats, release of toxic chemicals, employee illnesses and other accidents.

XIII. Perform routine and scheduled inspections and monitoring of the site facilities and equipment (such as adjusting, cleaning equipment and maintaining levels of liquids).

XIV. Perform or cause to be performed all Scheduled Maintenance in accordance with the manufacturer's recommendations.

XV. Perform routine and daily house cleaning and maintenance of the Facility, including workshop, and laboratory equipment used in conjunction with operation.

XVI. Maintain plant personnel records, payroll, benefits, training, etc.

XVII. Use best effort and judgment as an experienced Contractor to adopt and implement policies and practices designed to avoid and minimize the disruption caused by labor difficulties, including without limitation, work stoppages, boycotts, walkouts, slowdowns and strikes at the Facility(s).

XVIII. Maintain the Facility specific operations and maintenance training and qualification program. Conduct routine training to enhance and maintain staff skills to meet O&M goals and improve safety.

XIX. Coordinate scheduled and unscheduled maintenance outages and power deliveries with Employer and grid authority, subject to the policy directives of Employer.

XX. Supply Employer in a timely manner with all requirements regarding chemicals, lubricants, operating utilities other than fuel and water (if applicable), purchased electricity (if applicable), materials, and other items normally used and supplied for the type and size of the Facility, to the extent that Employer chooses to purchase any such items by itself.

XXI. Implement and maintain an accurate accounting and inventory system including cost ledgers, inventory records, accounts payable, etc. Document, review and approve operating and maintenance expenses.

XXII. Prepare and submit to Employer for approval annually an O&M plan that will include projections of availability, fuel consumption, spare parts, consumables, planned outages, labor and other costs. The O&M Plan shall follow manufacturer's recommendations and technical limits.

XXIII. Prepare annual reports, annual budgets and operating plans for Employer review and approval in accordance with the Contract. Documents shall be prepared in English unless otherwise specified.

XXIV. Implement and maintain a document control system for documents critical to project operation, maintenance, inspection and repair, such document control system. All documents are considered the property of the Employer and will be transferred to the Employer upon termination or expiration of the Contract.

XXV. The Contractor shall provide thirty (30) days written notice to Employer prior to the destruction of any such records and shall at Employer's request deliver such records to Employer.

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XXVI. Prepare and maintain operating logs, records, and monthly (and/or other periodic frequency as requested by the Employer) reports regarding the operation and maintenance of the Facility detailing, among other things, expenses incurred compared to the annual budget, fuel use, power output, other operating data, Facility equipment and materials consumption, repairs performed, and status of Facility equipment and materials. Reports shall be maintained in accordance with Employer Administrative and Quality Control procedures and in accordance with the Contract.

XXVII. Ensure routine back-up and off-Site storage at a secure location selected in accordance with Prudent Utility Practices of all information stored on the hardware. The location will be selected according to recommendations of the software provider and Employer.

XXVIII. Prepare technical evaluations of the Facility as may be reasonably requested by Employer.

XXIX. Collaborate with Employer in maintaining inventory of Facility(s) equipment and materials and purchase replacements as such items are used.

XXX. Maintain and regularly update an equipment repair and preventive maintenance program that meets equipment manufacturers' specifications and recommendations.

XXXI. Provide technical engineering support for solving operation and maintenance problems.

XXXII. Provide routine cleaning and hygiene, and generally keep the function area clean and in good order (including Facility fire protection, lighting and safety equipment.

XXXIII. Provide routine building maintenance including but not limited to painting, plumbing, electrical, sanitation, drainage, sewage, etc.

XXXIV. Provide routine building maintenance at least once a year for touch-up painting of the building and equipment.

XXXV. At Employer's request, Contractor recommends Facility modifications, capital improvements, replacements, and, at Employer's approval, implements the same in accordance with plant procedures.

XXXVI. Provide routine maintenance of all Work Vehicles/Weight Lifting Device/Equipment which are provided by Employer.

XXXVII. Provide routine maintenance and management of the elevators within the function area.

XXXVIII. Cooperate in the provision of information to authorized representatives of Employer, including Government entities, accountants, and attorneys.

XXXIX. Comply with all applicable governmental requirements and Employer's Agreements in preparing emergency response plans, hazardous waste disposal plans, material handling plans, and spill containment plans and assist Employer in preparing all other plans and documents required by applicable governmental requirements and Employer's Agreements. The Contractor shall cooperate Employer implement of Collection of waste materials and hazardous substances from to designated Employer area and its shall be managed and owned by Employer.

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XL. The Contractor shall responsible for the fire hazard prevention and firefighting in function area. The Contractor shall ensure all the fire prevention devices within the function area in good condition.

XLI. Promptly and effectively respond to emergencies, including, but not limited to, fires and encroachments (communications with the news media concerning any such emergency being made only after approved by, or in accordance with guidelines previously approved by the Employer).

XLII. Promptly and effectively respond to unscheduled outages.

XLIII. Project fuel requirements and schedule deliveries of fuel for the Facility(s) and monitor the sufficiency of such fuel in terms of quantity and quality and provide forecasts of fuel requirements, subject to the policy directives of Employer.

XLIV. Obtain and maintain all governmental permits, licenses, and approvals required to be held by the Contractor in order to perform the Service including personal and equipment certifications.

XLV. Assist Employer in the preparation of periodic reporting to applicable governmental authorities and cooperate with Employer in obtaining and reviewing governmental permits, licenses, and approvals other than such permits, licenses and approvals referred to in any clause(s) of the Contract.

XLVI. Maintain communications and relations with the local community.

XLVII. Maintain and update the Administrative Procedures Manual and all operation, maintenance, and service manuals as appropriate, subject to Employer's approval, and maintain and update, as appropriate, a complete set of system drawings for the Facility(s), specifications, manuals, diagrams, warranties, test results, and other information regarding the Facility(s) that are required for the operation, repair, and maintenance of the Facility(s).

XLVIII. Coordinate, as necessary, with Employer and grid authority on the operation and dispatch of the unit.

XLIX. Plan, manage, and execute all scheduled outages required by the Facility(s), including major overhauls. Coordinate planning and execution of outages with major equipment OEM's under applicable long-term services agreements.

L. Installation of all parts as and when needed for scheduled inspections or unplanned outages or otherwise needed to keep the Facility(s) operating properly.

LI. Provide technical evaluation, monitoring, and surveillance of the Facility(s) including but not limited to:

- Net dependable capacity tests.
- Plant performance tests.
- Equipment specific performance tests.
- Emissions tests.

LII. Perform work on all scheduled inspections/overhauls and unscheduled/forced outages.

LIII. Assist Employer handle all effluents, waste and refuse from the Facility in accordance with all applicable Laws, Occupational Health, Safety, and Security Plans and associated procedures. The Contractor shall dispose of

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non-hazardous materials from the Facility in accordance with all applicable laws and Employer's plans and policies.

LIV. Upon termination or expiration of the Contract, perform a complete inventory of spare parts and assist Employer with assessing the value of such inventory of spare parts.

LV. Two (2) years prior termination or expiration of the Contract, assist Employer in developing spare parts list including but not limited to recommended spare parts for the Facility.

LVI. Upon termination or expiration of the Contract, assist Employer with the turnover of all plant assets, documents, records, equipment, and other materials. Assist Employer, if required, in litigation, arbitration, dispute resolution and other proceedings with third parties involving the Facility.

LVII. Assist Employer, if required, in management of the insurance programs for the Facility, administration and compliance with insurance policies, creation and enforcement of appropriate risk management policies and procedures, and development, negotiation, and administration of insurance claims.

LVIII. The Contractor shall be responsible for the planning, management, and execution of all scheduled outages and unscheduled outages including:

- Identifying, recruiting, and managing outage staff.
- Identifying, procuring and transporting required parts and consumables.
- Maintaining quality assurance oversight and records.
- Identifying and coordinating required testing.
- Coordinating power supply with the Employer and grid authority.
- Documenting outage activities through outage reports, test reports, Management Information System (MIS) record entry, updating plant drawings and other records, etc.

LIX. The Contractor shall use the Machining Workshop under the supervision of the Employer.

LX. The Contractor shall deploy its own security personnel for the security within the function area.

LXI. The Contractor shall establish a medical institution at the Site to meet medical needs. The med kit shall be set up at various locations of the Site and be checked and refilled periodically.

LXII. The Contractor shall be responsible for the food and accommodation of the staff use the facilities provided by Employer, including but not limited to, procurement, garbage disposal work etc.

LXIII. The Contractor shall be responsible to develop and to execute a Community Development program.

LXIV. Demobilization of O&M personnel at the end of Contract period.

LXV. Painting of the Plant at end of Contract period.

C) Planned Maintenance / Overhaul

The Contractor shall be required to provide the following work, including but not limited to the level of scope of work outlined in this section. The Contractor may achieve the work described below through the use of O&M personnel, approved

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on site contractors, off site specialists (via a lease or exchange agreement), or a combination of all three.

The Contractor shall perform maintenance including but not limited to checking, testing, cleaning, repair and replacement in accordance with OEM's recommendation and within Reasonable and Prudent Operator Practices, including procuring and transporting of all required materials and spare parts, and mobilization and demobilization of specialist or expert. The maintenance program shall cover all OEM's recommendations, including one cycle major overhaul. Perform routine preventive maintenance activities in accordance with OEM's recommendation, but not limited to:

I. Lubrication/cooling checks and top up
I. Cleaning or flushing
II. Preservation
III. Fluid changes and replacement
IV. Visual or bore scope inspections
V. Operational monitoring
VI. Vibration analysis
VII. Chemical analysis (fuel and water testing)
VIII. Trend analysis
IX. Calibration
X. Measurements
XI. Adjustments
XII. Lube oil analysis
XIII. Replacement of wear/sacrificial parts
XIV. Leak test
XV. Resistance testing

Perform corrective maintenance activities in accordance with Reasonable and Prudent Operator Practices to troubleshoot, inspect, repair and replace the equipment upon identification and detection of certain conditions, including but not limited to:

I. Physical fault conditions such as:
- Blocked/stopped flow
- Fractures/break/breaches
- Cracks
- Distortion/displacement
- Corrosion/discoloration

II. Out of specification conditions such as:
- High/low flow, pressure, temperature, or chemistry
- Off voltage
- Out of limits/adjustments
- Erratic output
- Intermittent/spurious operation
- Failure to control/hold
- High/low output

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- Improper timing

III. Demand fault conditions such as failure to:

- Start/run/operate
- Stop
- Open
- Close
- Move/release/respond

IV. Abnormal characteristics such as:

- Overheating
- Noise
- Vibration
- Chatter
- False response

V. Leakage conditions such as:

- Leakage to surrounding environment
- Leakage past seats/stems/packing/seals

The preventive and corrective maintenance activities shall be inventoried and performed on a system-by-system basis in MIS/CIS system and shall apply to the following equipment types:

I. Circuit breakers
I. Batteries
II. Electric heaters
III. Motors (AC/DC)
IV. Valves/dampers (air/motor/hydraulic driven)
V. Control Relays (AC/DC)
VI. Transformers
VII. Analyzers / sensors / metering / recorders / switches / transmitters / controllers
VIII. Pumps/ fans / blowers / compressors
IX. Heat exchangers / radiators
X. Filters / strainers
XI. Air dryers
XII. Tanks / vessels
XIII. Ponds
XIV. Pipe / pipe fittings / pipe supports
XV. Vibration isolators / couplings / expansion joints
XVI. Steam turbine
XVII. Generators / exciters

Spare Parts are those which may be required at any time during O&M Works shall be provided for all equipment and machinery and shall be readily available at all times. Spare Parts shall be delivered and made available as anticipated by the

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Schedule. Spare Parts shall be replaced as they are used. Spare Parts shall be stored in the Contractor's warehouse. The Contractor will responsible for the maintenance and inventory of the spare parts.

The following terminologies are used to guide the Contractor in performing their services.

Generally, maintenance intervals can be influenced by operating conditions, type of fuel, and level of past maintenance performed on the equipment.

Routine Maintenance

This is the type of maintenance that should be performed by site maintenance or operation staff at low operating hour frequency on periodicity recommended by the OEM. Typically, these maintenance tasks have periodicities of daily, weekly, monthly or quarterly and can be performed while the equipment is operating. This maintenance includes various inspections, preservations, cleaning and adjustments.

For perform the Routine Maintenance work, the contractor shall establish a defect management system, for the purpose of archiving and analyzing of all equipment' health condition, and to make reasonable spare part procurement plans.

Minor Maintenance (C-Class)

This is the type of maintenance that typically is performed in light of the operation and condition of the machine, approximately every 4,000 hours, or on annual basis, whichever comes first. This maintenance requires the unit to be shut down and cold. Depending on the capabilities and training of the site maintenance staff, this maintenance may be performed by site personnel. This maintenance includes various inspections with special tools, cleaning, adjustments and replacement of minor components.

Medium Maintenance (B-Class)

This is the type of maintenance that typically is performed approximately every 10,000 hours up to 30,000 hours or about every 2-3 years. This maintenance work requires planned outage time in order to complete the component exchange.

Major Maintenance (A-Class)

This is the type of maintenance that typically is performed approximately every 40,000 hours or higher, or approximately in interval of every 5 years. The key feature of this maintenance is a complete tear down and inspection of the unit

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and rebuilding with new or refurbished parts as required. Typically, removal of the main parts to be taken to OEM or overhaul depot might be required.

d) Training Program

The Contractor shall provide a training program for the purpose of training the Employer's personnel in the operation and maintenance of equipment and systems furnished under the Contract. The Contractor shall provide the following, but not limited to,

i. Site security

ii. Safety
- General safety training
- General electrical safety
- Arc flash training
- Lock Out/Tag Out
- Confined space entry
- Respiratory training, etc.
- Facility evacuation

iii. Emergency Response
- General staff training
- First aid / first responder
- Fire brigade
- Environmental and hazardous waste response

iv. Facility Administration
- Administrative and business practices and procedures.
- Software training:
- MIS/CIS.
- Performance monitoring.
- Accounting and payroll.
- Inventory.
- Other software.
- Purchasing and inventory management

v. Operations
- Facility operations procedures
- Contractor's specific training
- Equipment/systems specific training

vi. Facility Operations
- Position specific training
- Practical factors, tests, qualification boards
- Proficiency requirements

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vii. Maintenance

- General
- Equipment specific
- MIS/SIS
- Welding certifications (for Contactor's personnel only)

The purpose of the training program shall be to provide training for the Employer's personnel, which will allow them to operate and maintain the Facility in a safe and efficient manner. Specific training shall be provided in testing, startup, operation, maintenance, and shutdown of all equipment installed at the plant.

The training shall be conducted under the direction and supervision of the Contractor's training coordinator. During this period, the Contractor shall be wholly responsible for operation and maintenance of the Plant. The training coordinator shall be a competent person with teaching and power plant experience.

All training and training materials shall be supplied in the English language.

The program shall provide classroom training, on-the-job training for the Employer's operations and maintenance personnel. The Employer will supply key operator personnel and maintenance personnel who are experienced with operation and maintenance of power plants.

The Contractor's training coordinator shall be responsible for the overall management, direction, development, and implementation of the training program. The training coordinator shall finalize the scope of training and arrange, schedule, and monitor all training activities.

The training coordinator shall manage the training staff and be responsible for developing the overall training plan, establishing class procedures, developing the training schedule, and participating in the training as an instructor. The training coordinator shall prepare training aids as required and shall further ensure that major equipment supplier instructors understand and comply with the established training plan and lesson format. The major courses of training shall consist of the following:

i. **Facility Fundamentals**

Facility fundamentals shall be discussed to cover basic information that is required to understand the design and operation of the various plant equipment and systems.

ii) **Facility Specifics**

This presents the theory of design, construction, operation and maintenance of plant equipment and systems.

iii) **Software Tools Training**

This training covers software tools that are required for O&M activities such as MIS & SIS including inventory control system, etc.

The study material used for training the station operating personnel shall be contained in an Operator Training Manual. This manual shall cover in

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detail the arrangement, function, and operation of all systems and major equipment in the plant.

Each section shall be broken down into lectures or training modules. A number of questions shall be attached at the end of each lecture as an aid in studying lecture content.

In addition to the Operator Training Manual, vendor manuals, system descriptions, operating procedures, pertinent drawings, various computer lists, logic diagrams, and library books shall be available for use by the trainees as these reference sources are completed.

Additional training for operation and maintenance personnel shall be accomplished in the form of "hands-on" indoctrination during the startup, shutdown and maintenance of the equipment and systems, unless otherwise agreed by the Employer. As part of this phase of the training, the operating and maintenance personnel shall be expected to observe Contractor's personnel as they perform startup, shutdown and maintenance tasks, and where possible, to work with and provide assistance to the Contractor during operation and maintenance of the facility. In this way, operation and maintenance shall become an extension of their in-class training and prepare them for the actual work.

All copies of documents used in operation and maintenance training shall be provided in hard copy and electronic file and shall become the property of the Employer for future training use.

e) Operation and maintenance service scope and boundary interface

Details described in Appendix A1 and Appendix A2

2.2 Standards for Performance of the Services:

Contractor shall perform the Services required under this Agreement, including those set forth in Appendix A, in a prudent, reasonable, and efficient manner and in accordance with:

I. Reasonable and Prudent Utility Practices
II. Original Equipment Manufacturers' recommendations,
III. The operating limits of electrical and mechanical equipment and other requirements and capabilities specified in the nameplates thereon or in operation and maintenance documentation relating thereto, or in supplier and manufacturer warranty requirements and recommendations relating thereto and the O&M Performance Target.
IV. the applicable Annual Facility Operating Plan and Annual Budget
V. all applicable Laws,
VI. the Project Agreements
VII. the requirements of National Load Dispatch Center, and
VIII. all insurance policies specified in Section 7 of this Contract. Contractor shall use all reasonable efforts to optimize the useful life of the Facility and to minimize Reimbursable Costs and Facility outages or other unavailability.

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2.3 Contractor's Personnel Standards:

Contractor shall provide as reasonably necessary all labor and professional, supervisory and managerial personnel as are required to perform the Services. Such personnel shall be qualified to perform the duties to which they are assigned and shall meet any requirements for Project personnel under the Project Agreements. All individuals employed by Contractor to perform the Services shall be employees of Contractor and their working hours, rates of compensation and all other matters relating to their employment shall be determined solely by Contractor (subject to Employer's approval rights with respect to the Annual Budget). With respect to labor matters, hiring personnel, and employment policies, Contractor shall comply with all applicable Laws. Contractor also shall act in a reasonable manner that is consistent with the intent and purpose of this Agreement and with Contractor's acknowledgment (hereby given) that Contractor has no authority to enter into any contracts with respect to labor matters that purport to bind or otherwise obligate Employer.

2.4 Compliance:

Contractor shall comply with all Laws applicable to the operation, maintenance and management of the Facility and the performance of the Services. Contractor shall apply for and obtain, and Employer shall assist Contractor in applying for and obtaining, all necessary permits, licenses and approvals (and renewals of the same) required to allow Contractor to do business or perform the Services in the jurisdictions where the Services are to be performed. Contractor shall provide reasonably necessary assistance to Employer, to secure permits, licenses, and approvals (and renewals of the same) that Employer is required to obtain from or file with any governmental agency regarding the Facility. Contractor also shall file such reports, notices, and other communications as may be required by any governmental agency regarding the Facility.

2.5 Operating Records and Reports:

Contractor shall maintain, at a location acceptable to Employer, the Facility operating logs, records, and reports that document the operation and maintenance of the Facility, all in form and substance sufficient to meet Employer's reporting requirements under the Project Agreements. Contractor shall maintain current revisions of drawings, specifications, lists, clarifications and other materials related to operation and maintenance of the Facility provided to Contractor by Employer and vendors. Contractor shall provide Employer reasonably necessary assistance in connection with Employer's compliance with reporting requirements under the Project Agreements, applicable Laws or any other agreement to which Employer is a party relating to the Facility. Such assistance shall include providing reports, records, logs and other information that Employer may reasonably request as to the Facility or its operation.

2.6 No Liens or Encumbrances:

Contractor shall maintain the Facility free and clear of all liens and encumbrances resulting from any action of Contractor or work done at the request of Contractor, except

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for such liens or encumbrances that result directly from nonpayment by Employer of amounts due and owing to Contractor under this Agreement.

2.7 No Action:

Except where such action is expressly permitted by this Contract, Contractor shall not take any action that would cause a default under any Project Agreement.

2.8 Emergency Action:

If an emergency endangering the safety or protection of persons, the Facility, or property located near the Facility occurs, Contractor shall promptly notify Employer and take all necessary action to attempt to prevent or mitigate any such threatened damage, injury or loss. Contractor shall make reasonable efforts to minimize any cost associated with remedial action in case of such an emergency.

2.9 Action in Extraordinary Circumstances:

In the event that:

I. the Facility or major Facility equipment suffers an unplanned outage (or Contractor reasonably believes that such an occurrence is imminent), and

II. Contractor has made reasonable, but unsuccessful, efforts to notify and communicate with Employer regarding such occurrence or imminent occurrence in accordance with the terms of this Agreement, Then Contractor shall:

I. take all necessary action to prevent or to mitigate such unplanned outage,

II. make reasonable efforts to minimize any cost associated with such remedial action,

III. continue to attempt to notify and communicate with Employer regarding the occurrence and the remedial action, and

IV. shall not expend for such purposes more than an aggregate of ten percent (10%) of the Annual Budget in any Contract Year.

ARTICLE 3: Employer's Responsibilities

3.1 Information:

Employer shall provide Contractor with all vendor manuals, spare parts lists, Facility data books and drawings which are provided to Employer pursuant to any Project Agreement or by any contractor responsible for construction, installation, repair or maintenance of the Facility or a part thereof. Subject to the standards of performance set forth in Article 2.2, Contractor shall be entitled to rely upon such information in performance of the Services. Employer shall also provide Contractor with copies of all Project Agreements and any amendments thereto and any other documents that define the Facility's operating requirements.

3.2 Overhaul of Major Equipment and Capital Improvements:

The cost of all major equipment teardowns and overhauls and all capital improvements shall be the responsibility of Employer. Contractor shall promptly notify Employer in writing of any such teardowns and overhauls of major equipment or capital improvements that Contractor believes are necessary or advisable together with a proposed schedule for completing such repairs or improvements. To the extent

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reasonably possible, the costs of all major equipment teardowns and overhauls and all capital improvements shall be incorporated into the applicable Annual Budget. If such costs have been incorporated into the applicable approved Annual Budget, or if Employer has otherwise consented in writing to reimburse Contractor for such costs, Contractor shall schedule, coordinate, contract and oversee the performance of such activities. Contractor also shall be responsible for monitoring and enforcing contract compliance by the contractor performing such work, including taking such steps, short of litigation, to enforce any warranties granted to Employer by such contractor.

3.3 Annual Budget and Facility Operating Plan:

In accordance with Article 5, Employer shall be responsible for approval of the Annual Budget, the Annual Facility Operating Plan and the Three-Year Budget.

ARTICLE 4: Compensation and Payment

4.1 Payments:

As compensation to Contractor for performance of the Services hereunder, Employer shall pay Contractor the Annual Operating Fee (or a pro rata portion thereof in the case of a Contract Year of less than 12 months). In addition, Employer shall (at Employer's Option) either:

I. reimburse Contractor, in the manner and at the times specified in this Article 4 and Appendix B, as modified from time to time, for all Reimbursable Costs or

II. pay such Reimbursable Costs directly to the applicable third parties.

4.2 Annual Operating Fee:

For the first Contract Year and each subsequent Contract Year, Employer shall pay to Contractor the sum of __ [Monthly amount] _ per month of the Contract Year, for an annual fee of __ [Annual amount] (the "Annual Operating Fee"). Beginning on the first day of the second Contract Year and on the first day of each Contract Year thereafter, the Annual Operating Fee (and the corresponding monthly operating fee) shall be adjusted to reflect changes in the [Escalation factor and calculation method].

4.3 Reimbursable Costs:

Employer shall reimburse Contractor for all costs incurred by Contractor in performing the Services, including the costs set forth in Appendix B (collectively, the "Reimbursable Costs"). Employer's obligation under this provision is subject to:

I. Employer's express approval of the costs as part of an Annual Budget or separately in writing, or

II. Contractor incurring costs in accordance with Article 2.8 (Emergency), 2.9 (Extraordinary Circumstances).

Expenditures made by Contractor in excess of the Annual Budget that are required to comply with any Law applicable to the Services or to the Facility, shall be approved and reimbursed by Employer. Subject to Employer 's right to modify the provisions of this Article 4.3 from time to time upon the reasonable request of the Lenders, Employer shall pay Reimbursable Costs as follows:

I. Employer shall pay to Contractor within 15 (fifteen) days of receiving the original invoice or application, as well as all reimbursable costs' supporting documentation, such as bills, Mushuk Challans, GRN, and receipt of sign of labor. To receive the

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monthly reimbursable amount, Contractor must submit the aforementioned original bill or application to Employer within five (05) days following the end of each month. It should be noted that reimbursable costs must be in line with the Annual Budget.

II. Contractor shall not incur Reimbursable Costs unless they are incurred in accordance with the applicable Annual Budget, or are permitted by Article 2.8 (Emergency), 2.9 (Extraordinary Circumstances). If Contractor becomes aware that Reimbursable Costs exceed or will exceed the amount provided in the applicable Annual Budget by 5% or more, Contractor shall use all reasonable efforts to notify Employer within ten (10) days and shall not, without Employer's approval to amend the applicable Annual Budget or Employer's authorization for Contractor to make such expenditure, perform any further Services that will cause or increase a budget overrun, except as provided in 2.8 (Emergency), 2.9 (Extraordinary Circumstances). If Employer refuses to authorize expenditures in excess of the Annual Budget, Contractor shall be relieved of those duties or obligations of this Agreement that cannot be performed without the expenditures Employer refuses to approve.

III. In all cases, Contractor shall use reasonable commercial efforts to mitigate any adverse effect from Employer's refusal to authorize expenditures in excess of the Annual Budget. Employer's reimbursement of any cost related to the Services shall not be construed as Employer's approval or acceptance of the Services.

4.4 Adjustments and Conditions:

Notwithstanding the payment of any amount pursuant to the foregoing provisions, Employer shall remain entitled to conduct a subsequent audit and review of all Reimbursable Costs incurred and paid by Employer and of any supporting documentation for a period of 2 years after the applicable Contract Year. If such audit and review show that any amount previously paid by Employer to Contractor did not constitute a Reimbursable Cost, Employer may:

I. recover such amount from Contractor, plus interest at the Reference Rate, calculated from the date the audit commenced, or

II. deduct such amount from any payment that thereafter may become due to Contractor.

4.5 Billing and Payment:

Within 05 days following the end of each month, Contractor shall submit the original invoice or application and disbursements showing Reimbursable Costs for such month in accordance with Article 4.2. Within 15 days after receipt of any such invoice, Employer shall:

I. Pay Contractor the sum specified in such invoice, less:
   - any amounts previously deposited with Contractor relating to such invoice, and
   - any portion of such invoice amount that Employer disputes in good faith or is permitted to offset under this Agreement; and

II. With respect to any disputed portion of such invoice, provide Contractor with a written statement explaining, in reasonable detail, the basis for such dispute. The parties shall attempt to resolve any such disputed portion in accordance with GC Clause 20.

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4.6 Interest:

Any amount owed to either party under this Agreement by the other party which remains unpaid more than 45 days after the date such amount is due and payable shall begin to accrue interest at the Reference Rate commencing on the Forty-Six days after such due date.

4.7 Bidder's Indemnities

The contractor is liable for and must indemnify the Owner and its employees and officers from and against any and all suits, actions, administrative proceedings, claims, demands, losses, damages, costs, charges and expenses of whatsoever nature including legal fees and expenses arising in any manner out of any acts or omissions of the contractor or its employees, agents or Subcontractors, whether or not the acts or omissions are in delict, breach of contract or otherwise in relation to the Agreement, except to the extent that loss arises out of the acts or omissions of the Owner.

ARTICLE 5: Procedures, Plans and Reporting

5.1 Procedures Manual:

The parties have approved a procedures manual that includes procedures for:

I. reporting and correspondence pursuant to this Agreement,
II. procurement and contracting, and
III. accounting, bookkeeping and record-keeping ("Procedures Manual").

The Procedures Manual shall govern the covered activities of Contractor for the term of this Agreement, subject to such revision and amendment as agreed in writing by Employer and Contractor.

5.2 Annual Facility Operating Budget and Plan:

I. Proposal: At least 70 days before the beginning of each Contract Year, Contractor shall prepare and submit to Employer a proposed annual budget for the Contract Year, established on a monthly basis. The proposed annual budget shall include separate operating and capital budgets. The proposed annual budget shall also set forth, in detail acceptable to Employer,

- anticipated operations, repairs and capital improvements,
- maintenance and overhaul schedules,
- planned procurement (including equipment, spare parts, and consumable inventories),
- labor activities (including staffing, labor rates, and holidays),
- administrative activities, and
- other work proposed to be undertaken by Contractor, together with an itemized estimate of all Reimbursable Costs to be incurred.

Each proposed annual budget shall be accompanied by a proposed annual operating plan setting forth the assumptions and implementation plans underlying the proposed annual budget. Any actions to be performed by Contractor under the proposed annual operating plan shall be consistent with Contractor 's obligations set forth in this Agreement.

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other information as the Owner or Owner's Representative may reasonably request to be detailed from time to time.

Each Annual Operating and Maintenance Plan must be in accordance with all applicable Laws, Approvals and Government Authorization's, the Project Agreements and the provisions of this Agreement. The contractor shall ensure that each Annual Operating and Maintenance Plan will not have the effect of the Owner being in breach of any of its obligations under the PPA, IA and Financing Documents in relation to Annual Operating and Maintenance Plan.

II. Adoption: Employer shall review Contractor 's proposed annual budget and annual operating plan within 30 days following receipt of the proposals. Employer may, by written request, propose changes, additions, deletions and modifications to the proposals. If requested by Contractor, Employer shall provide Contractor any cost information in Employer's possession from previous Contract Years applicable to items in the proposed annual budget. Employer and Contractor will then meet and use their reasonable commercial efforts to agree upon a final budget and plan (the "Annual Budget" and "Annual Facility Operating Plan", respectively), which shall be approved in writing by both parties. Except to the extent that the terms of Articles 2.8 and 2.9 permit Contractor to take actions which are outside the final Annual Budget without the consent of Employer, the final Annual Budget and Annual Facility Operating Plan shall remain in effect throughout the applicable Contract Year, subject to revisions and amendments proposed by either party and consented to in writing by the other party.

III. Changes: Contractor shall notify Employer as soon as reasonably possible of any significant deviations or discrepancies from the projections contained in the Annual Budget or Annual Facility Operating Plan.

IV. Failure to Adopt: If, by the first day of any Contract Year after the first Contract Year, the parties are unable to reach agreement concerning any item or portion of the Annual Budget for such Contract Year, then the amount(s) of such item or portion of the Annual Budget for such Contract Year shall be equal to 105% of the amount for the corresponding item or portion of the Annual Budget for the preceding Contract Year.

V. Three-Year Budget. At least 60 days before the first day of each Contract Year, Contractor shall prepare and submit to Employer a proposed budget for the next three (3) Contract Years or the remaining term of the Agreement, whichever period is shorter. The proposed three-year budget shall be established on an annual basis and shall include separate operating and capital budgets. The proposed three-year budget shall also set forth, in detail acceptable to Employer,

- anticipated operations, repairs and capital improvements,
- maintenance and overhaul schedules,
- planned procurement (including equipment, spare parts, and consumable inventories),
- labor activities (including staffing, labor rates, and holidays),
- administrative activities, and
- other work proposed to be undertaken by Contractor, together with an itemized estimate of all Reimbursable Costs to be incurred, accompanied by the underlying assumptions and implementation plans of the proposed five-year budget.

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Employer shall review Contractor's proposed three-year budget within 30 days following receipt of the proposal. Employer may, by written request, propose changes, additions, deletions and modifications to the proposals. Employer and Contractor will then meet and use their reasonable commercial efforts to agree upon a final three-year budget (the "Three-Year Budget"), which shall be approved in writing by both Parties. If a final Three-Year Budget is not approved in its entirety by both parties, the proposed three-year budget submitted by Contractor, together with Employer's final suggested changes, additions, deletions and modifications shall serve as the Three-year Budget. The Three-Year Budget shall be used only for planning and comparison purposes and shall not constrain Contractor in its actions or expenditures, provided, however, that Contractor shall be required to conform in its operations to the Annual Budget and Annual Facility Operating Plan as provided in this Contract

5.3 Operating Data and Records:

Contractor shall monitor and record all operating data and information that:

I. Employer must report to any person or entity under any Project Agreement,
II. Employer must report to any government agency or other person or entity under applicable Laws and
III. Employer reasonably requests.

Contractor shall report required or requested operating data and information to Employer as specified by Employer to support monthly invoicing under the Project Agreements, and within 15 Business Days following a request by Employer. Operating data to be reported include information from operating logs, meter and gauge readings and maintenance records.

5.4 Accounts and Reports:

Contractor shall cooperate with Employer in complying with reporting requirements set forth in the Project Agreements and shall, during the term of this Contract, furnish or cause to be furnished to Employer the following reports concerning the Facility operations and the Services:

I. Monthly Reports: Within ten (10) Business Days following the last day of each calendar month, Contractor shall submit:

- a progress report, in detail acceptable to Employer, covering all activities during such month with respect to operations and maintenance (including information regarding the amount of electric energy generated, hours of operation, heat rate, availability, outages, accidents and emergencies), capital improvements, labor relations, other significant matters, and Services. The monthly report shall include a comparison of such items to the corresponding values for the preceding month and for the corresponding portion of the previous Contract Year, a listing of any significant operating problems along with immediately planned remedial actions, and a brief summary of major activities planned for the next reporting period, and
- a statement setting forth all Reimbursable Costs paid or incurred in such month, which statement shall itemize, in detail acceptable to Employer, the computation of such Reimbursable Costs and shall state whether or not the

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Facility operations have conformed to the applicable Annual Facility Operating Plan and Annual Budget during such reporting period and if not, the extent and reasons for any deviation and the planned remedial action.

II. Annual Reports: As soon as available, and in any event within 60 days after the end of each Contract Year, Contractor shall submit an annual report describing, in detail substantially similar to that contained in the monthly reports referred to in Article 5.4(a), the Facility activities and operating data for such Contract Year. The annual report shall present a comparison of such Facility activities and operating data with the goals set forth in the Annual Facility Operating Plan and Annual Budget for such Contract Year, and with those achieved during the preceding Contract Year (if applicable) and an explanation of any substantial deviations. Within 30 days after submission of each annual report, Contractor shall meet with Employer to review and discuss the report and any other aspects of Facility operations that Employer may wish to discuss.

III. Litigation, Permit Lapses: Upon obtaining knowledge thereof, Contractor shall promptly notify Employer in writing of:

- any event of default under any of the Project Agreements;
- any litigation, claims, disputes or actions, threatened or filed, concerning the Facility or the Services;
- any refusal or threatened refusal to grant, renew or extend (or any action pending or threatened that might affect the granting, renewal or extension of any license, permit, warranty, approval, authorization or consent relating to the Facility or the Services; and
- any dispute with any governmental authority relating to the Facility or the Services.

iv) Other Information: Contractor shall promptly submit to Employer any material information concerning new or significant aspects of the Facility's activities and, upon Employer's request, shall promptly submit any other information concerning the Facility or the Services.

5.5 Additional Communications:

Contractor shall communicate certain additional events specified in Appendix C to Employer and third parties in accordance with the communication procedure set forth in Appendix C to this Agreement.

ARTICLE 6: Limitations on Authority

6.1 General Limitations:

Notwithstanding any provision in this Contract to the contrary, unless previously approved by Employer in writing or through Employer's approval of the Annual Budget, Contractor and any employee, representative, contractor or other agent of Contractor are prohibited from taking the specified actions with respect to the matters indicated below:

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I. Disposition of Assets: Sell, lease, pledge, mortgage, convey, or make any license, exchange or other transfer or disposition of any property or assets of Employer, including any property or assets purchased by Contractor where the purchase cost is a Reimbursable Cost;

II. Contract: Make, enter into, execute, amend, modify or supplement any contract or agreement
   - on behalf of, in the name of, or purporting to bind Employer or
   - that prohibits or otherwise restricts Contractor 's right to assign such contract or agreement to Employer at any time;

III. Expenditures: Make or consent or agree to make any expenditure for equipment, materials, assets or other items which would be a Reimbursable Cost, except in conformity with the Annual Budget; provided, however, that solely in connection with actions taken by Contractor pursuant to Articles 2.8 (Emergency), 2.9 (Extraordinary Circumstances), Contractor may, without prior approval from Employer, make limited expenditures outside the Annual Budget in accordance with those provisions;

IV. Other Actions: Take or agree to take any other action that materially varies from the applicable Annual Facility Operating Plan, Annual Budget or the requirements of any Project Agreement;

V. Lawsuits and Settlements: Settle, compromise, assign, pledge, transfer, release or consent to the compromise, assignment, pledge, transfer or release of, any claim, suit, debt, demand or judgment against or due by, Employer or Contractor, the cost of which, in the case of Contractor, would be a Reimbursable Cost hereunder, or submit any such claim, dispute or controversy to arbitration or judicial process, or stipulate in respect thereof to a judgment, or consent to do the same;

VI. Liens. Create, incur or assume any lien upon the Facility;

VII. Transactions on Behalf of Others. Engage in any other transaction on behalf of Employer or any other person or entity not expressly authorized by this Contract or that violates applicable Laws, this Agreement or any Project Agreement; or

VIII. Agreements: Enter into any agreement to do any of the foregoing.

6.2 Execution of Documents:

Any agreement, contract, notice or other document that is expressly permitted hereunder (or under written approval of Employer) to be executed by Contractor shall be executed by the authorized representative of Contractor or, subject to prior written notice to Employer, by such other representative of Contractor who is authorized and empowered by Contractor to execute such documents.

ARTICLE 7: Technical Limits and Contracted Characteristics

7.1 Start-Up Times

The notice from NLDC (National Load Dispatch Center) to the Employer to synchronize the generator to the Grid System will vary according to the length of time the Facility has been under shutdown. Table 1 below shows the length of notice required against various classifications of starts. In the event such notice cannot be given to the Employer by BPDB

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within the time periods indicated in following Table, Employer shall use reasonable efforts to accommodate BPDB's Dispatch request. Contractor shall be bound by these times and shall report to Employer if these times cannot be met at any time along with justifications for the same.

Classification of Start	Notice Required to Synchronize Generator
Hot Start	3 Hours
Warm Start	4 Hours
Cold Start	12 Hours

I. For the purposes of this Schedule, Start Up of the Facility is classified as follows:

- "Hot Start" is defined as a start following a continuous shutdown of steam turbine for a period of 8 hours or less.
- "Warm Start" is defined as a start following a continuous shutdown of steam turbine for a period between 8 and 48 hours.
- "Cold Start" is defined as a start following a continuous shutdown of steam turbine for a period more than 48 hours.

II. For the purpose of this Schedule, a Start-Up shall be deemed to have occurred upon synchronization of the turbine generator to the Grid System.

7.2 Facility Loading

The Facility load ramping rate for each generating unit of the Facility is the steady rate at which the load can be raised which will be 1% of the net capacity of each generating unit of the Facility per minute.

The Unit wise minimum continuous loading of Facility shall be 60% of the Unit wise Dependable Capacity. The Facility shall be capable of automatic operation and control from the Dependable Capacity of the Facility to 60% of Dependable Capacity.

7.3 Frequency, Power Factor and Voltage Limits

I. At rated voltage and frequency, the Facility will operate at 100% load with a power factor in the range 0.85 lagging to 0.95 leading at the generator terminals, which range shall not be exceeded.

II. The Facility will operate within the line voltage range used in practice by BPDB and in no case shall the Facility be required to operate more than +5% or less than -10% on the 400kV high voltage system.

III. The Facility shall operate within the frequency range 48.5 Hertz to 51.5 Hertz which range shall not be exceeded. The Facility shall be capable of continuous operation for the periods defined in Table below.

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Frequency Range (Hz)	Minimum Sustainable Operation
48.50 to 51.50	Continuous
47.50 to 48.50	10 minutes
Less than 47.50	Trip Condition
Greater than 51.50	Trip Condition

7.4 General

The Contractor through the Employer shall advise BPDB of any temporary operating constraints and limits, which may from time to time apply to the Facility.

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APPENDIX A-1: Supplementary Terms of Services

Contractor shall perform each of the services listed in this Appendix A in accordance with the standards required under Article 2.2.

1) Programs

In addition to those responsibilities described in the Agreement, Contractor shall be responsible for the establishment and implementation of the following programs, standards and procedures, which require Employer approval and which are included in the "Services" to be provided by Contractor.

a. The program for establishing specific operating goals for each functional Project area, for managing resources to minimize personnel turnover, and for qualifying personnel, to operate and maintain the Project (including the basis for qualification of personnel).
b. The program for communicating and cooperating with Employer and governmental agencies.
c. The Project management standards for conduct of operations, Project safely, conduct of maintenance, housekeeping, material condition, and records management.
d. The program for preparing supporting documentation, meter readings and information necessary to accurately prepare, justify and support monthly invoices in accordance with the terms and conditions of the Project Agreements.
e. Developing the procedures used to operate the Project as well as monitoring, evaluating, and proposing revisions to such procedures.
f. The Project operations and monitoring program which provides the requirements for:
   I. Monitoring of Project Performance
   II. Monthly Project Performance Calculations and Report
   III. Monthly Fuel Consumption Calculations and Report
   IV. Project Permitting and Environmental Reporting
   V. Shift Routines / Operating Practices
   VI. Control of Equipment
   VII. Project Chemistry Control and Water Treatment
   VIII. Training Programs
   IX. Operator Qualifications
   X. Operating Procedures
   XI. Status of Major Equipment
g. Safety management requirements
   I. The number of staffs must meet the minimum number required by operation and maintenance to ensure the safety of the crew.
   II. During the term of the contract, if the number of operation and maintenance equipment increases or decreases due to technical modification of corresponding equipment or system in the power plant, the Owner has the right to propose that the bidder should increase or decrease the number of operation and maintenance personnel. When the number of operation and maintenance personnel increases or decreases is less than or equal to 5, the bidder's operation and maintenance expenses shall not be changed. When the number of operation

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and maintenance personnel increased or decreased > 5, the bidder or owner can make corresponding additions to the contract in the next year.

III. The bidder shall strictly implement the operation procedures, system drawings, standard working tickets and standard operating tickets formulated by the owner. In case of equipment changes and exposure problems, it shall timely coordinate with the owner's operation specialist to comprehensively revise or supplement the operation procedures, system drawings, standard working tickets and standard operating tickets to ensure the timeliness and accuracy of the operation field procedures, system drawings, standard working tickets and standard operating tickets.

IV. The bidder shall establish and improve the operation analysis system. Post analysis, professional analysis, special topic analysis, accident obstacle, abnormal error analysis and comprehensive operation analysis should be analyzed by special personnel. At least one monthly comprehensive operation analysis report to the owner, for the comprehensive elaboration and analysis of the safety, reliability, economic indicators and existing problems of the unit, so as to help find and solve the site problems. All the analyses are required to be timely, true, and accurate.

V. Establish a mechanism for timely reporting, modifying and improving the defects found in the thermal logic protection value, and update and upgrade in time.

VI. The bidder should do a good job in on-site operation safety management, strictly implement the "On-site safe operation management system", do a good job before and after work, monthly safety meeting, safety committee, safety activity day, safety month, spring and autumn safety inspection and related special inspection work. Should often go into the site, familiar with the site equipment, environment and personnel status, do the safety production management controllable, in control.

VII. Establish a sound operation ledger and operation record mechanism, and the operation records of each major and each shift should be improved in detail.

VIII. Participate the safety meeting organized by the owner on time, report the existing problems and measures taken, and propose reasonable solutions.

IX. The bidder's safety contract must be signed to the individual. The bidder shall do a good job in safety training and education, establish and improve the three-level safety education and training network, and constantly improve the safety awareness of the employees. The owner's safety supervision department requires all employees to participate in the "Electric Power Safety Work Regulations" examination when the bidder enters the factory, and those who fail the examination cannot be put on the job.

X. The bidder shall formulate various typical accident plans, anti-accident drill plan, two measures plan (anti-accident measure plan and safety measure plan) and emergency plan according to the site equipment and operation situation. These plans and measures shall be reported to the Owner for record and added or enriched according to owner's requirements. To ensure that the operators are familiar with these plans and measures, and to organize regular drills (including fire drills), so that these plans and measures can really play a role in the state of the accident. According to the recent operation of the unit or in combination with similar safety accidents at the scene or in China, the owner requires the bidder to

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conduct self-inspection and supervise the bidder to examine the operation and maintenance personnel.

XI. The bidder shall carefully monitor and strengthen the circuit inspection, carefully capture the abnormal changes in parameters and find the problems or defects of the equipment. Log in and contact carefully in accordance with the equipment defect management system, timely isolate and cooperate with the maintenance and treatment, and make the equipment in a healthy state.

XII. Establish an effective defect management system and a corresponding defect filling and assessment mechanism. The bidder has the responsibility and obligation to check the safety risks of the production site equipment or environment, deal with the problems timely, aggressive and actively, and notify the owner in time.

XIII. In case of accidents of operating equipment, the bidder shall deal with them promptly in accordance with regulations. The bidder shall ensure that the operation procedure and sequence of accident handling are correct to avoid the expansion of the accident and ensure the safety of human and equipment. The owner shall have the right to understand, evaluate and investigate the handling of the accident. The bidder shall bear the consequences caused by improper handling.

XIV. The bidder shall be responsible for ensuring the safety performance test of the safety instruments used by the operators, and shall be equipped with a sufficient number of instruments, such as: insulation meter, multimeter, grounding wire, thermometer, vibration meter, flashlight, wrench, etc. A regular inspection and maintenance system for safety instruments shall be established to ensure that these safety instruments are always qualified. The problems found in the inspection by the safety supervision department of the owner shall be rectified immediately and unconditionally.

XV. For all operations or work occurring on the operation site, the bidder shall conscientiously implement, approve or permit according to his own authority, and strictly ensure the operation or work in accordance with the requirements of the Electricity Safety Work Regulations and the Two-ticket Management System. The responsible personnel on duty of operation of the bidder shall make necessary hazard point analysis requirements and technical disclosure to the operators or executors according to relevant requirements to ensure the safety of these operations or work.

XVI. The bidder has the responsibility and obligation to carry out on-site equipment operation in strict accordance with the regulations and prohibit illegal command, illegal operation and labor discipline. The bidder shall be punished for the above behavior. If the equipment or personal accident is caused by the above behavior occurs, the punishment shall be doubled according to the accident result.

XVII. The bidder shall take all reasonable measures to protect the site and surrounding environment and avoid pollution and noise; and avoid harm and interference to public personnel and property caused by improper working methods. Otherwise, the bidder should bear the corresponding responsibility accordingly.

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XVIII. The bidder shall take good care of the public facilities on the site, including roads, lighting, firefighting equipment, etc. When the bidder uses the firefighting equipment of the owner, he shall report in time and make up within a time limit.

XIX. The bidder shall take all preventive measures to prevent the wrongful acts of his employees and to avoid damage or threat to personal or public property in the vicinity of the Project.

XX. All the behaviors of the bidder shall not form any interference, invasion and destruction of the site environment. If the above behaviors are necessary, the owner shall be notified immediately and shall be resumed as required after the end of the need.

XXI. The bidder must sign the safety specification with the owner when entering the factory. Written materials of safety target guarantee measures approved by the owner's safety supervision department must be provided (with safety reward and punishment system).

h. Civilized production management

I. The bidder shall abide by the owner's documents, regulations and assessment methods on civilized production on the site.

II. The bidder's on-site staff shall wear uniform and obvious identification tags.

III. The bidder shall keep the civilized production area where he is responsible for clean and hygienic at all times.

IV. The bidder shall obey the owner's site civilized production management. The site management shall realize the owner's fixed management requirements: all kinds of goods, materials, tools placed reasonably, clear signs, orderly discharge of the site environmental sanitation to meet the relevant standards and requirements, to create a good working environment for employees.

V. The bidder shall respond to the environmental treatment requirements of the Owner due to the environmental sanitation problems of the inspection site. For the environmental sanitation problems within the responsibility scope of the bidder, the bidder shall rectify them in time.

VI. The bidder shall protect the site environment. When the site road, greening or other aspects are polluted or occupied due to the bidder, the bidder shall unconditionally restore it according to the requirements. If the recovery cannot be made as required, the owner may resume the work through a third party, and the expenses incurred thereby shall be borne by the bidder.

VII. The bidder shall timely open and close the site protection room, electronic room doors and Windows or related cabinet doors in accordance with relevant regulations, and the hygiene in the responsibility area shall be cleaned regularly. When multiple warnings cannot be corrected, they should be punished.

VIII. The bidder shall establish a management and control mechanism for the operation and maintenance personnel, and have clear punishment and reward provisions for the behavior of the operation and maintenance personnel. The bidder shall take all measures to maintain the on-site production order and ensure that the operation and maintenance personnel work hard. The operator is strictly forbidden to doze off during the duty, play and laugh on the monitor, and miss the meter reading. It is strictly forbidden to engage in things that are not related to production during work, such as playing mobile phones, playing chess,

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etc. It is strictly forbidden to prevaricate between employees and between teams and team.

IX. The Bidder If the environmental pollution caused by the bidder is slight, the bidder shall clean it up; In case of serious pollution, the bidder shall be assessed by the owner in addition to cleaning.

X. The Bidder If the owner is assessed by the environmental protection department due to the bidder, the bidder shall bear the responsibility, and the owner shall take corresponding additional assessment measures according to the specific situation.

i. Training requirements:
   i. The bidder shall formulate a perfect training plan, requiring a personnel training plan for every year and each node within the start of production preparation to 5 years after COD, and set specific goals so as to realize the gradual replacement of each position and finally realize independent operation.
   ii. The key production positions (chief shift operator, main operator and special engineer) of the bidder team shall be approved only after passing the inspection of the owner.
   iii. The bidder shall hold a full staff examination at least once every six months to promote the improvement of the technical level of the operation and maintenance personnel.
   iv. For the training of the owner's personnel by the bidder, the bidder shall put forward corresponding suggestions on rewards and punishments for the trainer and the trainee according to the training results after the completion of the training of a subject or a stage, which shall be implemented after the approval of the owner.
   v. The Owner has the right to check the skills of the bidder, and the training results of the personnel of the owner and the bidder shall be reported to the owner for review.

j. The maintenance program which provides the requirements for:
   i. Maintenance Planning
   ii. Maintenance Procedures
   iii. Preventive Maintenance
   iv. Predictive Maintenance
   v. Maintenance Training

k. The materials management program which provides the requirements for:
   i. Procuring Materials and Tools
   ii. Inventory Levels and Control
   iii. Renewal of Inventories

l. The diagnostic testing program for maintaining the Project and Project equipment, including both system and component level testing.

m. The housekeeping / cleanliness program which provides the requirements for:
   i. Hazardous Material Control
   ii. General Project Cleanliness
   iii. Equipment Condition Inspections
   iv. Hazardous Waste Program

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n. The problem assessment program which provides the procedure for determining the cause(s) of operational or equipment failures and preventing future failures through recommended improvements, including justification for such recommendations (i.e., basis of recommendation and economic analysis).
o. The records management program for maintaining the traceability and documentation of Project performance.
p. The Project safety program which provides the requirements for establishing:
   I. Safety Monitoring;
   II. Accident Prevention Program;
   III. Accident Reporting.
q. Monthly and yearly reporting systems of Project performance to Employer.
r. The security program for maintaining the security of the Project and surrounding area.

2) **Specific Requirements**

Contractor's scope of Services is based on the Project design as described in certain of the Project Agreements, the Project Operating Manuals, vendor manuals and design drawings. Contractor will prepare Annual Project Operating Plans, which, in part, will define the operations procedural requirements for the Project to meet the requirements of the Project Agreements. Contractor, as part of the Services, is responsible for:

a) Providing such trained personnel as is reasonably necessary to operate and maintain the Project and provide the Services set forth in this Agreement.
b) Operating and maintaining the Project in accordance with the approved Annual Project Operating Plan.
c) Submitting an Annual Project Operating Plan. Not later than ninety (90) days prior to the first day of each Contract Year, Contractor will submit an Annual Project Operating Plan to Employer. In addition to the requirements set forth in Article 5.2 (Annual Operating Budget and Plan), the Annual Project Operating Plan will detail maintenance, outage, and overhaul schedules, Project staffing, Maintenance of specific equipment items and spare parts details and expenses to be provided by the owner known capital and expense budget items, operating plans, and will provide the underlying assumptions used in developing the proposed budgets and anticipated availability for the period. Employer will review and approve the Annual Project Operating Plan. Such approval will become the basis for reimbursement under the Annual Budget.
d) Planning and managing on-site operations and maintenance activities, including:
   i. Assuring that operational goals and operating plans are consistent with the Annual Project Operating Plan.
   ii. Assuring that the Project is operated in accordance with this Agreement and in a safe, reliable, efficient, environment and prudent manner.
   iii. Assuring that operations and maintenance personnel are trained and qualified for their assigned responsibilities and tasks, and that such qualification is maintained.
   iv. Assuring that the Project meets contract, regulatory, and environmental requirements set forth in the Project Agreements or otherwise identified by Employer or Contractor.

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v. Managing and controlling costs consistent with budget requirements.
vi. Planning, scheduling and managing work and maintenance activities.
vii. Defining and documenting operational technical requirements.
viii. Defining and delineating responsibilities between Contractor and Employer and identifying reporting requirements.
ix. Establishing labor relations and personnel programs that will meet local government requirements and encourage employee retention.
x. Maintaining a current inventory of materials and procuring all services, spare parts, operational materials, consumables, office equipment, tools and shop equipment, or any other items or materials required to operate or maintain the Project. Contractor will identify required items, cost, quantity and need date. The cost of any item or service shall be reimbursed by Employer in accordance with this Agreement.
xi. Controlling outages, both planned and unplanned, by using detailed and integrated plans and schedules, and resource management.
xii. Maintaining Project performance levels by using routine system and component performance testing.
xiii. Maintaining a file of preplanned outage-related work to allow for efficient use of any forced outage downtime.
xiv. Establishing open purchase order or contract agreements with Project equipment vendors, industrial suppliers, jobbers, and maintenance contractors in accordance with Project Agreements to ensure timely response to Project maintenance needs.
xv. Promptly notifying Employer in writing of any teardowns and overhauls of major equipment or capital improvements that Contractor believes are necessary or advisable together with a proposed schedule for completing such repairs or improvements.

e) Performing certain tasks, duties, responsibilities and obligations assigned to Employer under the Interconnection Agreements, including, but not limited to, the following:
i. Performing routine surveillance of all equipment routinely used to communicate with the NLDC.
ii. Notifying the NLDC of any routine maintenance activities which will require clearance from the NLDC.
iii. Providing the NLDC and Employer's Customers with all required information regarding the Project's availability.
iv. Responding to dispatch orders from the NLDC and Employer's Customers.
v. Monitoring and adjusting the reactive output of the generators to maintain transmission voltage levels within the capability of the Project's generators.
vi. Responding to and correcting generator dynamic instability in accordance with instructions from the NLDC.

f) Execution or oversight of routine preventive maintenance ("PM") activities in accordance with Prudent Utility Practice, including, without limitation:
i. Lubrication Checks
ii. Cleaning / Flushing

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iii. Preservation
iv. Fluid Changes and Replacement
v. Visual Inspections
vi. Operational Monitoring
vii. Vibration Analysis
viii. Chemical Analysis (water testing)
ix. Trend Analysis
x. Calibration
xi. Measurements
xii. Adjustments
xiii. Hydrostatic Tests
xiv. Lube Oil Analysis (sampling only)
xv. Replacement of Wear / Sacrificial Parts
xvi. Resistance Testing

g) Execution or oversight of routine corrective maintenance ("CM") activities in accordance with Prudent Utility Practices to troubleshoot, inspect, and repair the equipment upon identification and detection of certain conditions, including without limitation:

i. Physical fault conditions such as:
- Blocked / stopped flow
- Fractures / break / breaches
- Cracks
- Distortion / displacement
- Corrosion / discoloration

ii. Out of specification conditions such as:
- High / low flow, pressure, temperature, or chemistry
- Off voltage
- Out of limits / adjustments
- Erratic output
- Intermittent / spurious operation
- Failure to control / hold
- High / low output
- Improper timing

iii. Demand fault conditions such as failure to:
- Start / run / operate
- Stop
- Open
- Close
- Move / release / respond

iv. Abnormal characteristics such as:
- Overheating
- Noise
- Vibration
- Chatter
- False response

v. Leakage conditions such as:

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- Leakage to surrounding environment
- Leakage past seats / stems / packing / seals
- CM activities not requiring equipment shutdown shall be performed as soon
- as possible and in order of priority. CM activities requiring equipment
- shutdown shall be performed when equipment is removed from service.

h) The PM and CM activities will be inventoried and performed on a system-by-system basis and shall apply to the following equipment types:

i. Circuit Breakers (all types)
ii. Batteries (all types)
iii. Electric Heaters
iv. Heat Tracing
v. Blowers
vi. AC Motors (synchronous / induction)
vii. DC Motors (synchronous / induction)
viii. Valves (all types)
ix. Valve Operators (air / motor / hydraulic)
x. Control Relays (AC / DC)
xi. Transformers
xii. Controllers
xiii. Recorders
xiv. Transmitters
xv. Switches (all types)
xvi. Dampers
xvii. Fans / Compressors
xviii. Heat Exchangers
xix. Radiators
xx. Pumps
xxi. Filters / Strainers
xxii. Air Dryers
xxiii. Tanks / Vessels
xxiv. Pipe / Pipe Fittings / Pipe Supports
xxv. Combustion Turbines
xxvi. Generators

i) Performing such other tasks and services which Employer may reasonably request from time to time in connection with operation of the Project.

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APPENDIX A-2: Division and Interface of Service Scopes

➢ **The Scope Matrix**

The work scope boundary among Owner, EPC Contractor, and bidder is shown as below table:

NO.	Work Scope	Responsible Party		
		Owner	EPC	Bidder
1	The readiness of the project Pre COD-stage	√	√	√
2	Sign external agreements relevant to operation and maintenance of the power Project (i.e. IA, PPA, LLA , coal supply, water supply, fuel supply, limestone supply, land use, etc.) and the certificate and license shall be issued in accordance with the relevant provisions of this contract. Pre COD-stage	√		
3	Project test-run. (production preparation stage)	√	√	√
4	Provide integral, accurate data and drawings required by operation and maintenance of the project. Pre COD-stage	√	√	
5	Hand over the Spare Parts supplied by the Owner. Pre COD-stage	√	√	
6	Recruit, organize, train project O&M personnel and mobilize the personnel to Facility site and comply with the Bangladesh Labor Laws or regulations. Pre COD-stage			√
7	Medical treatment and first aid of the bidder. (all stages)			√
8	Transportation of gypsum, fly ash, ash slag, stone coal (Rejected coal from pulvarizer) so on from power plant to ah yard. Ash yard management work. (Pre-COD)		√	
9	Transportation of gypsum, fly ash, ash slag, stone coal and so on from power plant to ah yard. Ash yard management work. (after-COD)			√
10	Provide vehicles used for coal yard and ash yard and ash slag transportation, and sprinkler and relevant machinery equipment. Pre COD-stage		√	

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11	Provide office and camp facility (including dormitory, kitchen, canteen and sports facilities). Pre COD-stage	√	√	
12	Provide basic furniture, including basic office furniture and logistics furniture (only including dormitory bed, cabinet and canteen furniture)	√	√	
13	Provide household appliances (only including air conditioner, TV and washing machine)	√	√	
14	Procurement of all office and living supplies except for those supplied by the Owner. (all stages)			√
15	Supplement and complete the site HSE warning sign, equipment and building identification (label) after COD. (after COD)			√
16	O&M manuals preparation Pre COD-stage		√	
17	Revise and update the O&M manuals from the sub-system commissioning. (all stages)			√
18	Purchase tools and devices for landscape. (Pre COD)		√	
19	Purchase tools and devices for landscape. (after COD)			√
20	Build chemical laboratory and purchase instrument and apparatus. Pre COD-stage	√	√	
21	Build I&C laboratory and purchase instrument and apparatus. Pre COD-stage	√	√	
22	Build electrical laboratory and purchase instrument and apparatus. Pre COD-stage	√	√	
23	Build high voltage laboratory and purchase instrument and apparatus. Pre COD-stage	√	√	
24	Build metal laboratory and purchase instrument and apparatus. Pre COD-stage	√	√	
25	Purchase equipment, facilities and apparatus for maintenance workshop. Pre COD-stage.	√	√	
26	Purchase uniform and equipment for security staffs. Pre COD-stage		√	
27	Purchase uniform and equipment for security staffs. after COD stage	√		
28	Purchase cleaning tools. (after COD)			√

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29	Purchase coal and transport to wharf. (all stages)	√		
30	Customs clearance and third-party inspection of the coal. (all stages)	√		
31	Receiving, weighing, sampling and testing of the coal (all stages).			√
32	Obtain water use permit and pay for water resource charge. Pre COD-stage	√		
33	Operation of the seawater intake pump, cleaning work of seawater inlet. (Pre COD-stage)		√	
34	Operation of the seawater intake pump, cleaning work of seawater inlet. (after COD)			√
35	Purchase fuel oil and transport to site or heavy lift berth (General jetty). (all stages)	√		
36	Unloading, weighing, sampling, and testing of delivered fuel oil before COD.		√	
37	Unloading, weighing, sampling, and testing of delivered fuel oil after COD.			√
38	Purchase limestone and transport to site or heavy lift berth. (all stages)	√		
39	Unloading, weighing, sampling and inspection of the delivered limestone before COD. COD (before commercial operation date)		√	
40	Unloading, weighing, sampling and inspection of the delivered limestone after COD. (after commercial operation date)			√
41	Purchase consumable materials except for seawater, coal, fuel oil and limestone before COD. (up to the end of DLP)		√	
42	Purchase consumable materials except for seawater, coal, fuel oil and limestone. (after DLP)			√
43	Purchase spare parts consumed in operation and maintenance During Pre-COD and 2 years warranty period. (up to the end of DLP)		√	
44	Before key staffs of O&M contractor join their post, the Owner will arrange personnel to organize interview and assessment (refer to post qualifications and skill standards for assessment	√		√

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	policy). Unqualified staff shall not assume their post. For those unqualified who fail the test during the interview, O & M contractor shall replace the staff within 15 days after receiving notice from the Owner until they meet the requirement of the post. If replaced staff are still not qualified, and their number accounts for over 15% of the total manpower, the Owner is entitled to forfeit the performance guarantee and terminate the O & M contractor. Refer to Schedule E: Contractor's Personnel for other staff qualifications.			
45	The bidder shall master the unit equipment features, operating and maintenance methods under the guidance and training from technical staff of EPC contractor, and transfer the training content regarding O & M they have mastered to Owner's staff in accordance with the training requirement of the Owner.		√	√
46	Under the guidance of EPC contractor staff, the bidder shall carry out relevant individual equipment test run, sub-system test run, whole unit startup and performance acceptance trial, and daily O & M work, and summarize important existing problems from respective professions and put up with the solutions, which shall be shared promptly to EPC contractor and the Owner.		√	√
47	In addition to completing the commissioning and trial operation under the supervision of EPC's technical management personnel, the bidder shall also be responsible for supervising safety of the equipment and civilized production within their own work scope during the commissioning period, as well as filling in various operation records, reports and logs, etc. as required by production management regulations.		√	√
48	The EPC contractor will complete the compilation of the operation and maintenance manual, system diagram, protection rated value, accident prevention program, and other operation and maintenance logs. The bidder shall improve these documents on this basis complying with the Owner's requirement to deliver a complete and applicable operation and maintenance document package.		√	√

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49	The bidder shall be responsible for the accuracy of all technical documents and further upgrading of documents. The Owner will evaluate, approve an issue all technical documents and carry out examination and appraisal on bidder.	√		√
50	In addition to completing the above commissioning and trial operation according to the relevant requirements of the Owner in the first two years of COD, the bidder shall record the whole process of commissioning and trial operation and provide them to the Owner. If the owner puts forward reasonable temporary technical and management requirements during the process, the bidder shall organize technical personnel to complete promptly.			√
51	The bidder shall implement the following standardization management in the first two years of COD. a) The relevant systems and regulations for operation management should be prepared in accordance with the relevant laws, regulations, standards and specifications of the country where the project is located, with reference to the relevant operation management as per international regulations and the actual situation on site, and can only be implemented after the approval of the Owner. b) Establish and improve various operation management systems, so that there are rules and laws to abide by in the operation work. Make sure the operation management meet the requirements of institutionalization, standardization and normalization. c) Establish working procedures for preparation, review, approval, release, recheck, revision of operation and maintenance management rules and regulations, operation and maintenance manuals and system diagram, and maintain the applicability, correctness and effectiveness of operation and maintenance manuals and policies. d) According to the relevant specifications of the power industry, the characteristics of the equipment and systems within the jurisdiction, the requirements of the local power dispatching authority, and the test			√

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	commissioning measures, prepare a typical operation ticket. e) In accordance with the provisions of relevant governing "Electrical Safety Work Regulations" without conflicting relevant regulations of the country where the project is located, the bidder shall implement the electrical operation mode switching monitoring system and standardize the operation process of electrical equipment. f) The bidder's various on-duty notes, records and reports shall require clean and tidy fonts, accurate records, standardized terminology and clear expressions. Work contact reporting shall adopt standard terms. g) The office, control room, duty room, rest room, etc. shall be kept clean and tidy, and office supplies, tools, materials and other items, as well as various documents, drawings and records shall be arranged in a orderly manner.			
52	During the 24-month defect liability period, EPC contractor will dispatch engineers to the site as agreed to assist the owner in the operation and maintenance of the plant and any training that may be necessary. In the event of an emergency, upon request by the owner, the EPC contractor shall take timely action to resolve any problems arising in operation and maintenance.		√	
53	Purchase maintenance and service materials. (after DLP)			√
54	Purchase spare parts for operation and maintenance after end of DLP			√
55	For defects occurring during defect liability period, except those that can be proved to be the sole responsibility of EPC contractor as per EPC contract due to equipment quality reasons, etc., it shall be the responsibility of the bidder to rectify those defects. And the bidder will eliminate the defects timely so as not to cause any hindrance to normal operation.			√
56	Coordinate with EPC contractor to deal with obvious defects of project equipment or facilities during warranty period or latent defects after warranty period. (before the end of the warranty period).	√	√	
57	Undertake Scheduled Maintenance work. (During DLP)		√	√

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58	Undertake Scheduled Maintenance work. (after DLP)			√
59	Undertake project upgrading expenses.	√		
60	Responsible for cleaning, greening, safety, etc. service of the whole power Plant and the maintenance of safety facilities (fire-fighting included). (pre-COD)		√	
61	Responsible for cleaning, greening, safety, etc. service of the whole power Plant and the maintenance of safety facilities (fire-fighting included). (pre-COD and after-COD)			√
62	Security system (including operation and maintenance of visitor entrance system, CCTV, etc.) of the whole power plant (after- COD)			√
63	Security staff of the whole power plant	√		
64	Undertake Periodic performance test (based on PPA, IA and Financing Documents requirement) after DLP.			√
65	Undertake Performance test (based on PPA, IA and Financing Documents requirement) during IOD, COD and during DLP.		√	√
66	Power selling, Electricity price negotiation and settle accounts (assisted by the Operator). (all stages)	√		√
67	Connection, communication and coordination with PGCB and BPDB assisted by the Owner (all stages)	√		√
68	Handling work permit or visa for foreign personnel from Immigration Office. (all stages)			√
69	Operate bidder's camps. (all stages)			√
70	Provide maintenance services of the office and power plant automation and control system and communication system. (after COD)			√
71	The Owner is responsible for provide the office network and bear the cost of public office communication, and the bidder is responsible for the cost of personal communication cost. (all stages)	√	√	√
72	Dredging of unloading area of general and coal jetty. (Pre-COD)		√	
73	Dredging of unloading area of general and coal jetty. (after-COD)	√		
74	Provide firefighting special trucks. (all stages)	√	√	
75	The Owner is responsible for coordinating relevant organizations or its authorities to conduct environmental testing and special equipment inspection, and bear testing and inspection costs. The bidder is responsible for providing the required manpower and material	√	√	√

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	cooperation in the testing and inspection process, and also responsible for recovery, maintenance and other work of the above-mentioned equipment at its own cost; (all stages)			
76	In accordance with the requirements of Owner or Bangladesh government and local Laws, regulations, calibrate the measurement instrument and except for the special equipment inspect all the safety equipment and tools at its own cost, the report of calibration and inspection shall be submitted to the Owner for registration.		√	√
77	In accordance with the requirements of the Owner or Bangladesh Government and local Laws, regulations, apply for the relevant certificates for the O&M personnel. (all stages)			√
78	Responsible for the procurement and maintenance of office vehicles for bidder and responsible for pay taxes, fees, insurance and fuel for such vehicles. (all stages)			√
79	maintenance of Simulation System. (Pre-COD)		√	
80	Use and maintenance of Simulation System. (after-COD)			√
81	Settlement and displacement Survey of building and structures. (Pre-COD)		√	
82	Settlement and displacement Survey of building and structures. (after-COD)			√
83	Obtain special tools and rigging devices from OEM/Supply and Services Contractor and hand over to the bidder. (Pre COD-stage)	√	√	
84	Purchasing insurance of equipment and facilities in project area. (Pre COD-stage)	√	√	
85	Purchasing insurance of O&M staff. (all stages)			√
86	Responsible for road routine maintenance and transportation management of inside and outside of the plant area. (before commercial operation date)		√	
87	Responsible for road routine maintenance and transportation management of inside and outside of the plant area. (after commercial operation date)			√
88	Responsible for the operation and maintenance of the wharf, unloading coal to the designated area of the coal yard; Reasonably arrange the maintenance work of equipment to prevent the coal-burning unloading operation from being affected by equipment defects (before commercial operation date)		√	

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89	Responsible for the operation and maintenance of the wharf, unloading coal to the designated area of the coal yard; Reasonably arrange the maintenance work of equipment to prevent the coal-burning unloading operation from being affected by equipment defects (after commercial operation date)			√
90	The regular check of special devices used within the range of the operation and maintenance of the plant area and jetty (forklift, bridge crane, compressed air tank and ship unloader) shall be the bidder's responsibility, the quotation of regular check shall be delivered to the Owner for approval before implementation. (before commercial operation date)		√	
91	The regular check of special devices used within the range of the operation and maintenance of the Wharf (forklift, bridge crane, compressed air tank and ship unloader) shall be the bidder's responsibility, the quotation of regular check shall be delivering to the Owner for approval before implementation. (after commercial operation date)			√
92	Routine maintenance of wharf revetment and fences on the revetment shall be the bidder's responsibility. Excluding the defect notification period responsibility which shall be borne by the EPC contractor. (after-COD)			√
93	Any other services not covered under above items, should be discussed and agreed by both parties.	√	√	√

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- **A special description of the division of responsibilities**
  1) The purpose of dividing the main responsibilities of all parties in the form is to facilitate the bidder to clear the working boundaries. In order to facilitate the bidder to carry out work in the future.
  2) The liability of EPC parties shall refer to the EPC contract description.
- **Interface of responsibilities between EPC contractor and the Bidder**
  1) The bidder is responsible for witnessing and cooperating with the whole process of power plant system, equipment commissioning, testing and trial operation, and participating in quality acceptance work.
  2) Under the command of the EPC contractor, the bidder shall conduct sub-system commissioning to COD operation. The EPC contractor is responsible for the maintenance of overhaul before COD. The operation and maintenance work after COD shall be responsible by the bidder. The remaining record defects before COD shall be dealt with by the EPC contractor. If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant supplied or of the work executed by the EPC Contractor the EPC Contractor shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its

cost, repair, replace or otherwise make good as the EPC Contractor shall determine at its discretion, such defect as well as any damage to the Facilities caused by such defect. The EPC Contractor shall not be responsible for the repair, replacement or making good of any defector of any damage to the Facilities arising out of or resulting from any of the following causes:

a) Improper operation or maintenance of the Facilities by the Employer;
b) Operation of the Facilities outside specifications provided in the Contract; or;
c) Normal wear and tear;

3) The EPC contractor of the power plant is responsible for the first-time registration of power plant equipment and facilities as well as obtains the use permit; The bidder shall be responsible for any new additions, changes, updates and extension other than those mentioned above.
4) Quality defects of power plant equipment emerging during two-year warranty period after hand-over shall be the responsibility of the EPC contractor.
5) In the production preparation period, the bidder shall cooperate with the owner to complete the inspection and acceptance of the quality of the whole plant construction and structures and record the defects, the elimination of the recorded defects shall be the EPC contractor's liability.

   For defects occurring during defect liability period, except those that can be proved to be the sole responsibility of EPC contractor as per EPC contract due to equipment quality reasons, etc., it shall be the responsibility of the bidder to rectify those defects. And the bidder will eliminate the defects timely so as not to cause any hindrance to normal operation.

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APPENDIX B: Reimbursable Costs

1) Reimbursable Cost items shall be paid to Contractor in accordance with the requirements of Articles 4 and 6. Reimbursable Costs include:
   a) Labor costs, including allowances for payroll, taxes, bonuses and benefits
   b) Spare and replacement parts
   c) All material, tools and equipment necessary to operate and maintain the Project
   d) Chemicals
   e) Lubricants (including proper disposal costs)
   f) Specialized instrumentation and calibration equipment
   g) Rigging and handling equipment
   h) Consumables and general supplies
   i) Cleaning Supplies
   j) Shop equipment installed in Project
   k) Authorized leased equipment
   l) Specialized test and calibration equipment
   m) Major equipment overhauls
   n) Building repairs and maintenance (not caused by contractors under the Project Agreements)
   o) Insurance costs
   p) Taxes (excluding income) required to be paid by Contractor
   q) Costs related to training of plant personnel
   r) Consultants' fees and expenses, if incorporated in the Annual Budget or otherwise approved in advance by Employer.
   s) Contract Services, if incorporated in the Annual Budget or otherwise approved in advance by Employer.
2) The following will be Reimbursable Costs when specifically related to Project support:
   a) Office supplies
   b) Office equipment and furniture
   c) Telephone and other communication service charges
   d) Freight and express mail charges
   e) Janitorial, cleaning, and groundskeeping services

All Services by Contractor that support Facility activities and all Reimbursable Costs shall be approved by Employer, through the Annual Budget or otherwise, prior to implementation by Contractor.

APPENDIX C: Communication Procedure

Communication procedure will be established after sign of the contract. The contractor will propose a communication procedure for the approval of the employer immediately after signing of the contract.

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Schedule C: Know-How Transfer and Training

1. Know-How and Systems to be Transferred

Contractor shall carry out training and transfer technology to Operators and Maintenance Personnel of the Employer so that they will be able to carry out the routine Operation and Maintenance independently by the end of this Operation and Maintenance Contract.

2. Software, Systems and Manuals to be Left at the End of the Contract

Any and all software, systems and manuals purchased / developed by the Contractor for carrying out the monitoring, operation and maintenance of the Facility and for which payment has been made by the Employer shall be handed over to the Employer along with software keys, passwords, hardware dongles, user manuals, etc. as applicable.

3. Training Program Required

Contractor shall design, schedule, organize and carryout necessary onshore and offshore trainings for Employer's Operation and Maintenance Personnel to achieve the objectives stated in 1 above.

4. Onsite Training Program Required

a) The bidder shall provide the on-job training to the employees appointed by the owner. so as to make them capable for prudent operation and maintenance of the power plant. The training place shall be on project site.

b) Bidder training is mainly aimed at the field of plant-wide operation and maintenance technology .The bidder shall be responsible for management and planning of the on-site training provided by the Equipment manufacturers at project site. With co-ordination of EPC contractor, the bidder will negotiate with equipment manufacturer regarding planning and management of these on-job training program.

c) The bidder will plan (training schedule, format of teaching plan which could be finalize after communicating with owner) and provide a uniform training service to the owner. The training program need to be corelated with the training program provided by the EPC contractor. The training program need to cover overall operation and maintenance of whole plant (including every system and sub-system)

d) The bidder's training type will be field training, the field training should include theoretical teaching with the practical practice, the training scope including, but not limited to (annex 1). Bidder shall send relevant professional training teachers for on-site training, equipped with translator. Training teachers should be fluent in English. The teachers will train the engineers from owner and Make them understand the principle and characteristics of the equipment, and also make them expert in system diagram, operation and maintenance procedures and accident handling, etc.

e) The on-site theoretical training course divided into operation training and maintenance training, with two common courses of the same duration of 4 weeks. The common courses are concentrated and completed in range of 6-8 weeks. After the completion of the theoretical on-site training, the practical on-job training will start gradually.

f) All training should be carried out throughout the contract duration.

g) The bidder shall prepare (English) training program and training materials, provide electronic version via CD, and submit all relevant training documents to owner for approval; The number of copies of training materials shall meet the training needs of

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operation person of the owner. The owner has the right to request the additional of a certain number of training materials without increasing the cost.

h) Bidder is responsible for the training, management and assessment of the owner's operation and maintenance personnel. The management of the owner will also participate in the assessment.

i) All training responsibilities of bidder will not be discharged upon EPC contractor's receipt of Provisional Acceptance Certificate and Final Completion Certificate issued by the owner. The specific training completion time is subject to the actual contractual training period and personnel replacement effect.

5. The Requirement of Operation Guidance During Training and Gradual Handover Period

a) The bidder will provide the qualified operators to start on-the-job training for owner trainees during the commissioning of the unit. One-to-one training should be considered for operating positions above the chief shift operator and main operator guideline the operation, the training can be arranged according to the on-site operation for positions below deputy operator. According to the operation guidance work of one unit, the time is from the beginning of the training to the training personnel can operate the unit independently. If two or more units need to provide operation guidance at the same time, the number of operation guidance personnel shall be supplemented, and the specific number shall be agreed by owner and contractor both.

The main work of operation guidance includes:

I. Correctly guide the owner's operator to carry out the daily operation of the power plant during normal operation period after unit COD.

II. According to the operation instructions, participate in work of start-up of the sub-system and overall.

III. Monitor and witness with the operation process, prevent mis-operation and correct illegal operation in time.

IV. Monitor the operating conditions of the unit, timely find abnormal conditions of the unit and take measures.

V. Handle accidents according to contingency plans in case of emergency.

VI. Guide operation adjustment during unit performance test.

b) The operation supervisor shall have-more than 3 years of work experience in the same position of the same type of power plant.

c) The chief shift operator should have a good command of English and good language communication skills, and be able to communicate well with the owner's operation person.

d) Operation person should have good ideological and moral character, physical health; bidder shall submit the qualification and resume of operation personnel for owner's record and review.

e) Owner shall provide the site and classrooms required for the on-site training, while bidder shall provide necessary training materials, school supplies and stationery required before the training finished.

f) Training of on-job operators in phasing of replacement plan:

After the training operators pass the assessment, can be take practical operation in the operation and maintenance company or the joint venture company according to the position characteristics.

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After taking up the post, in addition to completing their own work, they will continue to be trained and evaluated continuously by experts or direct superiors in accordance with the training plan, and the competent operators will gradually replace the operators base on the replacement plan.

The operation guidance plan is scheduled to be deploy in three months, including one month of escort and real-time consultation after the operator took over the operation

The Key positions of owner (but not limited to) for single unit are as below:

Serials No.	Post	Recommended staff No.	Note
1.	Operation manager	1	Regular working hours
2.	Deputy operation manager	1	Regular working hours
3.	Trainer & statistician	1	Regular working hours
4.	Fuel manager	1	Regular working hours
5.	Turbine operation engineer	1	Regular working hours
6.	Boiler operation engineer	1	Regular working hours
7.	Electrical operation engineer	1	Regular working hours
8.	Ash & desulfurization operation engineer	1	Regular working hours
9.	Coal supply operation engineer	1	Regular working hours
10.	Chemical operation engineer	1	Regular working hours
11.	Shift chief operator	5	4 shifts with 1 staff on duty each shift

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12.	DCS main operator on duty	10	4 shifts with 1 staff on duty each shift
13.	Ash & desulfurization main operator on duty	5	4 shifts with 1 staff on duty each shift
14.	Chemical main operator on duty	5	4 shifts with 1 staff on duty each shift
15.	Coal supply main operator on duty	5	4 shifts with 1 staff on duty each shift
16.	Hydrogen producing technician	5	4 shifts with 1 staff on duty each shift
17.	Lab technician	2	Regular working hours
18.	Translator	4	4 shifts with 1 staff on duty each shift
	Total	51	

Staffing plan of operation posts during test run period will be 4 shifts with 3 shifts on duty. The above plan is given based on the operation guidance model. If there is any change during actual work, both parties shall negotiate to solve the problem. The entry of bidder's personnel shall be approved by the owner.

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Annex 1: The Operation Training Scope

No.	Training Module	Post training content	Post training requirement
1.	**unit BTG features**		
1.1	Boiler body features	1. Familiar with the overall structural characteristics of the 660MW unit boiler; 2. Familiar with the structure and layout characteristics of boiler economizer, water cooling wall, superheater and reheater; 3. Conversant with the model, type and main technical specifications of 660MW unit boilers.	1. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; 2. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with.
1.2	Turbine body features	1. Familiar with the overall structural characteristics of the 660MW unit steam turbine; 2. Familiar with the structure and layout characteristics of high-pressure cylinder, medium-pressure cylinder and low-pressure cylinder; 3. Conversant with the model, type and main technical specifications of the 660MW unit steam turbine.	1. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; 2. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with.

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1.3	Generator body features	1. Familiar with the overall structural characteristics of the 660MW unit generator set; 2. Familiar with the structure and layout characteristics of generator stator core, stator winding, rotor core, rotor winding and excitation system; 3. Conversant with the model, type and main technical specifications of the 660MW unit generator set.	1. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; 2. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with.
2.	**Boiler auxiliary equipment and system**		
2.1	Boiler feed water preheating and evaporation system	1. Familiar with boiler feed water preheating and evaporation system (economizer, water cooling wall) and its steam-water process; 2. Know the instability of the hydrodynamic features of the once-through boiler, and the thermal deviation and heat transfer deterioration of the water-cooling wall; 3. Familiar with the locations of the boiler economizer inlet, separator drainage, and separator outlet on-site sampling points; 4. Know the role of boiler water dosing, and be conversant with the standard values of main indicators of feed water quality during boiler startup and normal operation;	1. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; 2. Main operator on duty should know deputy operator on duty should know not required for senior patrol operator and patrol operator; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; 4. Main operator on duty and deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator has basic understanding;

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		5. Familiar with the operation and precautions of parallel pumping and decoupling of feed pumps during operation; 6. Conversant with the method of reducing the water replenishment rate of the unit on the boiler side; 7. Conversant with the influence of high-pressure heater shutdown during operation; and the adjustment method of the boiler after the high-pressure heater power outage; 8. Master the phenomenon, cause, treatment and preventive measures of boiler economizer and water-cooling wall leakage.	5. Main operator on duty and deputy operator on duty should master； senior patrol operator should know； patrol operator has basic understanding； 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with; 7. Main operator on duty and deputy operator on duty should be conversant with and master； senior patrol operator has basic understanding not required for patrol operator； 8. Main operator on duty and deputy operator on duty should master； senior patrol operator should know； not required for patrol operator.
2.2	Boiler Startup Circulation System	1. Familiar with the design characteristics of the 660MW unit boiler startup cycle system; 2. Familiar with the boiler startup cycle system and its steam water process, and be proficient in the location of related equipment, valves and in DCS screen operation; 3. Know the structural characteristics, working features and main technical specifications of the boiler start-up circulating pump, boiler start-up separator, boiler atmospheric expansion vessel, boiler water collection tank, and boiler start-up drainage pump;	1. Main operator on duty should be familiar； deputy operator on duty should know； not required for senior patrol operator and patrol operator； 2. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with： 3. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operate；

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		4. Conversant with the inspection and preparation before the startup of boiler startup circulating pump (including the water injection operation and water quality control of the startup circulating pump motor chamber), and master the operation and shutdown of the boiler startup circulating pump; 5. Conversant with the inspection and preparation before the startup of boiler startup drainage pump, and master the operation and shutdown of the boiler startup drainage pump; 6. Master the normal operation and maintenance items and main control parameters of boiler startup circulating pump and boiler startup drainage pump; 7. Conversant with the interlocking protection logic of the boiler startup circulating pump and boiler startup drainage pump, and master its related thermal control protection rated value; 8. Conversant with the inspection before startup, and start-up and stoppage operations of the water storage tank HWL valve oil station, and master the interlocking protection logic of the water storage tank HWL valve and the normal operation and maintenance items and main control parameters of the water storage tank HWL valve oil station;	4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master (patrol operator knows operation and outage procedures); 5. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 7. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; interlocking protection logic is not required for patrol operator, but they should master the protection rated value; 8. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with and master; 9. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know; 10. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know;

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		9. Proficient in inspection and repair of boiler startup circulating pump and startup drainage pump as well as restore backup safety technical measures and pre-control of dangerous points after overhaul; 10. Master the boiler startup circulation system, such as exception accident handling of abnormal water level of the water storage tank, tripping of the startup circulating pump, high temperature of the motor chamber of the startup circulating pump, and cavitation of the startup circulating pump, etc. 11. Know the difference of operation and precautions of the startup system with and without the startup circulating pump.	11. Main operator on duty should know not required for deputy operator on duty, senior patrol operator and patrol operator.
2.3	Boiler Superheater and Reheater Systems	1. Familiar with the structure, layout characteristics and working features of boiler superheater and reheater; 2. Familiar with boiler superheater and reheater systems and their steam-water process, and be proficient in location of related equipment and valves and operation in DCS screen; 3. Conversant with the configuration of the safety valve of the boiler superheating and reheating steam pipelines and the location of the sampling points of the boiler superheating and reheating steam;	1. Main operator on duty should be familiar; deputy operator on duty should know; senior patrol operator should have basic understanding; not required for patrol operator; 2. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with ; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with; 4. Main operator on duty and deputy operator on duty should be conversant with; senior patrol

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		4. Conversant with the standard values of main indicators of steam quality during boiler startup and normal operation; 5. Familiar with the protection of superheater and reheater settings, and conversant with how to protect superheater and reheater during startup; 6. Proficient in the limit value of wall temperature in the operation of boiler superheater and reheater; 7. Know the hazards of thermal deviation of boiler superheaters and reheaters, and be familiar with the measures adopted to reduce thermal deviation; 8. Master the adjustment requirements and methods of main stream pressure in boiler operation; 9. Master the abnormal phenomena, causes and treatment methods of main stream pressure and reheat steam pressure during boiler operation; 10. Master the phenomenon, cause, treatment and preventive measures of boiler superheater and reheater leakage; 11. Know the reasons for how the oxide scale comes into being in boiler superheater and reheater, and be familiar with the measures to prevent the oxide scale from falling off in operation.	operator should have basic understanding; not required for patrol operator; 5. Main operator on duty and deputy operator on duty should be conversant with; not required for senior patrol operator and patrol operator; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 7. Main operator on duty and deputy operator on duty should be familiar with; not required for senior patrol operator and patrol operator; 8. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 9. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know; 10. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; not required for patrol operator;

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			11. Main operator on duty should be familiar; deputy operator on duty should know; not required for senior patrol operator and patrol operator.
2.4	Boiler body water drainage and air release system	1. Familiar with the setting situation and discharge position of drainage and air release system of boiler body, familiar with the local position of relevant equipment, valves and operation in DCS screen; 2. Familiar with the interlocking protection logic of motor-operated valve of drainage and air release system of boiler body; 3. Understand the meaning of drainage and air release of boiler body, and master the switching requirements of valve of drainage and air release system of boiler body; 4. Master the operation method and precautions of water discharge with pressure after boiler outage.	1.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; 2. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with. 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master.
2.5	Boiler De-superheating water system	1. Familiar with the configuration of the desuperheater system of boiler superheated steam and reheated steam, and the layout position of the desuperheater, proficient in the local position of relevant equipment, valves and operation in DCS screen; 2. Familiar with the temperature regulation method of boiler superheated steam and reheated steam, master the temperature adjustment requirements and methods	1.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with. 2. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with.

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		of the main steam and reheated steam during the boiler operation; 3. Master the regulating characteristics of the desuperheater system of main and reheated steam, and the steam temperature control values before and after the desuperheater. 4. Familiar with interlocking protection logic of motor-operated valve and pneumatic control valve of desuperheater system of boiler superheated steam and reheated steam; 5. Master the abnormal phenomena, causes and treatment methods of main stream temperature and reheat steam temperature in boiler operation.	3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be master with. 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with. 5.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master.
2.6	Boiler fume system	1. Familiar with boiler air and flue gas system and master its air and flue gas process, proficient in the local position of related equipment, valves and operation in DCS screen; 2. Understand the structural characteristics, working characteristics and main technical specifications of boiler air preheater, forced draft fan, induced draft fan, primary fan and primary air heater; 3. Understand the working principle and characteristics of blade regulating mechanism of forced draft fan, induced draft fan and primary fan;	1.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; (the inspection position is familiar with DCS picture); 2. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 3. Master position understanding; Auxiliary value, high patrol, patrol posts are not required. 4.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be

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		4. Familiar with the inspection and preparation before starting of boiler air preheater, forced draft fan, induced draft fan and primary fan (including primary air heater), master the operation and shutdown of boiler air preheater, forced draft fan, induced draft fan and primary fan and primary air heater; 5. Master the normal operation and maintenance items and main control parameters of boiler air preheater, forced draft fan, induced draft fan and primary fan; 6. Proficient in starting and stopping test of oil pump of air preheater oil station in operation, regular work of oil pump and oil filter switching of forced draft fan, induced draft fan and primary fan; 7. Proficient in the operation and precautions of juxtaposed and unlined of forced draft fan, induced draft fan and primary fan during operation; 8. Master the safety technical measures and pre-control of danger points for outage and maintenance of single air preheater, forced draft fan, induced draft fan, primary fan and primary air heater in operation and recover for backup after maintenance; 9. Be familiar with the interlocking protection logic of boiler air preheater, forced draft fan, induced draft fan,	familiar with;(the inspection position is familiar with the operation, outage operation); 5. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 6.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 7. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with. 8. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with. 9. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with. The inspection post does not require the interlock protection logic, but should master the protection fixed value; 10. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with. (have a simple understanding of the

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		primary fan and relevant oil station, and master the relevant thermal control protection fixed value; 10. Master the function, working principle, operation method and matters needing attention of fan-shaped plate clearance adjustment device of air preheater. 11. Master the range of furnace pressure to be maintained in normal operation of boiler, and the significance of maintaining negative pressure in operation; 12. Master the range of oxygen in the boiler chamber during normal operation, and the significance of oxygen adjustment during operation; 13. Master the function of boiler smoke temperature probe, and matters needing attention for starting and stopping; 14. Master the exception accident handling of boiler air preheater, such as leakage risk control device failure, air preheater fire, air preheater rotor stops and other abnormal accidents; 15.Master the exception accident handling of forced draft fan, induced draft fan, primary fan, such as stall, surge, vibration, bearing temperature high abnormal accident treatment;	working principle of secondary value, high patrol and inspection positions); 11.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 12. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 13. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 14. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 15.Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 16.Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding;

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		16.Master boiler blower, induced draft fan, primary fan, such as stall, surge, vibration, bearing temperature high abnormal accident treatment; 17. Be familiar with the technical measures to prevent the fan from rushing, stalling and surge during operation.	17.Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding.
2.7	Boiler pulverizing system	1. Familiar with the definition of pulverized coal fineness, the meaning of R90 and R200, and be able to read the report sheet of pulverized coal fineness analysis; Master the qualified scope of pulverized coal fineness design and how to adjust and maintain the best pulverized coal fineness; 2. Familiar with the content of elemental analysis and industrial analysis of coal, able to read the coal quality analysis report; Master the classification standards of anthracite, lean coal, bituminous coal and lignite and the definition of low calorific value and high calorific value of coal and standard coal; 3. Master the methods to ensure the economical and safe operation of pulverizing system; 4. Familiar with boiler pulverizing system and master its wind and powder process, proficient in the local position of related equipment, valves and operation in DCS screen;	1. Main operator on duty should be familiar and secondary positions; High patrol post understanding; Inspection post is not required; 2. Main operator on duty should be familiar and secondary positions; High patrol post understanding; Inspection post is not required; 3. Main operator on duty should be familiar and secondary positions; High patrol post understanding; Inspection post is not required; 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; (the inspection position is familiar with DCS picture); 5. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator;

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		5. Understand the structural characteristics, working characteristics and main technical specifications of boiler coal grinder, separator, coal feeder and sealed fan; 6. Master the cooling water source of coal grinder oil station, reducer oil station, coal grinder bearing, motor oil station and motor air cooler; 7. Familiar with the inspection and preparation of coal mill, coal feeder and sealed fan before starting, master the operation and shutdown of coal mill, coal feeder and sealed fan; 8. Master the normal operation and maintenance items and main control parameters of boiler coal mill, coal feeder and sealed fan; 9. Skilled in regular operation of coal mill oil station oil pump, oil filter switching, sealing fan switching, etc.; 10. Proficient in safety technical measures and pre-control of danger points for outage and maintenance of coal mill, outage and maintenance of sealed fan and post-maintenance recovery; 11. Be familiar with the interlocking protection logic of boiler coal mill and its oil station, coal feeder and sealed fan, and master the relevant thermal control protection fixed value;	6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 7. Main operator on duty, and master the positions of primary value, secondary value, high patrol and inspection; (the inspection position is familiar with the operation, outage operation); 8.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 9. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 10. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 11. Main operator on duty should be familiar and secondary positions; High patrol post should be familiar with; The inspection post does not require the interlock protection logic, but should master the protection fixed value;

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		12. Master the exception accident handling of boiler pulverizing system, such as pulverizing system fire, pulverizing system explosion, coal feeder coal break, coal feeder belt slip, original coal bunker empty, mill full mill, mill bearing temperature is high, mill conveying device damage, sealing wind pressure drop, a powder tube blockage and other abnormal accident treatment; 13. Master technical measures to prevent explosion of pulverizing system, spontaneous combustion of raw coal bunker, spontaneous combustion of broken coal of coal feeder, full grinding of coal mill, failure of material level gauge of coal mill, blending and firing adjustment of Indonesian coal, etc.	12. Main operator on duty; High patrol position familiar; Understand the inspection post; 13. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding.
2.8	Boiler Burner System	1. Familiar with the boiler burner air distribution mode and boiler combustion air distribution regulation principle, master the method to judge the combustion situation in the furnace from the change of the furnace flame; 2. Familiar with the functions, characteristics and regulation methods of primary wind (including perimeter wind) and secondary wind (including auxiliary wind, fuel wind and ember wind); 3. Familiar with the factors affecting the ignition of pulverized coal airflow, and master the guarantee measures for the continuous and stable ignition of pulverized coal airflow;	1. Master position the main; Deputy post understanding; High patrol post simple understanding; Inspection post is not required; 2. Main operator on duty should be familiar and secondary positions; High patrol post understanding; Inspection post is not required; 3. Master position the main; Deputy position should be familiar with; High patrol post understanding; Inspection post is not required; 4. Main operator on duty should be familiar and secondary positions; High patrol post understanding; Inspection post is not required;

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		4. Familiar with the meaning of boiler furnace purging, master the conditions of furnace purging; 5. Familiar with the ignition method of boiler burner, master the necessary conditions for pulverized coal burner and oil burner ignition; 6. Master the functions of boiler pre-furnace fuel oil system, boiler micro-oil ignition system and scanner fan and the maintenance range of basic parameters in normal operation; 7. Familiar with boiler burner system, pre-furnace fuel system, micro-oil ignition system, scanner cooling air system and its process (including the connection of oil supply pipeline before the oil depot comes to the furnace), proficient in the local position of related equipment, valves and operation in DCS screen; 8. Understand the arrangement type, structure characteristics, working principle and main technical specifications of boiler pulverized coal burner, oil burner and scanner fan; 9. Familiar with the input conditions of pulverized coal burner and oil burner, master the program-controlled input and manual input operation of oil burner; 10. Be familiar with the inspection and preparation of pre-furnace fuel system, micro-oil ignition system and	5. Main operator on duty should be familiar and secondary positions; High patrol post understanding; Inspection post is not required; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master: 7. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; (the inspection position is familiar with DCS picture); 8. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 9. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master: 10.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; (the inspection position is familiar with operation and outage operation); 11.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master:

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		scanner fan, and master the operation and shutdown of pre-furnace fuel system, micro-oil ignition system and scanner fan; 11. Master the normal operation and maintenance items and main control parameters of boiler pre-furnace fuel oil system, micro-oil ignition system, scanner fan; 12. Proficient in regular work such as oil gun ignition test, fire inspection and scanner fan switch in operation; 13. Familiar with safety technical measures and pre-control of danger points for outage and maintenance of oil gun, outage and maintenance of scanner fan and post-maintenance recovery; 14. Familiar with the characteristics of boiler fuel oil and the control range of pressure and temperature of fuel oil system, and master the adjustment methods; 15. Master the requirements and methods of combustion adjustment in boiler operation; 16. Familiar with the matters needing attention of combustion adjustment when boiler is running under low load and burning inferior coal;	12. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 13. Master both primary and secondary positions; High patrol post should be familiar with, patrol post understanding; 14.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; (auxiliary value, high patrol and inspection positions do not require fuel characteristics); 15. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 16. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 17. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 18. Master primary value and secondary value positions; High patrol post should be familiar with; The inspection post does not require the interlock

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		17. Master precautions for burner loss prevention and combustion adjustment when high volatile coal is used in boiler; 18. Be familiar with the interlocking protection logic of boiler pulverized coal burner, oil burner and scanner fan, and master the relevant thermal control protection fixed value; 19. Familiar with the working principle and function of boiler burner flame detection, and master how to realize the logic of thermal control when losing all flame; 20. Familiar with the interlocking logic of heat control of oil injection and powder cutting in boiler RB operation; 21. Master the phenomenon, cause, harm, treatment and prevention measures of coking in boiler operation; 22. Master the treatment methods and preventive measures for the fire of the fuel oil system in front of the boiler; 23. Familiar with the causes and adjustment methods of high carbon content of fly ash combustibles and ash slag in boiler operation; 24. Familiar with technical measures to prevent damage of burner over temperature and burner coking during operation	protection logic, but should master the protection fixed value; 19. Be familiar with and master the main position; Deputy post understanding; High patrol and inspection post are not required. 20. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 21. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 22.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; High patrol, inspection posts should be familiar with; 23. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 24.Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding;

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2.9	Boiler shoot blowing system	1. Familiar with the quantity and arrangement of long telescopic, semi-telescopic, furnace soot-blower and air preheater soot-blower; 2. Master the soot blowing steam process of furnace body and air preheater and the local position of related equipment and valves as well as the operation in DCS screen; 3. Understand the structural characteristics, working characteristics and main technical specifications of boiler body long telescopic, semi-telescopic, furnace soot blower and air preheater soot blower; 4. Master soot blowing steam source and parameters of furnace body and air preheater; 5. Familiar with the requirements and matters needing attention during operation of boiler soot blowing system; 6. Master how to judge whether the soot blower exits or not and the harm caused by the failure of the soot blower; 7. Be familiar with the influence of soot blowing in boiler furnace and tail flue on main and reheat steam temperature;	1. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with ; 2. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with ; 3. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 4.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with ; 5.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with ; 6.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 7.Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding;

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		8. Master the emergency stops conditions of the boiler soot blower, and pre-control the dangerous points such as boiler fire extinguishing, main steam and reheat steam temperature overtemperature, negative pressure fluctuation in the furnace, air preheater ash blocking, soot blower staying in the middle position in the process of soot blowing;	8.Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding;
2.10	Boiler slag removal system	1. Familiar with the function and arrangement of boiler slag removal system, master the local position and equipment operation of slag removal machine, slag well, hydraulic shut-off door and slag bin; 2. Know the structure characteristics and technical specifications of slag removing machine, driving hydraulic oil station, hydraulic shut-off door and hydraulic oil station, slag bin and dust removing fan of slag bin; 3.Familiar with interlocking protection of slag removal system; 4. Master the pre-operation inspection of boiler slag removal system and the operation of slag removal system; 5. Master the local oil station start-up inspection of hydraulic shut-off door of slag remover and the opening and closing operation of hydraulic shut-off door;	1. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with ; 2. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 3. Be familiar with primary and secondary positions; High patrol post should understand; The inspection position should be simple understanding; 4.. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with ; (the inspection position is familiar with operation); 5.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with;

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		6. Master the abnormal operation and tripping of the steel strip machine in the boiler slag removal system and the matters needing attention.	6.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with.
2.11	Industrial water, firefighting water system	1. Familiar with pipe network layout and process of industrial water system and firefighting water system, familiar with local position of users, equipment and valves of industrial water system; 2. Familiar with the parts related to the industrial water system and the main plant HVAC system; 3. Understand the inspection and preparation before putting into operation of industrial water system and firefighting water system, and understand the commissioning, outage operation and maintenance items in normal operation of industrial water system and firefighting water system; 4. Proficient in safety technical measures and pre-control of danger points for overhaul of industrial water system and firefighting water system; 5. Master the handling of the accident of abnormal drop in the pressure of the industrial water system and firefighting water system, and deeply understand the impact of the complete shutdown of industrial water pumps and firefighting water pumps on the operation of the unit equipment.	1.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 2. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 3. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 4.Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 5. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding.

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2.12	Compressed air systems	1. Familiar with the pipe network layout and process of compressed air for instrument, miscellaneous compressed air and ash removal compressed air system, familiar with the local position of users, equipment and valves of compressed air system; 2. Familiar with the use, difference and correlation of compressed air for instrument, miscellaneous compressed air and ash removal compressed air; 3. Understand the normal operation and maintenance items and main control parameters of compressed air system; 4. Understand the interlocking protection logic of compressed air system, and grasp its relevant thermal control protection fixed value; 5. Familiar with the safety technical measures for the overhaul of compressed air system and the pre-control of danger points; 6. Master the accident handling of abnormal pressure drops of main pipe of compressed air system, and deeply understand the impact of complete shutdown of air compressor on the operation of unit equipment.	1. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 2. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 3. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 4. Master position is familiar with interlock protection logic; There is no requirement for interlock protection logic for auxiliary value, high patrol and inspection posts; Primary value, secondary value, high patrol, patrol post should grasp the protection fixed value; 5.Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 6. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding.

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3.	**Steam turbine auxiliary equipment and system**		
3.1	Circulating water and rubber ball cleaning system	1. Familiar with circulating water supply system, condenser rubber ball system, cooling water system of circulating water pump group, oil station system of circulating water pump outlet hydraulic butterfly valve and master its process; proficient in the local position of relevant equipment, valves and operation in DCS screen; 2. Master users and investment timing of circulating water supply system, water source discharged into cooling tower, familiar with parts related to condenser circulating water system, HVAC system and rubber ball cleaning system of main workshop; 3. Understand the structural characteristics, working characteristics and main technical specifications of cooling tower, circulating water pump, outlet liquid-controlled butterfly valve and rubber ball cleaning device; 4. Familiar with the inspection and preparation before starting circulating water supply system and rubber ball cleaning system (including cooling water system of circulating water pump group, oil station system of circulating water pump outlet hydraulic butterfly valve), master the operation and shutdown operation of circulating water pump and rubber ball cleaning device in different ways;	1. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; (the inspection position is familiar with DCS picture); 2.Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know 3. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 4. Be familiar with and master the primary value, secondary value, high patrol and inspection positions (the inspection position is familiar with operation and outage operation); 5.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 6.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 7. Main operator on duty and deputy operator on duty should master; senior patrol operator should

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		5. Master the normal operation and maintenance items and main control parameters of circulating water supply system and rubber ball cleaning system; 6. Be skilled in switching circulating water pump during operation, start-stop test of sewage pump in pump house, start-stop of rubber ball cleaning device, etc.; 7. Master the shutdown, recovery operation and matters needing attention for unilateral leak detection or cleaning of condenser in operation of the unit; 8. Proficient in safety technical measures and pre-control of danger points for outage and maintenance of single circulating water pump set, outage and maintenance of rubber ball cleaning device and post-maintenance recovery, safety technical measures and pre-control of danger points for pressure relief and water release of circulating water system after outage of unit (including water release from cooling tower pool); 9. Be familiar with the interlocking protection logic of circulating water supply system (including cooling water system of circulating water pump group, oil station system of circulating water pump outlet hydraulic butterfly valve) and rubber ball cleaning device, and master the relevant thermal control protection fixed value;	know; patrol operator should have basic understanding; 8. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 9. Master the positions of primary value and secondary value; High patrol post should be familiar with; The inspection post does not require the interlock protection logic, but should master the protection fixed value; 10. Be familiar with both primary and secondary positions; High patrol post understanding, patrol post simple understanding; 11.Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 12.Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding;

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		10. Be familiar with the qualified standards of the operation rate and ball collection rate of the condenser rubber ball cleaning device, and understand the factors affecting the ball collection rate of the rubber ball cleaning device; 11. Master the treatment of circulating water supply system, such as trip of circulating water pump, reversal of circulating water pump, pressure drop of circulating jellyfish pipe, pressure drop of oil station of circulating water pump outlet hydraulic butterfly valve, and deeply understand the impact of circulating water interruption on unit equipment operation; 12. Master technical measures to prevent circulating water interruption, water-flooded condensate pit, water-flooded circulating pump outlet liquid-controlled butterfly valve pit, etc.;	
3.2	Open circulating cooling water system	1. Familiar with open circulating cooling water system and its process, familiar with the local position of relevant equipment, valves and DCS screen operation; 2. Master the users and investment timing of the open circulating cooling water system, and be familiar with the parts related to the open circulating cooling water system and the HVAC system of the main plant; 3. Familiar with the inspection and preparation before the start of open circulating cooling water system,	1.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; (the inspection position is familiar with DCS picture); 2.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; High patrol, inspection posts should be familiar with; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be

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		master the operation and shutdown of open circulating cooling water system; 4. Master the normal operation and maintenance items and main control parameters of open circulating cooling water system;	familiar with and master (patrol operator knows operation and outage procedures); 4.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master;
3.3	closed circulation cooling water system	1. Familiar with closed circulation cooling water system and its process, familiar with the local position of related equipment, valves and DCS screen operation; 2. Master the users and input timing of closed circulation cooling water system, and be familiar with the location of chemical sampling point and chemical dosing point of closed circulation cooling water; 3. Understand the structural characteristics, operating characteristics and main technical specifications of closed circulation cooling pumps and closed water cooler; 4. Familiar with the inspection and preparation before start-up of closed circulation cooling water system, master the operation and shutdown of closed circulation cooling water system;	1.. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; (the inspection position is familiar with DCS picture); 2. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; High patrol, inspection posts should be familiar with; 3. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master (patrol operator knows operation and outage procedures);

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		5. Master the normal operation and maintenance items and main control parameters of closed circulation cooling water system; 6. Skilled in regular operation such as switching of closed circulation cooling water pump and closed water cooler in operation; 7. Familiar with safety technical measures and pre-control of danger points for outage and maintenance of a single closed-cycle cooling water pump, outage and maintenance of closed water cooler, and recovery after maintenance; 8. Be familiar with the interlocking protection logic of closed circulation cooling water system, and grasp the relevant thermal control protection fixed value; 9. Master the treatments of closed circulation cooling water system, such as the trip of the closed circulation cooling water pump, the reversal of the closed circulation cooling water pump, the drop of the pressure of the jellyfish tube, the abnormal handling of the high temperature of the closed circulation cooling water, and deeply understand the impact of the interruption of the closed circulation cooling water on the operation of the unit equipment.	5. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 7. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 8. Master primary value and secondary value positions; High patrol post should be familiar with; The inspection post does not require the interlock protection logic, but should master the protection fixed value; 9. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding.
3.4	condensate system	1. Familiar with condensate system and its process, familiar with the local position of relevant equipment, valves and DCS screen operation;	1. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should

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		2. Master the users and investment timing of condensate system (including condensate), and be familiar with chemical sampling points of condensate and the locations of oxygen and dosing points; 3. Understand the structural characteristics, working characteristics and main technical specifications of condenser and condensate pump; 4. Be familiar with the function of minimum flow recirculation of condensate, and master when the minimum flow recirculation valve of condensate opens and closes; 5. Be familiar with the heat loads connected to the condenser and the locations of the heat loads; 6. Be familiar with the definition of terminal temperature difference of condenser, supercooling degree of condensate water and temperature rise of circulating water, and master the influence of these indicators on unit operation; 7. Be familiar with the method of reducing water refill rate of turbine side; 8. Familiar with the inspection and preparation before start-up of condensate water system, master the operation and shutdown of condensate water system;	master; (the inspection position is familiar with DCS picture); 2. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; High patrol, inspection posts should be familiar with; 3. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 5.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; High patrol, inspection posts should be familiar with; 6.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; High patrol, inspection posts should be familiar with; 7. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; High patrol, inspection posts should be familiar with;

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		9. Master the normal operation and maintenance items and main control parameters of condensate system; 10. Master the requirements of flushing and discharge operation and water quality control of condensate system pipes, and be familiar with the standard values of main indicators of condensate quality in start-up and normal operation of units; 11. Proficient in switching operation of power frequency and frequency conversion condensate pumps in operation; 12. Familiar with the safety technical measures and the pre-control of danger points for the outage and maintenance of a single condensate pump in operation and the recovery of standby after maintenance; 13. Be familiar with the interlocking protection logic of condensate water system, and master its related thermal control protection fixed value; 14. Master exception accident handling of condensate system, such as tripping of condensate pump, cavitation of condensate pump, interruption of sealing water of condensate pump, blockage of filter at inlet of condensate pump, drop of pressure of jelly tube, abnormal water level of condenser, etc., and deeply	8. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; High patrol, inspection posts should be familiar with; 9.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 10. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 11. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 12. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 13. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; interlocking protection logic is not required for patrol operator, but they should master the protection rated value;

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		understand the impact of condensate interruption on the operation of unit equipment.	14. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding.
3.5	Deoxygenation and main feed water system	1. Familiar with deoxygenation and main feed water system and master its process, master the local position of relevant equipment, valves and DCS screen operation; 2. Be familiar with the locations of chemical sampling points, oxygen and dosing points of deoxygenation and main feed water system; 3. Be familiar with the structural characteristics, working characteristics and main technical specifications of deaerator, water supply pre-pump and main feed pump; 4. Be familiar with the protection device of the deaerator and the water and steam sources connected on the deaerator body; 5. Master the switching timing of deaerator auxiliary steam source and fourth steam extraction source, and be familiar with the interlocking relationship between them; 6. Be familiar with the function of minimum flow recirculation and middle tap of feed pump, and master	1. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; (the inspection position is familiar with DCS picture); 2.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; 3. Main operator on duty should be familiar with; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; 5. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding;

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		when the minimum flow recirculation valve of feed pump is opened and closed; 7. Be familiar with the correlation of feed pump sealing water supply, feed pump sealing water return water, feed pump sealing unloading water, and master the recovery method of feed pump sealing water; 8. Familiar with the inspection and preparation of deaerator before it is put into operation, and master the operation and shutdown of deaerator; 9. Be familiar with the inspection and preparation before putting water supply pre-pump into operation, and master the operation and shutdown of water supply pre-pump; 10. Master the normal operation and maintenance items and main control parameters of deaerator, water supply pre-pump and main feed pump; 11. Master the requirements of pipeline flushing and discharge operation and water quality control of deoxygenation and low-pressure main water supply system, and be familiar with the standard values of main quality indicators of main water supply during unit start-up and normal operation; 12. Familiar with the safety technical measures and the pre-control of danger points for the outage and	6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be master with. 7. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; High patrol, inspection posts should be familiar with; 8.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be master with. 9. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be master with. 10. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be master with. 11.Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 12.Main operator on duty and deputy operator on duty should master; senior patrol operator should

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		maintenance of a single water supply pre-pump or the main water supply pump; 13. Familiar with the interlock protection logic of deaerator, feed water pre-pump and main feed water pump, and master the relevant thermal control protection setting value; 14. Master exception accident handling of deaerator system, such as deaerator vibration, abnormal deaerator pressure, abnormal deaerator water level and other abnormal accident treatment, and deeply understand the impact of deaerator explosion and abnormal high-water level on the operation of unit equipment; 15. Master the treatment of abnormal accidents such as vaporization, reversal, high bearing temperature, high vibration and sealing water interruption of the pre-feed pump/main feed pump	know; patrol operator should have basic understanding; 13. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; interlocking protection logic is not required for patrol operator, but they should master the protection rated value; 14. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding; 15.Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding
3.6	Steam driven turbine	1. Be familiar with high- and low-pressure steam intake system, shaft seal and vacuum system, lubricating oil system, EH oil system of steam driven turbine and master their process, master the local position of relevant equipment, valves and operation in DCS screen; 2. Familiar with MEH screen operation of steam driven turbine; 3. Familiar with the model, type, structural characteristics and main technical specifications of	1. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know DCS screen）; 2. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know MEH screen）;

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		steam driven turbine, understand the structural characteristics, working principle and main technical specifications of lubricating oil system and EH oil system and auxiliary equipment steam driven turbine; 4. Familiar with the forbidden start-up conditions of steam driven turbine, master the flushing conditions of steam driven turbine, inspection and preparation before flushing, flushing operation, steam source switch and shutdown operation; 5. Master the methods and precautions of the turning device of steam driven turbine; 6. Master the normal operation and maintenance items and main control parameters of steam driven turbine; 7. Skilled in the regular work of start and stop of AC lubricating oil pump switch, DC lubricating oil pump of steam driven turbine, lubricating oil cooler switch, lubricating oil filter switch, turning gear test, EH oil pump switch, EH oil circulation cooling pump switch, lubricating oil box bottom water discharge, etc.; 8. Skilled in the maintenance work such as trip protection test, overspeed test, high pressure blocking module test and switching valve activity test of steam driven turbine;	3. Main operator on duty should be familiar； deputy operator on duty should know senior patrol operator should have basic understanding； not required for patrol operator； 4. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know Operation of flushing and outage）； 5. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 7. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 8. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; patrol operator should know; 9. Main operator on duty and deputy operator on duty should be conversant with and master; senior

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		9. Familiar with safety technical measures and pre-control of danger points for outage maintenance and recovery for backup of single steam driven turbine in operation; 10. Be familiar with the interlock protection logic of steam driven turbine and its auxiliary system, and master its related thermal control protection fixed value; 11. Be familiar with the conditions of emergency shutdown of steam turbine driving feed pump, and master the handling of abnormal accidents such as overspeed, water shock, blade fracture, vibration, oil pressure drop and oil system fire of steam driven turbine.	patrol operator should be conversant with; patrol operator should know; 10. Main operator on duty and deputy operator on duty should master； senior patrol operator should be conversant with; interlocking protection logic is not required for patrol operator, but they should master the protection rated value； 11. Main operator on duty and deputy operator on duty should master； senior patrol operator should be conversant with; patrol operator on duty should know.
3.7	Regenerative extraction steam and heater system	1. Familiar with drainage system of extraction steam system, high/low pressure heater drainage and air release system and master their processes, familiar with the local position of relevant equipment, valves and operation in DCS screen; 2. Understand the structural characteristics, working characteristics and main technical specifications of low-pressure heater, high pressure heater, drain pump of LP. Master the hydrophobic mode and principle of high and low-pressure heaters, as well as the difference between starting and continuous exhaust steam, and be familiar with the position of chemical sampling point of hydrophobic heater and hydrophobic control standard;	1. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know DCS screen）； 2. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master;

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		5. Be familiar with the inspection and preparation before putting the heater into operation, and master the operation of putting the heater into operation and shutting down; 6. Master the normal operation and maintenance items and main control parameters of heat recovery steam extraction and heater system; 7. Capable of conducting regular work such as activity test of extraction check value and switching of drain pump of low-pressure heater; 8. Master the arrangement of all the hydrophobic points and measuring points of each parameter on the pipes of the regenerative steam extraction system, and deeply understand the influence of the temperature change of the pipes of the regenerative steam extraction system on the operation of the unit equipment; 9. Be familiar with the temperature, pressure and flow rate of steam recovery and extraction in each section, and the significance of monitoring the pressure in each monitoring section during operation; 10. Familiar with the safety technical measures and the pre-control of danger points for the outage and maintenance of some heaters during operation and the recovery for backup after maintenance;	4. Main operator on duty, deputy operator on duty and senior patrol operator should be conversant with and master; patrol operator should be conversant with; 5. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 7. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; （patrol operator should know Exhaust steam reverse check door moving test） 8. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding not required for patrol operator; 9. Main operator on duty and deputy operator on duty should be conversant with and master senior patrol operator should have basic understanding; not required for patrol operator;

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		11. Familiar with the interlocking protection logic of regenerative steam extraction and heater system, and grasp the relevant thermal control protection value; 12. Master exception accident handling of regenerative steam extraction and heater system, such as heater vibration, heater trip, abnormal water level of heater, trip of low suction pump and other abnormal accidents, and deeply understand the influence of heater on the safe and economic operation of unit.	10.Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know; 11. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; interlocking protection logic is not required for patrol operator, but they should master the protection rated value; 12. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know.
3.8	Main and reheated steam and high- and low-pressure bypass system	1. Familiar with main and reheat steam system, high- and low-pressure bypass system and master its process, familiar with the local position of relevant equipment, valves and operation in DCS screen; 2. Master the type, capacity, main design parameters and oil station flow and operation of high- and low-pressure steam turbine bypass system; 3. Familiar with the arrangement of all drainage points on main steam, reheat steam and pipes of high- and low-pressure bypass system, and deeply understand the influence of temperature changes of main stream, reheat steam and pipes of high- and low-pressure bypass system on unit operation;	1. Main operator on duty， deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know DCS screen）； 2. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 3. Main operator on duty， deputy operator on duty senior patrol operator and patrol operator should be conversant with and master; （senior patrol operator and patrol operator should master the layout of hydrophobic points）

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		4. Master the normal operation and maintenance items and main control parameters of main and reheat steam system and high- and low-pressure bypass system; 5. Master the coordination measures and matters needing attention of main stream, reheat steam and high- and low-pressure bypass system during boiler hydraulic test; 6. Master the operation and precautions of main and reheat steam and high- and low-pressure bypass system during startup and shutdown; 7. Be familiar with the interlocking protection logic of main reheat steam system and high- and low-pressure bypass system, and grasp the relevant thermal control protection setting value.	4. Main operator on duty，deputy operator on duty senior patrol operator and patrol operator should master; 5. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; not required for patrol operator; 6. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; not required for patrol operator; 7. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; interlocking protection logic is not required for patrol operator, but they should master the protection rated value.
3.9	Auxiliary steam system	1. Be familiar with auxiliary steam system and master their process, master the local position of relevant equipment, valves and DCS screen operation; 2. Be familiar with the arrangement of all hydrophobic points on the pipes of auxiliary steam system; 3. Familiar with steam source, normal operation mode and users of auxiliary steam header; 4. Master the normal operation and maintenance items and main control parameters of auxiliary steam system;	1. Main operator on duty，deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know DCS screen）； 2. Main operator on duty，deputy operator on duty senior patrol operator and patrol operator should be conversant with and master; 3. Main operator on duty，deputy operator on duty senior patrol operator and patrol operator should be conversant with and master;

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		5. Familiar with auxiliary steam system, and disassembly operation and matters needing attention; 6. Be familiar with the interlocking protection logic of auxiliary steam system, and master the relevant thermal control protection fixed value; 7. Master exception accident handling of auxiliary steam system, such as pressure loss, overpressure and other abnormal accident treatment, deeply understand the influence of auxiliary steam system pressure loss on unit equipment operation.	4. Main operator on duty， deputy operator on duty senior patrol operator and patrol operator should master； 5. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should master； 6. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; interlocking protection logic is not required for patrol operator, but they should master the protection rated value； 7. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know.
3.10	Shaft seal and vacuum system	1. Familiar with shaft seal system and vacuum system and master their process, familiar with the local position of related equipment and valves and DCS and DEH screen operation; 2. Understand the structural characteristics, working characteristics and main technical specifications of shaft seal heater, shaft fan and vacuum pump; 3. Familiar with the relationship among atmospheric pressure, absolute pressure and vacuum, and familiar	. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know DCS screen）； 2. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator；

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		with the definition of rated vacuum, optimal vacuum and ultimate vacuum; 4. Familiar with the interlocking protection logic of shaft seal system and vacuum system, and master the relevant thermal control protection fixed value; 5. Master the normal operation and maintenance items and main control parameters of shaft seal system and vacuum system; 6. Proficient in vacuum tightness test, vacuum pump switching, shaft fan switching and other regular work; 7. Familiar with the inspection and preparation of shaft sealing system and vacuum system before putting into operation, master the operation and shutdown of shaft sealing system and vacuum system; 8. Be familiar with the influence of temperature and pressure changes of shaft seal steam on turning gear during turning gear operation; 9. Be familiar with the conditions of vacuum system irrigation for leak detection after turbine shutdown, and master the technical measures and matters needing attention of vacuum system irrigation for leak detection; 10. Master exception accident handling of shaft seal and vacuum system, such as vacuum pump trip, shaft seal	3. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should be conversant with and master; 4. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; interlocking protection logic is not required for patrol operator, but they should master the protection rated value; 5.Main operator on duty deputy operator on duty senior patrol operator and patrol operator should master; 6. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should master; 7. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 8. Main operator on duty and deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding;

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		steam emission, shaft seal pressure loss, shaft seal insufficient steam supply and other abnormal accidents, and deeply understand the influence of shaft seal system pressure loss on the safe operation of the unit.	9. Main operator on duty deputy operator on duty and senior patrol operator should master patrol operator should be conversant with; 10. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know.
3.11	Main turbine lubricating oil and jacking shaft oil system	1. Be familiar with the lubricating oil system and jacking shaft oil system of the turbine and master their process, master the local position of relevant equipment, valves and DEH screen operation; 2. Understand the structural characteristics, working characteristics and main technical specifications of main fuel tank, AC lubricating oil pump, DC lubricating oil pump, jacking shaft oil pump, turning gear, fume exhaust fan, lubricating oil cooler, lubricating oil filter and lubricating oil temperature control valve; 3. Familiar with the inspection and preparation of lubricating oil system of turbine, jacking shaft oil system and turning gear before starting, master the operation and shutdown of lubricating oil system of turbine, jacking shaft oil system and turning gear (including oil purification device); 4. Master lubricating oil system, jacking shaft oil system and normal operation and maintenance items and main control parameters of the turbine;	1. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know DCS screen）； 2. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator； 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with and master； 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master； 5. Main operator on duty should master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should

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		5. Familiar with the characteristics and oil quality requirements of lubricating oil of the main engine, master the influence of oil quality deterioration on the safe operation of the unit and preventive measures; 6. Skilled in regular work such as water discharge of main oil tank, switch of lubrication oil pump, start and stop of dc lubrication oil pump, jacking shaft oil pump test, switch of fume exhaust fan, switch of lubricating oil cooler, switch of lubricating oil filter, fume exhaust fan outlet pipe bottom sewage discharge, etc.; 7. Master the safety technical measures and pre-control of danger points for the outage and maintenance of lubricating oil pump, lubricating oil cooler, lubricating oil filter and its recovery after maintenance, and the outage and maintenance of the coil after shutdown; 8. Familiar with the interlock protection logic of the lubricating oil system of the turbine, the jacking shaft oil system and the turning gear (including the emergency oil supply trigger of the lubricating oil system), and master the relevant thermal control protection fixed value; 9. Master the handling of lubricating oil and jacking oil system of the turbine, such as abnormal lubricating oil quality, abnormal lubricating oil temperature, abnormal lubricating oil pressure, abnormal oil level of the main tank, lubricating oil system fire, abnormal jacking oil	have basic understanding not required for patrol operator; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 7. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know; 8. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; interlocking protection logic is not required for patrol operator, but they should master the protection rated value; 9. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know.

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		pressure, turning gear failure and other abnormal accidents, and deeply understand the impact of lubricating oil cut off on the safe operation of the unit.	
3.12	Lubricant purification and transport system	1. Be familiar with lubricating oil purification and conveying system and master its process, master the local position of relevant equipment, valves and DCS screen operation; 2. Understand the structural characteristics, working principle and main technical specifications of oil storage tank and lubricating oil conveying pump; 3. Master the switching operation and matters needing attention in various ways of lubricating oil purification and conveying system.	1. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know DCS screen）； 2. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator； 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master;
3.13	EH oil system	1. Familiar with EH oil system and master its process, familiar with local position of relevant equipment, valves and DEH screen operation; 2. Understand the structural characteristics, working characteristics and main technical specifications of EH, EH oil tank, EH oil pump, EH oil accumulator, EH oil regeneration device, EH oil circulation cooling device and EH oil filter; 3. Familiar with the inspection and preparation before start-up of EH oil system, master the start-up and	1. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know DCS screen）； 2. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator； 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master；

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		shutdown operation of EH oil system (including oil purification device); 4. Master the normal operation and maintenance items and main control parameters of EH oil system; 5. Familiar with EH oil characteristics and oil quality requirements, master the influence of EH oil quality deterioration on unit safety operation and preventive measures; 6. Proficient in steam turbine inlet valve ATT test, EH oil pump switching, EH oil circulation cooling oil pump switching and other regular work; 7. Familiar with safety technical measures and pre-control of danger points of EH oil pump in operation, such as outage maintenance and backup after maintenance; 8. Be familiar with the interlock protection logic of the EH oil system (including the emergency oil supply trigger of the EH oil system), and grasp the relevant thermal control protection fixed value; 9. Master the treatment of abnormal accidents of EH oil system, such as unqualified EH oil quality, abnormal EH oil temperature, abnormal EH oil pressure, abnormal EH oil level in EH tank, blocked intake oil filter of valve oil	4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 5. Main operator on duty should master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; （senior patrol operator should know the test of Steam turbine inlet valve ATT; the test of Steam turbine inlet valve ATT isn't required for patrol operator; ） 7. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know; 8. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; interlocking protection logic is not required for patrol operator, but they should master the protection rated value; 9. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know

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		motor, and deeply understand the influence of EH oil leakage on the safe operation of the unit.	
3.14	generator sealing oil system	1. Familiar with generator sealing oil system and its process, familiar with the local position of related equipment, valves and DCS screen operation; 2. Understand the structural characteristics, operating characteristics and main technical specifications of generator sealing oil pump, sealed oil storage tank, exhaust fan of sealed oil storage tank, hydrogen side return tank, vacuum tank, vacuum pump, sealed oil filter, sealed oil cooler, oil-hydrogen differential pressure valve; 3. Understand the working principle of generator sealing oil system, and be familiar with the relationship between generator sealing oil pressure and hydrogen pressure and the regulation principle; 4. Understand the setting situation of floating oil in generator sealing oil system, and master the function of floating oil in generator sealing oil system; 5. Familiar with the inspection and preparation of generator sealing oil system before starting, master the operation and shutdown of generator sealing oil system;	1. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know DCS screen）； 2. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator； 3. For working principle: Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator. For the oil-hydrogen differential pressure relationship: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with； 4. For floating oil Settings Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator. For floating oil action Main operator on duty deputy operator on duty senior patrol operator and patrol operator should master；

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		6. Master the normal operation and maintenance items and main control parameters of generator sealing oil system; 7. Familiar with the characteristics and oil quality requirements of generator sealing oil, master the influence of deterioration of generator sealing oil quality on the safe operation of the unit and preventive measures; 8. Skilled to complete generator sealing oil pump switch, dc generator sealing oil pump start-up test, seal oil filter rotating town sewage drainage, gas of vacuum pump of vacuum tank released, sealing oil storage tank of smoke exhaust fan switching, seal oil filter switching, the sealing oil cooler switching and so on regular work; 9. Familiar with the safety technical measures and the pre-control of danger points for the shutdown and maintenance of the generator sealing oil pump in operation and the recovery of standby after maintenance; Be familiar with the interlocking protection logic of generator sealing oil system, and master its related thermal control protection fixed value; 11. Master the treatment of abnormal accidents of the generator sealing oil system, such as abnormal oil quality of sealing oil, abnormal temperature of sealing	5. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 6. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should master; 7. Main operator on duty should master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding; 8. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should master; 9. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know; 10. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; interlocking protection logic is not required for patrol operator, but they should master the protection rated value;

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		oil, abnormal pressure of sealing oil, abnormal oil level of hydrogen side return tank, abnormal oil level of vacuum tank, abnormal vacuum of vacuum tank and other abnormal accidents, and deeply understand the impact of generator sealing oil interruption on the safe operation of the unit; 12. Master the technical measures to prevent oil from entering generator.	11. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know; 12. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator and patrol operator should be conversant with.
3.15	Generator hydrogen cooling system	1. Be familiar with hydrogen cooling system of generator and master its process (including connection of hydrogen supply pipe from hydrogen production station), master local position of relevant equipment, valves and DCS screen; 2. Understand the structural characteristics, operating characteristics and main technical specifications of hydrogen dryer, hydrogen on-line control device, hygrometer, CO2 evaporator, gas purity meter, hydrogen leakage detector, insulation overheating monitoring device and hydrogen cooler; 3. Be familiar with the operation of the generator hydrogen cooling system safety regulations and the principles of gas displacement, grasp the generator hydrogen cooling system of hydrogen, hydrogen gas replacement operation method, matters needing attention and gas acceptable quality standards (including carbon dioxide replacement, replacement of carbon dioxide, hydrogen, carbon dioxide air	1. Main operator on duty deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know DCS screen）； 2. Main operator on duty should know： deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator； 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master； 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master； （patrol operator should know Hydrogen cooler outage to load requirements） 5. Main operator on duty should master; deputy operator on duty should be conversant with; senior

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		replacement of hydrogen and air exchange of carbon dioxide, etc.); 4. Master the normal operation and maintenance items of generator hydrogen cooling system, main control parameters and the load requirements of hydrogen cooler outage; 5. Familiar with the requirements of hydrogen quality, master the influence of abnormal humidity and purity of generator hydrogen on the safe operation of the unit and preventive measures; 6. Proficient in regular work such as normal hydrogen replenishment of generator, hydrogen sewage discharge in the generator, hydrogen leak detection device sewage discharge, hydrogen drying device bottom drainage, etc.; 7. Understand the generator air tightness test, and master the calculation method and test method of generator hydrogen leakage; 8. Familiar with the safety technical measures and the pre-control of danger points for the shutdown and maintenance of hydrogen cooler of generator in operation and the recovery of standby after maintenance;	patrol operator should know; patrol operator should have basic understanding： 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master： 7. Main operator on duty should know： deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator： 8. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know; 9. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know.

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		9. Master the treatment of abnormal accidents of the hydrogen cooling system of generators, such as hydrogen cooler leakage, abnormal hydrogen temperature, abnormal hydrogen pressure, abnormal hydrogen purity and other abnormal accident handling, and deeply understand the impact of hydrogen explosion of generators on the safe operation of units.	
3.16	Generator stator cooling water system	1. Familiar with generator stator cooling water system and master its process, familiar with the local position of related equipment, valves and operation in DCS screen; 2. Understand the structural characteristics, operating characteristics and main technical specifications of generator stator cooling water pump, stator cooling water filter, stator cooling water cooler, ion exchanger, stator cooling water mixing tank and stator cooling water tank; 3. Understand the cooling principle of generator stator cooling water system, and be familiar with the relationship between generator stator cooling water pressure and hydrogen pressure and its regulation and control; 4. Familiar with the check and preparation of generator stator cooling water system before start-up, master the operation and shutdown of generator stator cooling water system (including forward and backwash operation after shutdown);	1. Main operator on duty，deputy operator on duty senior patrol operator and patrol operator should be conversant with and master patrol operator should know DCS screen）； 2. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator； 3. For working principle: Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator. For the water hydrogen differential pressure relationship: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with； 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master；

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		5. Master the normal operation and maintenance items and main control parameters of generator fixed cold water system; 6. Familiar with the water quality standard of generator fixed cold water, master the influence of abnormal PH value and conductivity of generator fixed cold water on the safe operation of unit and preventive measures; 7. Skilled in regular work such as switching of fixed cooling water pump of generator, fixed cold water filter, fixed cold water cooler, fixed cold water refill, etc.; 8. Master the safety technical measures and the pre-control of danger points for the shutdown and maintenance of fixed cold-water pump, fixed cold water filter and fixed cold-water cooler in operation; 9. Be familiar with the interlocking protection logic of generator fixed cold water system, and master its related thermal control protection fixed value; 10. Master the treatment of abnormal accidents of the stator cooling water system of the generator, such as low stator cooling water pressure of the generator, low water level of the stator cooling water tank, high temperature of the stator cooling water , high conductivity of the stator cooling water , high vibration of the stator cooling water pump, high inlet and outlet water differential pressure of the stator winding, and	5. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 6. Main operator on duty should master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding; 7. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 8. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know; 9. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; interlocking protection logic is not required for patrol operator, but they should master the protection rated value; 10. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know.

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		deeply understand the influence of the interruption of the stator cooling water on the safe operation of the generator.	
3.17	HVAC and air conditioning system of the main workshop	1. Be familiar with the HVAC and air conditioning system of the main workshop and master its process, master the local position of relevant equipment and valves; 2. Understand the structural characteristics, working characteristics and main technical specifications of water source heat pump air conditioning unit, cooling pump, cooling pump motor and electric water filter; 3. Familiar with the inspection and preparation before the commissioning of HVAC and air conditioning system of the main workshop, and master the commissioning and shutdown of HVAC and air-conditioning systems; 4. Master the normal operation and maintenance items and main control parameters of HVAC and air conditioning system of the main workshop; 5. Master the switching operation of circulating water, such as switching valves of open water and industrial water pipe f HVAC and air conditioning system of the main workshop.	1. Main operator on duty，deputy operator on duty senior patrol operator and patrol operator should be conversant with and master; 2. Main operator on duty should know; deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 5. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master
4.	**Electrical auxiliary equipment and system**		
4.1	400kV switchyard	1. Familiar with 400kV system equipment specifications, understand the structure and working characteristics of 400kV system power distribution devices (such as SF6 circuit breaker, isolation switch, current transformer,	1. For equipment specifications, structural characteristics and working characteristics: Main operator on duty should know; deputy operator on duty should have basic understanding not required

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		voltage transformer, lightning arrester, etc.), and master their local layout position; 2. Familiar with the operation mode of 400kV system and basic requirements of main electrical wiring; 3. Master the inspection items of the daily operation of the power distribution device of 400kV system, inspection items and matters needing attention in special weather; 4. Master the maintenance range of basic parameters in normal operation of 400kV system; 5. Familiar with the layout of power supply and control power supply of switches and switches of 400kV system, familiar with the state transformation of switches and remote and local opening and closing operation of switches; 6. Master 400kV line stop, power transmission operation and switching operation 7. Master the operation of shutdown, power supply and switching of start-up and standby transformer; 8. Master the handling of abnormal accidents such as 400kV system switch refusal to close, refusal to trip,	for senior patrol operator and patrol operator. For local layout position: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master. 2. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 5. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with and master; 6. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; patrol operator should know; 7. Main operator on duty and deputy operator on duty should be conversant with and master; senior

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		switch closing or tripping, current transformer failure, etc.; 9. Master the measures to prevent the power failure of the whole plant during start-up and maintenance, and deeply understand the impact of the power failure of the whole plant on the safe operation of the unit.	patrol operator should be conversant with; patrol operator should know; 8. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; not required for patrol operator; 9. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; patrol operator should know;
4.2	11kv high voltage auxiliary power system	1. Understand the equipment specifications, structure characteristics and working characteristics of power distribution devices (such as vacuum switch, FC switch, bus PT, grounding trolley, etc.) of 11kV high voltage auxiliary power plant system, and master their local layout position; 2. Familiar with grounding mode of 11kV high voltage auxiliary power plant system; 3. Familiar with the normal operation mode and special operation mode of 11kV high voltage auxiliary power plant system, as well as the operation regulations of 11kV high voltage auxiliary power plant system, master the load distribution of 11kV busbars (including 11kV working section, public section and coal transport section busbars);	1.For equipment specifications, structural characteristics and working characteristics: Main operator on duty should know; deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator. For local layout position: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 2. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 4. Main operator on duty and deputy operator on duty should be conversant with and master; senior

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		4. Master 11kV bus normal power transmission, power failure, bus overhaul, bus insulation measurement and 11kV coal transport section contact belt operation; 5. Familiar with 11 kv high-voltage switch cabinet in the small control power supply device switch, power switch, small energy storage power supply switch, all confirmed voltage loop small secondary voltage switch, motor ontology heating switch position and function, such as master 11 kv high voltage switch, including vacuum switch, FC switches, stop, sending operations (including insulation) switch test; 6. Familiar with 11kV high voltage switch operation regulations and locking relationship; 7. Master the inspection and maintenance items in the normal operation of 11kV high voltage auxiliary power plant system; 8. Familiar with the handling principles of abnormal accidents of 11kV high voltage auxiliary power plant system, master the handling of abnormal accidents such as bus voltage loss, bus grounding, bus TV resonance and bus fault.	patrol operator should be conversant with; patrol operator should know; 5. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with; 7. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 8. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; not required for patrol operator;
4.3	415V low voltage auxiliary power system	1. Understand the equipment specifications, structure characteristics and working characteristics of distribution devices of 415V low-voltage power supply	1.For equipment specifications, structural characteristics and working characteristics: Main operator on duty should know; deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator. For

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		system (such as frame switch, drawer switch and bus PT), and master their local layout position; 2. Familiar with the grounding mode of 415V low voltage power plant system; 3. Familiar with the normal operation mode and special operation mode of 415V low-voltage power supply system, as well as the operation regulations of 415V low-voltage power supply system, master the load distribution of 415V bus (including PC and MCC bus); 4. Master the operation of 415V bus normal power transmission, power failure, bus overhaul, bus insulation measurement and bus connection belt; 5. Be familiar with the position and function of small switch of control power supply, small switch of device power supply and small switch of secondary voltage of integrated voltage circuit in 415V low-voltage switch cabinet, master the stop and power operation of 415V low-voltage switch (including frame switch and drawer switch) (including switch insulation measurement); 6. Master the inspection and maintenance items in the normal operation of 415V low-voltage power supply system; 7. Familiar with 415V low voltage auxiliary power plant system abnormal accident handling principles, master	local layout position: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 2.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with; 3.Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master 4. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; patrol operator should know; 5. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with; 7. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; not required for patrol operator;

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		415V low voltage auxiliary power plant bus voltage loss, bus grounding, bus fault and other abnormal accident handling.	
4.4	Unit auxiliary transformer (UAT)	1. Understand the equipment specifications, structure characteristics and working characteristics of main transformer, high voltage plant transformer, start and standby transformer and 400V power center transformer, and master their local layout position; 2. Master the meaning of transformer wiring groups and be able to draw wiring diagrams of various wiring groups; 3. Understand the principle and structure characteristics of split transformer; 4. Familiar with the function of transformer respirator and the failure of silica gel; 5. Master normal and abnormal operation regulations of transformer and control mode of cooling device, and be familiar with switching operation of dual power supply of transformer cooling device after shutdown; 6. Familiar with measuring period and control standard of insulation resistance of oil-immersed transformer and dry-type transformer, familiar with measuring method of insulation resistance of 415V power center transformer;	1.For equipment specifications, structural characteristics and working characteristics: Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator. For local layout position: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 2. Main operator on duty should be conversant with and master; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 3. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator； 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with； 5. For operation mode: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master for dual power switching operation: Main operator on duty and

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		7. Familiar with on-load voltage regulating control logic and local device operation principle, master relevant regulations in operation; 8. Understand the working principle of transformer gas protection, master the relevant provisions of gas protection on and off, and the post-treatment methods of abnormal situations and accidents; 9. Master the parallel operation conditions of transformers and matters needing attention in parallel operation; 10. Master operation regulations and operation methods of transformer commissioning, outage and switching, and be able to write operation tickets of transformer switching in various ways; 11. Master the inspection items before transformer put into operation, normal operation and abnormal conditions, as well as relevant regulations of new transformer put into operation; 12. Familiar with the conditions of transformer fault outage and emergency outage, master the abnormal accident treatment of transformer, such as transformer trip, transformer overload, transformer on-load tap adjustment failure, transformer cooling power supply disappearance (including cooler failure, cooler all stop), transformer oil temperature rise and exceed the	deputy operator on duty should be familiar with, senior patrol operator and patrol operator should know; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 7. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; not required for patrol operator; 8.Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; not required for patrol operator; 9. Main operator on duty and deputy operator on duty should be familiar with and master senior patrol operator should be conversant with; patrol operator should know; 10. Main operator on duty, deputy operator on duty and senior patrol operator should master; patrol operator should be conversant with;

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		specified value, abnormal transformer oil level, pressure release device action, transformer fire and other abnormal accidents. value, abnormal transformer oil level, pressure release device action, transformer fire and other abnormal accidents.	11. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 12. For fault outage, emergency outage conditions: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with for exception handling: Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; not required for patrol operator.
4.5	auxiliary electromotor	1. Understand the equipment specifications, structure characteristics and working characteristics of 11kV motor, 415V motor and DC 220V motor, and master their local layout position; 2. Familiar with all kinds of motor control methods, be able to understand all kinds of control circuit diagram, judge the abnormal situation of control circuit; 3. Familiar with the requirements of vibration and shaft displace of various motors and the regulations of start-up times, master the measuring methods and regulations of insulation measuring of motors; 4. Understand the setting principle of motor primary insurance;	1. For equipment specifications, structural characteristics and working characteristics: Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator. For local layout position: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 2.Main operator on duty should be familiar； deputy operator on duty should know； not required for senior patrol operator and patrol operator; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master;

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		5. Understand the working principle of motor inverter; 6. Master the regulations of normal and abnormal operation of motors, daily inspect items before starting the motors, and be able to judge the types of motor faults; 7. Be familiar with the conditions of motor failure and emergency shutdown, and master the handling of abnormal motor accidents, such as motor trip, motor vibration, abnormal temperature, abnormal sound, motor fire, motor blocking, motor phase loss operation and other abnormal accidents.	4. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator； 5. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator； 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master； 7. For fault outage, emergency outage conditions: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with for exception handling: Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator and patrol operator should be conversant with;
4.6	Emergency Power Supply System and diesel generator set	1. Understand the equipment specifications, structural characteristics and working characteristics of diesel generator set, and master its local layout position; 2. Be familiar with the setting mode of emergency power supply system, and master the connection between diesel generator and emergency power supply system;	1. For equipment specifications, structural characteristics and working characteristics: Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator. For local layout position: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master;

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		3. Master the load distribution of each PC and MCC of emergency power supply system, and be familiar with its local layout position; 4. Familiar with the pre-start-up inspection of diesel generator set, master the start-up, stopping operation and normal operation inspection and maintenance items of diesel generator set, be able to carry out no-load test and load test operation of diesel generator set; 5. Familiar with interlock protection of diesel generator set, master various operation modes and control logic of emergency power supply system; 6. Master the switching operation of MCC section of emergency power supply system from emergency power to working power and from working power to emergency power; 7. Master the common abnormal accident handling of diesel generator set, such as abnormal oil temperature, abnormal water temperature, abnormal frequency, abnormal lubricating oil pressure, abnormal sound and other abnormal accident handling.	2. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master patrol operator should know no-load test and load test）; 5. Main operator on duty, deputy operator on duty and senior patrol operator should be conversant with and master; patrol operator be conversant with; 6. Main operator on duty, deputy operator on duty and senior patrol operator should be conversant with and master; d patrol operator should be conversant with; 7. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; not required for patrol operator;
4.7	UPS	1. Understand the equipment specifications, structural characteristics and working characteristics of AC	1. For equipment specifications, structural characteristics and working characteristics: Main operator on duty should know; deputy operator on duty should have basic understanding not required

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		uninterruptible power supply (UPS) system, and master its local layout position; 2. Familiar with the setting mode of AC uninterruptible power supply (UPS) system and the relationship between various power supplies; 3. Familiar with the load distribution of AC uninterruptible power supply (UPS) bus, and familiar with the local layout of each load; 4. Master the power supply orientation, operation mode and power switching operation method of THE AC uninterruptible power supply (UPS) system (including power supply, power failure, automatic bypass operation of main power supply, automatic bypass operation of main power supply, automatic bypass operation of maintenance bypass, maintenance bypass operation of automatic bypass operation, automatic bypass operation of main power supply); 5. Master the check and maintenance items in the normal operation of the AC uninterruptible power supply (UPS) system; 6. Master the meaning and treatment of UPS alarm lights; 7. Master the treatments of common faults of THE AC power supply (UPS) system, such as rectifier failure, DC	for senior patrol operator and patrol operator. For local layout position: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 2. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 4. Main operator on duty should master; deputy operator on duty should be conversant with, senior patrol operator should know not required for patrol operator; 5. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master patrol operator should know the processing method）; 7. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with not required for patrol operator;

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		power failure, overload, overtemperature, inverter failure, etc.	
4.8	110V、220V DC system	1. Understand the equipment specifications, structural characteristics and working characteristics of 110V and 220V DC system, and master the local layout position (including charging cabinet, battery and insulation monitoring device); 2. Understand the setting principle of DC load power supply insurance. 3. Familiar with 110V, 220V DC system diagram, main circuit disassembly point, load, and local layout position of each load; Familiar with normal operation mode and special operation mode of 110V and 220V DC system, familiar with parallel conditions of DC system; 5. Familiar with charging, discharging, floating charging, equalization and other operation methods and precautions of 110V, 220V DC battery pack; 6. Master 110V and 220V DC bus charging operation, 110V DC I bus and II bus switching operation, 220V DC I bus and II bus switching operation; 7. Master the check and maintenance items in the normal operation of 110V and 220V DC system;	1. For equipment specifications, structural characteristics and working characteristics: Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator. For local layout position: Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with and master; 2. Main operator on duty should know; not required for deputy operator on duty, senior patrol operator and patrol operator; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with； 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be familiar with； 5. Main operator on duty should be familiar； deputy operator on duty should know； not required for senior patrol operator and patrol operator；

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		8. Familiar with the hazards of 110V and 220V DC system grounding, master the method of dc grounding search and matters needing attention; 9. Familiar with the wiring mode of accident lighting, master the switching test of dc system accident lighting; 10. Master the common abnormal accident handling of 110V and 220V DC system, such as abnormal voltage, DC grounding, charging device failure, battery fire and other abnormal accident handling.	6. Main operator on duty, deputy operator on duty and senior patrol operator should master; patrol operator should be conversant with; 7. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 8. Main operator on duty, deputy operator on duty and senior patrol operator should master; patrol operator should be conversant with; 9. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 10. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; not required for patrol operator；
4.9	Electric automatic control device	1. Understand the composition and function of electric automatic control devices in power plants; 2. Understand the composition and working characteristics of generator synchronous device, and be familiar with DCS control logic, synchronous mode and selection of synchronous point (quasi-synchronous mode, synchronous mode and manual quasi-synchronous mode) of generator synchronous device;	1.Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator； 2. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator；

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		3. Understand the function, equipment specification and working principle of excitation system, and be familiar with the control logic, excitation mode and switching operation between various modes of excitation system; 4. Understand the DCS excitation control principle, master the excitation device operation regulations, operation mode and excitation adjustment matters needing attention; 5. Familiar with the inspection and preparation of excitation system before input, master the input and exit operation of excitation system (with the development of group backup, disassembly operation); 6. Understand the excitation system channel switching test, master the check and maintenance items in the normal operation of the excitation system, and be able to find and judge the typical alarm and fault treatment; 7. Familiar with the working principle of 11kV offload quick switching device, familiar with several ways of 11kV offload switching device (quick switching, delay switching, simultaneous capture switching, residual voltage switching), and proficient in the operation methods of 11kV offload power series switching, simultaneous switching, parallel automatic switching, parallel semi-automatic switching, etc.;	3. Main operator on duty should know； deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator； 4. Main operator on duty and deputy operator on duty should master; senior patrol operator should know; patrol operator should have basic understanding； 5. Main operator on duty, deputy operator on duty and senior patrol operator should master; patrol operator should be conversant with; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master patrol operator should only master he inspection and maintenance items）； 7. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with and master； 8. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master；

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		8. Master the operation and precautions of 11kV plant power supply switching (including switching from standby power supply to working power supply and switching from working power supply to standby power supply), and pre-control the high voltage difference between working power supply and standby power supply in the switching process; 9. Familiar with the working principle and function of AVC, PSS and fault recorder, and master the relevant operation regulations; 10. Master the principles of finding and handling the causes of abnormal and fault recording actions of excitation rectifier.	9. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with and master; 10. Main operator on duty and deputy operator on duty should master; senior patrol operator should be conversant with; not required for patrol operator;
5.	**Startup and shutdown of the unit**		
5.1	unit startup	1. Familiar with the interlocking and protection transmission test items before unit starting (including interlocking protection of main engine, interlocking test of auxiliary engine, and pre-start test after major and minor Overhaul) 2. Familiar with the work to be presided over by the deputy general manager of production and the project to be decided when the unit is started; 3. Familiar with the classification standard of boiler and steam turbine start-up state, master the conditions for unit start-up prohibition (including steam turbine turn-	1. Main operator on duty should be familiar; deputy operator on duty should know senior patrol operator should have basic understanding; not required for patrol operator; 2. Main operator on duty should be familiar; deputy operator on duty should know senior patrol operator should have basic understanding; not required for patrol operator; 3. Main operator on duty and deputy operator on duty should be conversant with and master; senior

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		down prohibition and generator grid-connection prohibition); 4. Familiar with the inspection and preparation of all systems and equipment (including insulation measurement of generator stator and rotor winding) before cold start-up of unit; 5. Master the operation methods and water quality control standards of condensate water system, low pressure water supply system, cold and hot flushing of boiler; 6. Master the control strategy of high- and low-pressure bypass system of steam turbine at different start-up stages; 7. Master the major nodes operating methods, such as the operation skills and matters needing attention of the boiler feeding water operation, the boiler ignition operation, boiler temperature and pressure rising operation, steam turbine turn-on operation, generator interconnection operation, water supply switching operation, auxiliary power supply switching operation, the wet state turn to dry state of boiler operation, operation, boiler feed water pump paralleling operation, out the oil operation etc.;	patrol operator and patrol operator should be conversant with; 4. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding; 5. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding; 6. Main operator on duty should master; deputy operator on duty should know senior patrol operator should have basic understanding; not required for patrol operator; 7. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding; 8. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding; 9.Main operator on duty should be conversant with and master; deputy operator on duty should know;

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		8. Be familiar with the principle of steam turbine turn-on parameter selection, and master the turn-on conditions of steam turbine (including inlet quality); 9. Master the operation steps, precautions and danger point control of cold state startup, warm state startup, hot state startup and extremely hot state startup; 10. Master the corresponding curve of load and steam parameters during the start-up of steam turbine; 11. Master the control indexes in the process of cold start, warm start, hot start and extremely hot start of the unit, such as load lifting speed, pressure lifting speed, temperature rising speed, etc.	senior patrol operator should have basic understanding not required for patrol operator; 10.Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding; 11.Main operator on duty should master; deputy operator on duty should know; not required for senior patrol operator and patrol operator;
5.2	unit shutdown	1. Familiar with the unit shutdown regulations, master the difference and characteristics between fixed parameter shutdown and sliding parameter shutdown; 2. Master the regulations and precautions for the operation of steam turbine turning after the unit is out of service; 3. Master the test and preparation work before the shutdown of the unit. 4. Master the operation steps, precautions and control of dangerous points for the shutdown of fixed parameters and sliding parameters of the unit;	1. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding; 2. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator and patrol operator should be conversant with; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master;

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		5. Master the control indicators during the shutdown of fixed parameters and sliding parameters of the unit, such as load reduction speed, pressure reduction speed, cooling speed, etc.; 6. Master the operation methods, operation skills and precautions of major nodes such as the withdrawal of a single steam pump when the unit is stopped, the change of the boiler from dry state to wet state, the switching of the factory power supply, and the switching of the feed water from the main road to the auxiliary road; 7. Understand the steam turbine DEH automatic shutdown procedure and precautions; 8. Master the operation and precautions on the turbine side after the steam turbine is turned off, the operation and precautions on the furnace side after the boiler is turned off (including the cooling method after the shutdown), and the operation and precautions on the power side after the generator is disconnected; 9. Be able to draw and analyze the rotor idle curve of the steam turbine generator set; 10. Familiar with the maintenance and maintenance measures after the unit is out of operation (including boiler maintenance, steam turbine maintenance and generator maintenance).	4. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding; 5. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding; 6. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding; 7. Main operator on duty should know; deputy operator on duty should have basic understanding not required for senior patrol operator and patrol operator; 8. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 9. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; not required for patrol operator;

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			10. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; not required for patrol operator
6.	**Operation and maintenance of unit**		
6.1	Operation monitoring and controlling	1. Familiar with the operating parameters of boiler, steam engine and generator in unit operation; 2. Familiar with the steam- water quality control indicators during normal operation and unit start-up stage; 3. Familiar with the influence of steam- water quality deterioration on unit equipment and treatment principles; 4. Master the normal operation and maintenance items and main control parameters of boiler, steam engine and generator during unit operation; 5. Familiar with the pressure supervision significance of steam turbine monitoring section, able to analyze the pressure of steam turbine monitoring section.	1. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 2. Main operator on duty should be familiar; deputy operator on duty should know senior patrol operator should have basic understanding; not required for patrol operator; 3. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should know; not required for patrol operator; 4. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 5. Main operator on duty should be familiar; deputy operator on duty should know senior patrol operator should have basic understanding; not required for patrol operator.
6.2	Operation adjustment	1. Familiar with the basic principles of boiler combustion adjustment, steam temperature adjustment, generator	1. Main operator on duty and deputy operator on duty should be familiar with, senior patrol operator

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		load adjustment, voltage adjustment and frequency adjustment; 2. Master the adjustment methods and matters needing attention for economic operation of boilers, steam engines and generators; 3. Familiar with static and dynamic characteristics of steam temperature and pressure of once-through boiler , master the control characteristics of superheated steam temperature and reheated steam temperature of boiler; 4. Master the setting of coal-water cross limit and air-coal cross limit boundary in normal operation, and understand the operation of the loop in operation; 5. Master the input of British Thermal UUNet (BTU) correction loop; 6. Master the provisions and measuring methods of insulation resistance in various parts of generator system; 7. Master the principle of generator progressive operation and the parameter limit of each part during progressive operation; 8. Familiar with the meaning of unit control mode (including manual mode, steam engine following TF,	should know; patrol operator should have basic understanding; 2. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; not required for patrol operator; 3. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator and patrol operator should be conversant with; 4. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; not required for patrol operator; 5. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; not required for patrol operator; 6. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 7. Main operator on duty and deputy operator on duty should be conversant with and master; senior

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		boiler following BF, machine-furnace coordinated CCS and load dispatching mode AGC), be able to carry out non-disturbance switching of unit control operation mode; 9. Familiar with the characteristics of constant pressure operation and sliding pressure operation of the unit, and familiar with the sliding pressure operation of the unit; 10. Master the technical measures of boiler low-load stable combustion operation adjustment and boiler overpressure and overtemperature operation adjustment; 11. Master the technical measures taken to improve the economic operation of the unit; 12. Master the influence of unit operating condition changes on the safe, reliable, economic and environmental protection operation of turbine-generator units.	patrol operator should be conversant with; patrol operator should know; 8. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should be conversant with and master; 9. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; patrol operator should know; 10. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; patrol operator should know; 11. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; patrol operator should know; 12. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; not required for patrol operator.
7.	**Unit protection and testing**		
7.1	Boiler protection and testing	1. Master boiler MFT protection operation conditions and operation contents;	1. Main operator on duty and deputy operator on duty should be conversant with and master; senior

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		2. Master boiler OFT protection operation conditions and operation contents; 3. Master the test conditions, test methods and matters needing attention for the interlocking test of turbine, boiler and generator; 4. Master the test conditions and test methods of boiler MFT protection action test; 5. Be familiar with the hydrostatic test conditions, regulations, requirements and test scope of the heating surface of boiler superheat and reheat steam system after overhaul, and master the operating methods and precautions of hydrostatic test; 6. Be familiar with the principle, method and matters needing attention of checking safety valve of boiler superheat and reheat steam pipeline after overhaul; 7. Familiar with the purpose of boiler oil system leakage test, master the operation process of oil leakage test; 8. Master the operation test of boiler side motor-operated and pneumatic valve, regulating valve and baffle; 9. Master daily and regular boiler work and test items.	patrol operator and patrol operator should be conversant with; 2. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator and patrol operator should be conversant with; 3~7. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; not required for patrol operator; 8. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 9. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master;

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7.2	Steam turbine protection and testing	1. Master the operation conditions and contents of engine ETS protection; 2. Master the test conditions and methods of steam engine ETS protective action test; 3. Familiar with the test conditions and evaluation standards for tightness test of steam turbine high pressure main steam valve and regulating valve, master the operation methods and matters needing attention for tightness test of steam turbine high pressure main steam valve and regulating valve; 4. Master the test conditions, operation methods and matters needing attention of steam turbine overspeed test; 5. Master the test conditions, operation methods and matters needing attention of ATT for steam turbine high pressure main steam valve and regulating valve; 6. Master the test conditions, operation methods and matters needing attention of the activity test of steam turbine extraction check valve;; 7. Master the test conditions and evaluation standards of steam turbine vacuum tightness test, and master the operation methods and matters needing attention of steam turbine vacuum tightness test;	1. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator and patrol operator should be conversant with; 2. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator and patrol operator should be conversant with; 3~7. Main operator on duty should be conversant with and master; deputy operator on duty should be conversant with; senior patrol operator should know; not required for patrol operator; 8. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 9. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master.

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		8. Master the operation test of motor side motor-operated and pneumatic valve, regulating valve and baffle; 9. Master daily and regular work and test items of steam engine.	
7.3	Generator and transformer group, line protection and test	1. Familiar with the purpose, task and requirements of relay protection, familiar with the general provisions of relay protection and automatic devices; 2. Familiar with the configuration and exit treatment of microcomputer protection devices such as generator and transformer, circuit, etc.; 3. Master the inspection and inspection items for the normal operation and maintenance of relay protection and automatic devices; 4. Understand the logic principle of relay protection and automatic device, master the principle of protection device platen in and out; Familiar with relay protection and automatic device common abnormal processing; 6. Master the configuration, exit mode and exit of protection device of generator and transformer group (including generator, main transformer and HVDC transformer);	1. Main operator on duty should be familiar; deputy operator on duty should know senior patrol operator should have basic understanding; not required for patrol operator; 2. Main operator on duty should be conversant with and master; deputy operator on duty should be familiar senior patrol operator should know; patrol operator should have basic understanding not required for patrol operator; 3. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 4. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; patrol operator should know; 5. Main operator on duty should be familiar; deputy operator on duty should know; not required for senior patrol operator and patrol operator;

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		7. Master the configuration and operation of the protection for start/standby transformer. Familiar with general regulations of line protection operation; 9. Master 400kV line protection configuration, line protection operation and operation precautions; 10. Master abnormal information and handling suggestions of 400kV line protection device; 11. Master the protection configuration and operation outlet of 11kV plant bus; 12. Master the protection configuration and action outlet of 11kV high-voltage motor used in the factory; 13.Familiar with generator test items after major and minor overhaul; 14. Master the routine regular work and test projects of electrical specialty.	6. Main operator on duty should master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding not required for patrol operator; 7. Main operator on duty should master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding not required for patrol operator; 8. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master; 9. Main operator on duty should master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding not required for patrol operator; 10. Main operator on duty should be familiar; deputy operator on duty should know; not required for senior patrol operator and patrol operator; 11. Main operator on duty should master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should

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			have basic understanding not required for patrol operator; 12. Main operator on duty should master; deputy operator on duty should be conversant with; senior patrol operator should know; patrol operator should have basic understanding not required for patrol operator; 13. Main operator on duty should be familiar; deputy operator on duty should know senior patrol operator should have basic understanding not required for patrol operator; 14. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master
8.	**Unit accident handling**		
8.1	Boiler accident treatment	1. Master the principles of unit accident handling; 2. Familiar with the difference between boiler fault shutdown and emergency shutdown, master the conditions and main operating steps of boiler fault shutdown and emergency shutdown; 3. Master the phenomenon, reason and treatment method of boiler MFT protection action; 4. Master the phenomenon, reason and treatment of RB tripping of single air preheater, forced draft fan, induced	1. Main operator on duty, deputy operator on duty, senior patrol operator and patrol operator should master. 2. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator and patrol operator should be conversant with know the main operation steps）; 3~8. Main operator on duty should be conversant with and master; deputy operator on duty should be familiar; senior patrol operator should know; patrol

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		draft fan, primary fan, steam feed water pump set and coal mill in boiler operation; 5. Master the phenomenon, reason and treatment method of the loss of compressed air source for boiler instrument and miscellaneous use; 6. Master the phenomenon, reason and treatment of secondary combustion of boiler tail flue; 7. Master the phenomenon, reason and treatment method of exceeding temperature of boiler heating surface tube wall; 8. Master the phenomenon, reason and treatment of boiler coking; 9. Master the phenomenon, reason and treatment method of abnormal boiler main steam pressure; 10. Master the phenomenon, reason and treatment method of abnormal temperature of boiler main steam; 11. Master the abnormal phenomena, causes and treatment methods of boiler reheat steam pressure; 12. Master the phenomenon, reason and treatment method of abnormal temperature of boiler reheat steam;	operator should have basic understanding not required for patrol operator; 9~12. Main operator on duty and deputy operator on duty should master; senior patrol operator and patrol operator should be conversant with; 13~17. Main operator on duty should be conversant with and master; deputy operator on duty should be familiar; senior patrol operator should know; patrol operator should have basic understanding not required for patrol operator.

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		13. Master the phenomenon, reason and treatment method of sudden drop or interruption of boiler feed water flow; 14. Master the phenomenon, reason and treatment of boiler feed water temperature sudden drop; 15. Master the abnormal phenomena, causes and treatment methods of outlet steam temperature of boiler soda water separator; 16. Master the phenomena, causes and treatment methods of boiler four pipe leakage (water wall, superheater, reheater, economizer); 17. Master the phenomenon, cause and treatment of boiler furnace explosion.	
8.2	Steam turbine accident treatment	1. Familiar with the difference between turbine fault shutdown and emergency shutdown, master the conditions and main operating steps of turbine fault shutdown and emergency shutdown; 2. Master the phenomena, causes and treatment methods of turbine ETS protection action; 3. Master the phenomenon, reason and treatment method of vacuum drop of steam turbine;	1. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator and patrol operator should be conversant with know the main operation steps）; 2~12. Main operator on duty should be conversant with and master; deputy operator on duty should be familiar; senior patrol operator should know; patrol operator should have basic understanding not required for patrol operator.

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		4. Master the phenomena, causes and treatment methods of steam turbine overspeed; 5. Master the phenomena, causes and treatment methods of turbine vibration; 6. Master the phenomenon, reason and treatment of high temperature of steam turbine bearing; 7. Master the phenomenon, reason and treatment of large axial displacement of steam turbine; 8. Master the phenomena, causes and treatment methods of steam turbine water impact; 9. Master the phenomena, causes and treatment methods of turbine blade damage or shedding; 10. Master the phenomena, causes and treatment methods of large shaft bending of steam turbine; 11. Master the phenomena, causes and treatment methods of steam turbine flow failure; 12. Master the phenomenon, cause and treatment of inlet valve jam after steam turbine trip.	
8.3	Electrical accident treatment	1. Familiar with the difference between generator fault shutdown and emergency shutdown, master the	1. Main operator on duty and deputy operator on duty should be conversant with and master; senior

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		conditions and main operating steps of generator fault shutdown and emergency shutdown; 2. Master the phenomenon, causes, and handling methods of the protection action of the unit; 3. Master the phenomenon, reason and treatment method of auxiliary power interruption; 4. Master the phenomena, causes and treatment methods of power grid cycle anomalies; 5. Master the phenomenon, reason and treatment method of unit load swing; 6. Master the phenomenon, reason and treatment method of abnormal generator temperature; 7. Master the phenomenon, reason and treatment method of generator overload; 8. Master the phenomenon, reason and treatment method of unbalanced three-phase current of generator; 9. Master the phenomenon, reason and treatment method of generator stator grounding;	patrol operator and patrol operator should be conversant with know the main operation steps）; 2~19. Main operator on duty should be conversant with and master; deputy operator on duty should be familiar; senior patrol operator should know; patrol operator should have basic understanding not required for patrol operator.

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		10. Master the phenomenon, reason and treatment method of generator rotor grounding; 11. Master the phenomenon, cause and treatment of inter-turn short circuit of generator rotor winding; 12. Master the phenomenon, reason and treatment method of non-full phase operation of generator; 13. Master the phenomenon, reason and treatment method of generator non-simultaneous; 14. Master the phenomenon, cause and treatment of generator oscillation or out-of-step; 15. Master the phenomenon, cause and treatment of generator loss of magnetism; 16. Master the phenomenon, reason and treatment method of generator inverse power; 17. Master the phenomenon, reason and treatment method of generator TV disconnection; 18. Master the phenomenon, cause and treatment method of generator TA circuit failure; 19. Master the phenomenon, cause and treatment of generator internal explosion and fire.	

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8.4	Anti-accident technical measures	1. Familiar with the technical measures to prevent the blasting of pressure vessels in the plant; 2. Be familiar with technical measures to prevent fire accidents on site; Be familiar with technical measures to prevent leakage of boiler heating surface; 4. Familiar with technical measures to prevent boiler tail flue from re-burning; 5. Familiar with technical measures to prevent boiler furnace explosion; 6. Familiar with technical measures to prevent boiler pulverizing system explosion and coal dust explosion; 7. Be familiar with technical measures to prevent overspeed of steam turbines (steam driven turbines); 8. Be familiar with the technical measures to prevent turbine shafting fracture (including small turbine); 9. Be familiar with technical measures to prevent bending of large shaft of steam turbine (including small steam turbine);	1~23. Main operator on duty and deputy operator on duty should be conversant with and master; senior patrol operator should be conversant with; patrol operator should know.

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		10. Be familiar with technical measures to prevent turbine bearing bush damage (including small turbine); 11. Be familiar with technical measures to prevent water inlet of steam turbine (including steam driven turbines); 12. Be familiar with technical measures to prevent water intake in turbine oil (including small steam turbines); 13. Be familiar with technical measures to prevent ignition of turbine oil systems (including small steam turbines); 14. Familiar with the technical measures to prevent the turbine shaft from being locked; 15. Be familiar with technical measures to prevent inverting of feed pump set; 16. Be familiar with the technical measures to prevent the explosion and water strike of steam- water pipes; 17. Be familiar with technical measures to prevent oil from entering generator; 18. Familiar with technical measures to prevent ignition and explosion of generator hydrogen system;	

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		19. Familiar with technical measures to prevent transformer damage and transformer explosion; 20. Familiar with technical measures to prevent electrical switchgear accidents; 21. Be familiar with technical measures to prevent generator damage accidents; 22. Be familiar with technical measures to prevent electrical mis operation accidents; 23. Be familiar with the technical measures to prevent power failure in the whole plant.	

Annex 2: The Maintenance Training Scope

No.	Training Module	Post training content	Post training requirement
1.	Steam turbine specialty		
1.1	Maintenance of high and intermediate pressure cylinder of steam turbine	Operation instruction for class a maintenance of steam turbine high and intermediate pressure cylinder	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
1.2	Maintenance of steam driven turbine	Operation instruction for class a maintenance of steam driven turbine	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.

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No.	Training Module	Post training content	Post training requirement
1.3	Rotor bending measurement	rotor bending measurement training	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
1.4	Centering operation of coupling	Coupling centering training	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
1.5	Maintenance of closed circulating water pump	Operation instruction for class a maintenance of closed circulating water pump	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
1.6	Lifting gesture standard	Lifting gesture standard training	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
1.7	Valve foundation maintenance	Valve maintenance training	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
1.8	Basic training of fitter	Basic training of fitter	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
1.9	Post risk identification list of maintenance department	Post risk identification list of maintenance department	The team leader, technician, team leader, principal and maintenance worker shall be familiar with

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No.	Training Module	Post training content	Post training requirement
1.10	Maintenance of high-pressure heater	Operation instruction for class a maintenance of high-pressure heater	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
1.11	First aid (CPR)	Cardiopulmonary resuscitation (CPR)	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
1.12	Use and management standards of work ticket and operation ticket	Use and management standards of work ticket and operation ticket	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
1.13	Hoisting safety should knowledge	Hoisting safety should knowledge	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
1.14	Circulating water pump maintenance shoe scraping	Operation instruction for class a maintenance of circulating water pump	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
2.	Boiler specialty		
2.1	Basic structure, precautions and treatment methods of coal feeder	Operation instruction for class a maintenance of coal feeder	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
2.2	Explanation of inspection methods and common problems of anti-wear and	Operation instruction for class a maintenance of anti-wear and explosion-proof four tubes of boiler	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.

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No.	Training Module	Post training content	Post training requirement
	explosion-proof of four tubes of boiler		
2.3	Operation instruction for class a maintenance of primary air fan	Structure, common faults and treatment methods of primary air fan	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
2.4	Welding process and principle training	Welding process, principle and precautions	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
2.5	Operation instruction for class a maintenance of coal pulverizer.	Maintenance methods and precautions of lower frame of coal mill	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
2.6	Operation instruction for class a valve maintenance	High, medium and low-pressure valve structure, principle and maintenance training	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
2.7	Operation instruction for class a maintenance of soot blower	Basic structure, common faults and treatment methods of soot blower	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
2.8	Soot blower disassembly and maintenance training	Practical operation training of soot blower disassembly	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
2.9	Operation instruction for class a maintenance of seal fan	Common faults and solutions of seal fan structure	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.

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No.	Training Module	Post training content	Post training requirement
2.10	Operation instruction for class a maintenance of forced-draft blower	Basic structure, common faults and treatment methods of forced-draft blower	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
2.11	Operation instruction for class A maintenance of flame detection cooling blower	Operation instruction for class A maintenance of flame detection cooling blower	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
2.12	Coupling alignment and shaft bending measurement training	Coupling alignment and shaft bending measurement	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
2.13	Coal feeder belt deviation adjustment training	On site adjustment method of coal feeder belt deviation	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
3.	Electrical specialty		
3.1	Generator transformer unit protection device test	Operation instruction for generator transformer unit protection	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
3.2	Explanation of secondary circuit	415V secondary circuit diagram	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
3.3	Inspection and principle of meter and transmitter	Inspection instructions for meters and transmitters	The team leader, technician, team leader, principal and maintenance worker shall be familiar with

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No.	Training Module	Post training content	Post training requirement
3.4	Synchronization system device test and principle	Operation instruction of synchronization system	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
3.5	415V protection device test and principle	415V protection operation instruction	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
3.6	Test and principle of 11kv protection device	11kv protection operation instruction	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
3.7	Test of thermal storage transformer protection device of generator transformer unit	Test instruction for thermal storage transformer protection device of generator transformer unit	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
3.8	Basic principle of relay protection	Basic principle of relay protection	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
3.9	High voltage Pt and CT test	Operation instruction	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
3.10	Maintenance and test of dry-type transformer	Operation instruction	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.

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No.	Training Module	Post training content	Post training requirement
3.11	High voltage overvoltage protector test	Operation instruction	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
3.12	Zinc oxide arrester test	Operation instruction	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
3.13	Generator test	Operation instruction	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
3.14	Main transformer test	Operation instruction	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
3.15	High voltage cable test	Operation instruction	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
3.16	Maintenance and test of high voltage switch	Operation instruction	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
3.17	Maintenance and test of high voltage motor	Operation instruction	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.

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No.	Training Module	Post training content	Post training requirement
3.18	Electrical principle and debugging method of electric actuator	Commissioning of electric actuator	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
3.19	Electrical principle and maintenance process of frame switch	Maintenance and common fault treatment of frame switch	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
3.20	Fault finding of electric heat tracing and electric heater	Fault finding and treatment of electric heat tracing and electric heater	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
4.	**Control and instrument engineering**		
4.1	Maintenance of turbine protection system (ETS)	Operation instruction for turbine protection system (ETS)	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.2	Maintenance of turbine monitoring instrument system (TSI)	Operation instruction for turbine monitoring instrument system (TSI)	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
4.3	Class a maintenance of steam turbine interlocking protection	Operation instruction for class A maintenance of steam turbine interlocking protection	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.4	Calibration of pressure (vacuum) switch	Operation instruction for pressure (vacuum) switch calibration (Revised Version)	The team leader, technician, team leader, principal and maintenance worker shall be familiar with

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No.	Training Module	Post training content	Post training requirement
4.5	Class a maintenance of steam turbine digital electro-hydraulic control system (DEH)	Operation instruction for class a maintenance of steam turbine digital electro-hydraulic control system (DEH)	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.6	Maintenance of control circuit of pneumatic actuator	Operation instruction for maintenance of control circuit of pneumatic actuator	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
4.7	Maintenance of control circuit of two position pneumatic actuator	Operation instruction for maintenance of control circuit of two position pneumatic actuator	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
4.8	Actuator maintenance	Operation instruction for actuator maintenance	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.9	Maintenance of pneumatic control valve positioner	Operation instruction for maintenance of pneumatic control valve positioner	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.10	Principle and troubleshooting of thermal resistance	Principle of thermal resistance temperature measurement and troubleshooting	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
4.11	Maintenance of programmable control system (PLC)	Maintenance method of programmable control system (PLC)	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.

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No.	Training Module	Post training content	Post training requirement
4.12	CEMS system	CEMS system principle	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.13	How to connect CEMS upper computer to PLC	Method of connecting CEMS upper computer to PLC	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.14	Post risk identification list of maintenance department	Post risk identification list of cognitive maintenance department	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.15	Logic analysis of DCS system	DCS principle and logic configuration analysis	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.16	Principle of Silicon Meter	Principle and maintenance of Silicon Meter	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.17	Working principle and physical wiring of two-wire induction switch	Working principle and physical wiring of two-wire induction switch	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.18	Common fault judgment and treatment of control circuit	Common fault judgment and treatment of control circuit	The team leader, technician, team leader, principal and maintenance worker shall be familiar with

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No.	Training Module	Post training content	Post training requirement
4.19	Occupational health management system and procedures	Occupational health management system and procedures	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
4.20	Precautions for working at height	Precautions for working at height	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
4.21	Training on common wiring methods of relays and contactors	Training on common wiring methods of relays and contactors	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
4.22	MFT boiler protection system learning	MFT boiler protection system learning	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.23	Fault judgment and treatment of DCS DI/DO/AI/AO	Fault judgment and treatment of DCS DI/DO/AI/AO	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.24	Common fault judgment of acting force and reaction force of coal pulverizer	Common fault judgment of acting force and reaction force of coal pulverizer	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.25	Analysis of FSSS system	Analysis of FSSS system	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.

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No.	Training Module	Post training content	Post training requirement
4.26	Wiring mode and principle of mechanical switch	Wiring mode and principle of mechanical switch	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.27	Team safety management	Team safety management	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.28	Working principle of thermal resistance and treatment of common problems	Working principle of thermal resistance and treatment of common problems	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.29	Working principle and wiring mode of thermocouple	Working principle and wiring mode of thermocouple	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
4.30	Common temperature measuring points in thermal engineering DCS construction	Common temperature measuring points in thermal engineering DCS construction	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
4.31	Establishment of electric door configuration	Establishment of electric door configuration	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.32	Positioning of hot primary air control valve	Positioning of hot primary air control valve	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.

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No.	Training Module	Post training content	Post training requirement
4.33	Positioning of hot primary air control valve	Positioning of hot primary air control valve	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.34	Positioning of cold primary air control valve	Positioning of cold primary air control valve	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
4.35	Common fault judgment of micro oil ignition system	Common fault judgment of micro oil ignition system	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
5.	**Ash removal and Desulfuration and chemical specialty**		
5.1	Maintenance of cycloid needle wheel deceleration	Practical operation of cycloidal pinwheel reducer	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
5.2	Maintenance of desulfurization vacuum belt dehydrator	Operation instruction for maintenance of desulfurization vacuum belt dehydrator	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
5.3	Absorber maintenance	Operation instruction for maintenance of absorption tower	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
5.4	Maintenance of ash conveying system of economizer	Operation instruction for maintenance of Economizer Ash Conveying System	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.

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No.	Training Module	Post training content	Post training requirement
5.5	Maintenance of limestone slurry pump	Operation instruction for maintenance of limestone slurry pump	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
5.6	Electrostatic precipitator feed valve	Dome valve repair	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
5.7	Maintenance of gypsum discharge pump	Operation instruction for maintenance of gypsum discharge pump	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
5.8	Maintenance of flushing water pump of demister	Operation instruction for maintenance of flushing water pump of demister	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
5.9	Maintenance of electrostatic precipitator	Operation instruction for maintenance of electrostatic precipitator	The team leader, technician and team leader shall be familiar with; Main responsibility and maintenance workers should know.
5.10	Valve maintenance	Valve maintenance practice	The team leader, technician, team leader, principal and maintenance worker shall be familiar with
6. Practical training			
6.1	Fitter process, quality standard and precautions	Flexible use of various types of fitter tools and instruments, able to independently manufacture simple structural parts	All participants of corresponding maintenance professions shall be familiar with and master

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No.	Training Module	Post training content	Post training requirement
6.2	Alignment and quality standard of water pump	Concentric and collinear, two rotor couplings concentric, end faces parallel, and data recording specifications	All participants of corresponding maintenance professions shall be familiar with and master
6.3	Repair welding and quality standard of grinding roller	The surfacing of grinding roller shall be smooth and round, eliminate defects, ensure welding quality and restore the original size of grinding roller	All participants of corresponding maintenance professions shall be familiar with and master
6.4	Setting calculation	Accurate calculation of protection setting value	All participants of corresponding maintenance professions shall be familiar with and master
6.5	Maintenance of horizontal centrifugal pump	Disassemble and clean all parts of the centrifugal pump, and ensure that all parameters meet the requirements of maintenance regulations after reassembly	All participants of corresponding maintenance professions shall be familiar with and master
6.6	Verification of voltage control switch	Independently complete the calibration work, the data is accurate, and can determine the accuracy of the instrument and whether the accuracy is qualified	All participants of corresponding maintenance professions shall be familiar with and master
6.7	Calibration of pressure transmitter	Independently complete the calibration work, the data is accurate, and can determine the accuracy of the instrument and whether the accuracy is qualified	All participants of corresponding maintenance professions shall be familiar with and master
6.8	Operation instruction	Disassembly, assembly and test of motor	All participants of corresponding maintenance professions shall be familiar with and master

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No.	Training Module	Post training content	Post training requirement
6.9	Electrical wiring process	Meet process requirements	All participants of corresponding maintenance professions shall be familiar with and master

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Schedule D: Performance Targets

1. Availability Factor:

The Availability Factor is a measure of the Facility's ability to produce output during a given period. The Contractor shall keep records of the AF of each Facility on an on-going basis and shall promptly and accurately declare the current ability of each Facility to produce and deliver power.

For purpose of calculating the AF Performance Liquidated Damages, the AF shall be based on the AF for the previous contract year based on the following formula:

$$AF_n = \frac{DC \times \text{hours in the year} - \{\Sigma (MO_{cap} \times MOH) + \Sigma (FO_{cap} \times FOH) + \Sigma (SO_{cap} \times SOH)\}}{DC \times \text{hours in the year}}$$

Where,

AF_n	= Availability Factor for the Year "n"
DC	= Dependable Capacity of the Facility as per the PPA
MO_{cap}	= capacity reduction during each Maintenance Outage in the Year "n"
MOH	= Maintenance Outage hours for each Maintenance Outage (MO_{cap}) in the Year "n"
FO_{cap}	= capacity reduction during each Forced Outage in the Year "n"
FOH	= Forced Outage hours for each Forced Outage (FO_{cap}) in the Year "n"
SO_{cap}	= capacity reduction during each Scheduled Outages in the Year "n"
SOH	= Scheduled Outage hours for each Scheduled Outage (SO_{cap}) in the Year "n"
$\Sigma (MO_{cap} \times MOH)$	= Maintenance Outage Energy for the Year "n"
$\Sigma (FO_{cap} \times FOH)$	= Forced Outage Energy for the Year "n"
$\Sigma (SO_{cap} \times SOH)$	= Scheduled Outage Energy for the Year "n

2. Heat Rate Guarantee:

Heat Rate Guarantee is net heat rate of each unit that is measured during O&M performance test. For purposes of calculating the Performance Liquidated Damages the guaranteed value of heat rate in the Heat Rate Guarantee shall constitute 100% load.

The Achieved Net Heat Rate also needs to be recorded as it is a measure of the efficiency at which energy is produced and delivered by each unit. The Contractor shall keep on-going records of the actual heat rate of each Unit on a continuous basis and, at the end of each contract year, shall calculate the average annual heat rate achieved for the units.

3. Net Dependable Capacity:

Net Dependable Capacity is net amount of capacity at any given time, expressed in kW, as determined by the most recent Dependable Capacity Test.

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4. Gross Unit Power Output Guarantee:

It is the gross power output of the individual steam turbine generator unit that is measured during O&M performance test. For purposes of calculating the Performance Liquidated Damages the guaranteed value of the gross output in the Gross Plant Power Output Guarantee shall constitute 100% load.

The Achieved Net Plant Power Output also needs to be recorded as it is a measure of the sum of net power output in each Plant. The Contractor shall keep on-going records of the actual net output of each Plant on a continuous basis.

5. Unscheduled Trips:

Regarding Unscheduled Trips the contractor will follow the power purchase agreement accordingly.

6. Performance Liquidated Damages:

The Contractor shall pay the Employer liquidated damages for failure to achieve the Performance Guarantees as specified in Schedule G2. The Contractor's liability to pay Liquidate Damage in any Contract Period shall not exceed USD Twenty Million (USD20,000,000.00) or 20% of contact value which one is higher.

7. Performance guarantee:

a) Main Performance Target:

Sl No.	Name of The Items	Guaranteed Values
01	Guaranteed Availability Per Year	85%
02	Standard coal consumption for power generation (g/kWh)	According to the performance test result from the third party and the tested calorific value of coal
03	Standard coal consumption for power supply (g/kWh)	According to the performance test result from the third party and the tested calorific value of coal.
04	Auxiliary Power Consumption Limit	a) At 50% (22.6*2) = 45.2 MW b) At 75% (29.6*2) = 59.2 MW c) At 100% (36.6*2) = 73.2 MW.
05	Weighted Plant Net Heat Rate: (per Unit)	• 8507.5 KJ/KWh (100%) • 8761.6 KJ/KWh (75%) • 9437.4 KJ/KWh (50%) (This parameter could be change as per performance guarantee test result)

b) Guaranteed Noise:

1. The Plant boundary noise is not higher than 70dB during the day.
2. The plant boundary noise is not higher than 60dB at night.

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3. Basis for noise guarantee:
   a) The noise level when delivering to the bidder shall not exceed the above value;
   b) Guarantee value is applicable to normal operation, except start and stop of the device and exception handling.
   c) The bidder shall also ensure that the noise standard complies with the provisions on noise emission in other Bangladesh regulations, PPA, IA and EIA. In case of conflict, the provisions with higher standard in PPA, IA and EIA shall prevail.

c) Emission Target of Atmospheric Pollutants and Ash and Slag:

1. Particulate emission concentration is less than 30 mg/Nm3;
2. The emission concentration of sulfur dioxide shall be less than 200 mg/Nm3
3. Nitrogen oxide emission concentration is less than 350 mg/Nm3;
4. The percentage ratio of transportation of ash and gypsum inside the Facilities, storage and management is greater than or equal to 100% (responsibility of the Contractor).
5. Basis for emission guarantee:

a) The emission index when delivering to the bidder shall not exceed the above value;
b) The bidder shall also ensure that the emission standards of flue gas pollutants comply with the provisions of PPA, IA and EIA. In case of conflict, the provisions with higher standards in PPA, IA and EIA shall prevail.

8. Training Assurance:

1. The bidder shall formulate a training plan that meets the requirements of the owner, and the employees who meet the post requirements of the owner shall gradually replace the post after cod, and finally realize the localized management of the owner.
2. The bidder shall conduct training in various forms and methods, such as signing apprenticeship contract with the owner's personnel, providing simulator and practical training opportunities, and regular assessment, so as to improve the scientific, technical and cultural level and production labor proficiency of the owner's personnel and better complete the production tasks of the enterprise.
3. In addition to the training of the owner's personnel, the bidder shall also complete the training and education of the bidder 's internal staff. The management personnel of the owner will conduct random inspection from time to time.
4. The training scheme submitted by the bidder shall be submitted to the competent department of the owner for review, and can be implemented only after passing the review. The bidder shall improve and change the training plan according to the requirements of the owner.
5. The training scheme submitted by the bidder shall be submitted to the competent department of the owner for review, and can be implemented only after passing the review. The bidder shall improve and change the training plan according to the requirements of the owner
6. The specific training and assessment requirements are detailed in the detailed rules for the implementation of the owner's education and training management.

9. Performance Appraisal:

The performance appraisal shall be implemented based on the annual completion status.

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Schedule E: Contractor's Personnel

1. General requirements for contractor's personnel:

1.1. Before entering the key post personnel of the operation and maintenance unit, the owner shall arrange the corresponding personnel to interview and evaluate them (see the post qualification and skill standards for the evaluation standards). Those who fail shall not take up the post. For those who do not meet the requirements for working after the interview and examination, the operation and maintenance unit shall replace the new personnel within 15 days after receiving the notice from the owner until the personnel meet the post requirements. If the replacement personnel still do not meet the post qualification requirements, and the unqualified proportion of key technical positions (Management and technical personnel who play a key role in production, refer to the description in Schedule E, clause2 for details) is more than 15%, the owner may confiscate the performance guarantee and terminate the operation and maintenance contractor.

1.2. When the key positions of the operation and maintenance contractor are changed, due to job transfer, promotion, resignation, etc., The post personnel shall be qualified and approved by the owner before they can take on their posts.

1.3. Personnel in key positions in the operation and maintenance contractor must go through the on-site adaptation period before they pass the evaluation, and get familiar with the environment, rules and regulations.

1.4. Every year, the owner can organize 1 to 2 personnel evaluations according to the actual situation, and the corresponding personnel of the owner will evaluate the personnel in each key position to test the ability of the personnel of the operation and maintenance contractor. Those who do not meet the standards should undergo on-the-job training and cannot continue to work until they pass the assessment.

1.5. Operation AE (shift) and above positions, equipment maintenance technicians, foreman and above positions need to have similar position experience of the same type unit, and the technical and management skills of key positions will be evaluated by the owner. The interview evaluation indexes are as follows: the full score is 100 points, and the score requirement is not less than 80 points:

a) Basic quality and post-performance ability (interview); 20 points
b) Business and technical ability (examination); 40 points
c) Basic management ability (examination + interview); 20 points
d) Previous work performance (interview + qualification certificate); 20 points

2. Requirements for personnel allocation quantity and Qualification for key positions of operation and maintenance:

2.1. Project Manager (1 person):

a) Bachelor degree or above, major in electric power related field;
b) At least 15 years working experience in large coal-fired power plants, at least 3 years of working experience in the same position, at least 1 year of overseas working experience of the same type of power plants;
c) Familiar with the engineering project management process, have the ability to establish operation and maintenance projects;

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d) Strong project management and coordination ability, rich project management experience, good team spirit and communication skills;
e) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.

2.2. Deputy Project Manager (Production) (1 person):

a) Bachelor degree or above, major in electric power related field;
b) At least 15 years of working experience in large coal-fired power plants, at least 2 years of working experience in the same position, at least 1 year of overseas working experience in the same type of power plants;
c) Proficient in electric power production and operation, equipment inspection, equipment maintenance and other professional knowledge;
d) Rich technical experience, with good team spirit and communication skills;
e) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.

2.3. Deputy Project Manager （Management) (1 person):

a) Bachelor degree or above, major in electric power related field;
b) At least 15 years of working experience in large coal-fired power plants, at least 2 years of working experience in the same position, at least 1 year of overseas working experience of the same type of power plants;
c) Proficient in the engineering project management process;
d) Strong project management and coordination ability, rich project management experience, good team spirit and communication skills;
e) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.

2.4. Lead Engineering Manager (1 person):

a) Bachelor degree or above, major in electric power related field;
b) Engineering series intermediate or above professional and technical qualification;
c) At least 15 years of working experience in large coal-fired power plants, at least 3 years of working experience in the same position, and at least 1 year of overseas working experience in the same type of power plants;
d) Familiar with the current situation and common accidents, obstacles and abnormalities in operation of the same units at home and abroad; with strong language expression, public relations and communication skills;
e) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.

2.5. Section Manager for Production and Technology Department (1 person):

a) Bachelor degree or above, major in electric power related field;
b) Engineering series intermediate or above professional and technical qualification;
c) At least 10 years of working experience in large coal-fired power plants, at least 3 years of working experience in the same position;
d) Good planning, organization, coordination, and communication skills;
e) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.

2.6. Section Manager for Generation Department (1 person):

a) Bachelor degree or above, major in electric power related field;
b) Engineering series intermediate or above professional and technical qualification;

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c) At least 10 years of management or related work experience in ultra-supercritical unit operation or 15 years of similar work experience in thermal power plants;
d) At least 3 years working experience in the same position or at least 5 years working experience in shift chief -operator or operation specialist;
e) Good planning, organization, coordination, and communication skills;
f) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.

2.7. Section Manager for Equipment and Maintenance Department (1 person):

a) Bachelor degree or above, major in electric power related field;
b) Engineering series intermediate or above professional and technical qualification;
c) At least 10 years of working experience in power plant production management;
d) Good planning, organization, coordination, and communication skills;
e) Master at least working principle, structure, maintenance process, test method, abnormal analysis and treatment of main and auxiliary machines in a profession;
f) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.

2.8. Production and Technology Department Engineer:

2.8.1. Boiler Engineer (1 operation direction and 1 maintenance direction):

a) Bachelor degree or above, major in electric power related field;
b) At least 10 years of working experience in large thermal power plants and at least 3 years professional technical management work experience or similar working experience in the operation/maintenance of boiler in ultra-supercritical units;
c) Master the theoretical knowledge of the boiler principle and its maintenance and operation. Knowledge of the structure, performance characteristics and important parameters of the main equipment of boiler and thermal system and important auxiliary equipment of thermal power plants;
d) With text writing ability, able to prepare technical plan, summary and report, coordination and communication ability;
e) Understand the technical management experience of relevant brother units and the management trends and development trends of domestic and foreign majors;
f) Strong accident analysis, judgment, comprehensive problem-solving ability and organization, command, coordination ability;
g) Have strong English reading and average speaking and writing ability.

2.8.2. Steam Turbine Engineer (1 operation direction, 1 maintenance direction):

a) Bachelor degree or above, major in electric power related field;
b) At least 10 years of working experience in large thermal power plants and at least 3 years professional technical management work experience or similar working experience in the operation /maintenance of Steam Turbine in ultra-supercritical units;
c) Master the theory knowledge of steam turbine principle and its maintenance and operation. Knowledge about the structure, performance characteristics and important parameters of steam turbine and thermal system main equipment and important auxiliary equipment of thermal power plants;

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d) With text writing ability, able to prepare technical plan, summary and report, coordination and communication ability;
e) Understand the technical management experience of relevant brother units and the management trends and development trends of domestic and foreign majors;
f) Strong accident analysis, judgment, comprehensive problem-solving ability and organization, command, coordination ability;
g) Have strong English reading and average speaking and writing ability.

2.8.3. Electrical Engineer (1 operation direction and 1 primary part maintenance direction and 1 secondary part maintenance direction):

a) Bachelor degree or above, major in electric power related field;
b) At least 10 years of working experience in thermal power plants and at least 3 years of professional technical management work experience or similar working experience in the operation /maintenance of Electrical in thermal power plants;
c) Master the theoretical knowledge of the generator principle and its maintenance and operation. Understand the structure, performance characteristics and important parameters of the main equipment and important auxiliary equipment of thermal power plants;
d) With text writing ability, able to prepare technical plan, summary and report, coordination and communication ability;
e) Understand the technical management experience of relevant brother units and the management trends and development trends of domestic and foreign majors;
f) Strong accident analysis, judgment, comprehensive problem-solving ability and organization, command, coordination ability;
g) Have strong English reading and average speaking and writing ability.

2.8.4. Control and instrument Engineer (1 DCS direction and 1 thermomechanical direction):

a) Bachelor degree or above, major in electric power related field;
b) At least 10 years of working experience and at least 3 years of professional technical management work experience or similar working experience of Control and instrument in thermal power plants;
c) Master the control and instrument knowledge;
d) With text writing ability, able to prepare technical plan, summary and report, coordination and communication ability;
e) Understand the technical management experience of relevant brother units and the management trends and development trends of domestic and foreign majors;
f) Rich C&I's fault and accident analysis, problem-solving ability and work organization, coordination execute ability;
g) Have general English listening, speaking, reading and writing skills.

2.8.5. Chemical water Engineer (1 operation direction, 1 maintenance direction):

a) College degree or above, major in electric power related field;
b) At least 10 years of working experience in large thermal power plants and at least 3 years of professional technical management or similar working

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experience in the operation/maintenance of Chemical Water in ultra-supercritical units;

c) Proficient in chemical principles and maintenance and operation. Knowledge about the structure, performance characteristics and important parameters of the main chemical system equipment and important auxiliary equipment of thermal power plants.

d) With text writing ability, able to prepare technical plan, summary and report, coordination and communication ability;

e) Understand the technical management experience of relevant brother units and the management trends and development trends of domestic and foreign majors;

f) Strong accident analysis, judgment, comprehensive problem-solving ability and organization, command, coordination ability;

g) Have general English listening, speaking, reading and writing skills.

2.8.6. Coal Handling System Engineer (1 operation direction, 1 maintenance direction):

a) College degree or above, major in electric power related field;

b) At least 10 years of working experience in large thermal power plants and at least 3 years of professional technical management or similar working experience in the operation /maintenance of Coal Handling System in thermal power plants;

c) Master the theoretical principle of coal transport system and the theoretical knowledge of maintenance and operation. Understand the structure, performance characteristics and important parameters of the main equipment and important auxiliary equipment of the coal transmission system of thermal power plants.

d) With text writing ability, able to prepare technical plan, summary and report, coordination and communication ability;

e) Understand the technical management experience of relevant brother units and the management trends and development trends of domestic and foreign majors;

f) Strong accident analysis, judgment, comprehensive problem-solving ability and organization, command, coordination ability;

g) Have general English listening, speaking, reading and writing skills.

2.8.7. Metal Welding Supervisor (1person):

a) College degree or above, major in electric power related field;

b) At least 10 years of working experience in large thermal power plants and at least 3 years of working experience in the same position in ultra-supercritical units;

c) Understand the metal professional performance characteristics and important parameters of thermal power plants;

d) With text writing ability, able to prepare technical plan, summary and report, coordination and communication ability;

e) Understand the technical management experience of relevant brother units and the management trends and development trends of domestic and foreign majors;

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f) Strong accident analysis, judgment, comprehensive problem-solving ability and organization, command, coordination ability;
g) Have general English listening, speaking, reading and writing skills.

2.8.8. Desulfurization and Ash Removal Engineer (1 operation direction, 1 maintenance direction):

a) College degree or above, major in electric power related field;
b) At least 10 years of working experience in thermal power plants and at least 3 years of professional technical management or similar working experience in the operation /maintenance of Desulfurization and Ash Removal in thermal power plants;
c) Master the principle of environmental protection system and its maintenance, operation of the theoretical knowledge. Knowledge of the structure, performance characteristics and important parameters of the main equipment and important auxiliary equipment of the environmental protection system of in thermal power plants;
d) With text writing ability, able to prepare technical plan, summary and report, coordination and communication ability;
e) Understand the technical management experience of relevant brother units and the management trends and development trends of domestic and foreign majors;
f) Strong accident analysis, judgment, comprehensive problem-solving ability and organization, command, coordination ability;
g) Have general English listening, speaking, reading and writing skills.

2.9. Shift chief-operator and main duty operator

2.9.1. Shift chief-operator (4persons):

a) Bachelor degree or above, major in electric power related field;
b) Have intermediate or equivalent or above professional and technical position qualifications;
c) More than 7 years of working experience in large coal-fired power plants and more than 5 years of working experience in centralized control operation of ultra-supercritical units;
d) At least 3 years of shift chief-operator, specialist work experience or at least 5 years of working experience of main duty operator (unit leader), with whole-process production preparation work experience;
e) Proficient in the whole plant thermal and electrical system, and master the start-stop of the main equipment and system, normal maintenance and accident treatment;
f) Proficient in anti-accident measures and safety measures under special operating conditions;
g) Master the interlock protection and control principle of boiler, steam engine and electrical equipment;
h) Familiar with relevant technical standards, management standards, rules and regulations;
i) Familiar with the principle and logic of automatic control and relay protection device;
j) Strong planning, organization, coordination and communication skills, certain leadership skills, good language and writing skills;

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k) Have a high sense of responsibility, analysis and judgment ability, risk control ability, emergency handling ability, organization and coordination ability.

l) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.

2.9.2. Training and Statistician Officer (2persons):

a) Bachelor degree or above, major in electric power related field;

b) At least 10 years of working experience in large thermal power plants and at least 5 years of working experience in ultra-supercritical unit management or similar work;

c) Familiar with steam turbine, furnace, electricity, control and instrument, chemistry, environmental protection, ash removal, fuel and other professional knowledge of thermal power plants;

d) Strong training and teaching ability;

e) Proficient in applying all kinds of computer office software;

f) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.

2.9.3. Main Operator on Duty for Main Control Operation (8persons):

a) Bachelor degree or above, major in electric power related field;

b) At least 3 years of working experience in main control and operation of ultra-supercritical units;

c) Assistance level or above professional and technical position qualifications;

d) Proficient in the main control operation procedures, master the professional knowledge of thermal power plant steam turbine, furnace, electricity, control and instrument, water conversion, environmental protection, coal transport, ash removal;

e) Strong accident handling ability;

f) Have a strong execution force and have general English listening, speaking, reading and writing skills.

2.9.4. Main Operator on Duty for Desulfurization and Ash Removal (4 persons):

a) College degree or above, major in electric power related field;

b) At least 3 years of working experience in ash and sulfur auxiliary control operation of thermal power plants;

c) Proficient in ash and sulfur operation procedures, master the desulfurization, ash removal and other professional knowledge;

d) Strong accident handling ability;

e) Have a strong execution force and have general English listening, speaking, reading and writing skills.

2.9.5. Main Operator on Duty for Chemical Operation (4 persons):

a) College degree or above, major in electric power related field;

b) At least 3 years of working experience in chemical auxiliary control operation of ultra-supercritical units;

c) Proficient in chemical operation procedures, master chemical professional knowledge;

d) Strong accident handling ability;

e) Have a strong execution force and have general English listening, speaking, reading and writing skills.

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2.9.6. Fuel Manager (1 person):

a) College degree or above, major in electric power related field;
b) More than 10 years of management or related work experience of coal in thermal power plant;
c) More than 3 years of working experience in the same position;
d) Good planning, organization, coordination, and communication skills;
e) Have strong English reading and average speaking and writing ability.

2.9.7. Main Operator on Duty for Coal Transportation shift (4 persons):

a) College degree or above, major in electric power related field;
b) At least 3 years of experience in Operator on Duty for Coal Transportation shift of thermal power plants;
c) Proficient in coal transport operation procedures, master the professional knowledge of coal transport;
d) Strong accident handling ability;
e) Have general English listening, speaking, reading and writing skills.

2.10. Equipment and Maintenance monitor

2.10.1. Turbine Maintenance (Including water treatment) shift leader (1 person):

a) College degree or above, major in thermal power engineering or mechanical engineering or other electric power related fields;
b) More than 3 years of working experience of this post in the same type of power plant;
c) Master the production process and safe production standards of electric power enterprises and "On-site safe operation management system";
d) Master the structure, principle and operation characteristics of steam engine equipment;
e) Master the inspection procedures and steam engine equipment inspection standards;
f) Have strong control ability of turbine maintenance equipment;
g) Have a strong ability to analyze and judge the discovery of equipment abnormalities;
h) Have strong organization, communication and coordination skills;
i) Have a strong execution force and have general English listening, speaking, reading and writing skills.

2.10.2. Boiler Maintenance (Including desulphurization and ash removal) Shift leader (1 person):

a) College degree or above, major in thermal power engineering or mechanical engineering or other electric power related fields;
b) More than 3 years of working experience of this post in the same type of power plant;
c) Master the production process and safe production standards of electric power enterprises and "On-site safe operation management system";
d) Master the structure, principle and operation characteristics of boiler equipment;
e) Master the inspection procedures and boiler equipment inspection standards;
f) Have a strong boiler equipment maintenance process control ability;

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g) Have a strong ability to analyze and judge the discovery of equipment abnormalities;
h) Have strong organization, communication and coordination skills;
i) Have a strong execution force and have general English listening, speaking, reading and writing skills.

2.10.3. Electrical Maintenance (primary/secondary) Shift leader (1 person):

a) College degree or above, major in thermal power engineering or mechanical engineering or other electric power related fields;
b) More than 3 years of working experience of this post in thermal power plant;
c) Master the production process and safe production standards of electric power enterprises and "On-site safe operation management system";
d) Master the structure, principle and operation characteristics of electrical equipment;
e) Master the inspection procedures and electrical equipment inspection standards;
f) Have a strong ability of electrical equipment maintenance process control;
g) Have a strong ability to analyze and judge the discovery of equipment abnormalities;
h) Have strong organization, communication and coordination skills;
i) Have a strong execution force and have general English listening, speaking, reading and writing skills.

2.10.4. Control and instrument Maintenance Shift leader (1 person):

a) College degree or above, automation / instrument / electrical / thermal power and other power plant related major;
b) More than 4 years of working experience in thermal power plants or more than 3 years of working experience in the same position;
c) Master the production process and safe production standards of electric power enterprises and "On-site safe operation management system";
d) Have good team spirit, strong management, communication and coordination skills, language and expression ability;
e) Master the structure, principle and operation characteristics of the control and instrument equipment, an d master the equipment maintenance procedures and test standards;
f) Have a strong ability of control and instrument equipment maintenance process control, a strong ability to analyze and judge equipment abnormalities;
g) Have the ability to make a maintenance plan;
h) Good professional English reading ability;
i) Proficient in using office software.
j) Have a strong execution force and have general English listening, speaking, reading and writing skills.

2.10.5. Coal Handling Maintenance Shift leader (1 person):

a) College degree or above, major in thermal power engineering, mechanical engineering and electric power related fields;
b) More than 3 years of working experience of this post in thermal power plant;

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c) Master the production process and safe production standards of electric power enterprises and "On-site safe operation management system";
d) Master the structure, principle and operation characteristics of coal transport equipment;
e) Master the inspection procedures and coal transport equipment inspection standards;
f) Have a strong ability to control the maintenance process of coal transport equipment;
g) Have a strong ability to analyze and judge the discovery of equipment abnormalities;
h) Have strong organization, communication and coordination skills;
i) Have a strong execution force and have general English listening, speaking, reading and writing skills.

2.10.6. Comprehensive Operation Shift leader(1person):

a) College degree or above, major in thermal power engineering, mechanical engineering and electric power related fields;
b) More than 3 years of working experience of this post in thermal power plant;
c) Master the production process and safe production standards of electric power enterprises and "On-site safe operation management system";
d) Master the structure, principle and operation characteristics of Comprehensive equipment;
e) Master the inspection procedures and Comprehensive equipment inspection standards;
f) Have a strong ability to control the maintenance process of Comprehensive equipment;
g) Have a strong ability to analyze and judge the discovery of equipment abnormalities.
h) Have strong organization, communication and coordination skills;
i) Have a strong execution force and have general English listening, speaking, reading and writing skills.

2.10.7. High pressure Welder (at least 1person):

a) Medium technology degree or above, 23-45 years old;
b) More than 3 years of experience in high-pressure welding;
c) Have rich welding experience, can argon arc welding, electric welding, gas package welding, manual welding;
d) Hold welder certificate, technical level is advanced or above; pressure vessel certificate;
e) Familiar with welder knowledge.

2.10.8. Scaffolding Technician (1person):

a) Special operation certificate of shelf worker;
b) Relevant power plant work experience;
c) Can independently set up steel pipe scaffolding and mobile frame;
d) Good health, good coordination ability, good sense of service and professional quality, strong strain ability and ability to resist pressure, strong sense of responsibility, careful, serious and responsible work

2.10.9. Crane Operator (2persons):

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a) More than 2 years of experience in lifting large components;
b) Hold the crane work certificate;
c) Ability to complete the lifting work independently;
d) Strong safety awareness, engaged in thermal power, power plant coal transport installation, maintenance work, familiar with lifting equipment and tools.

2.11. HSE Manager (1person):

a) Bachelor degree or above, safety major or related major;
b) At least 10 years of working experience in thermal power plants, at least 3 years HSE management experience in power plants, at least 1-year HSE management experience in overseas power plants.
c) Have the engineer certificate of National Registered Safety Officer.
d) Familiar with HSE management procedures and methods;
e) Have text writing ability, have planning, coordination, communication and management literacy;
f) Have a strong execution force and have a good written expression ability, can skillfully use English for communication, speaking and writing.

2.12. Safety Supervisor (3persons):

a) College degree or above, safety major or related major;
b) At least 10 years of working experience in thermal power plant, more than 1 year of working experience in power plant safety management;
c) Familiar with HSE work content and process;
d) Have text writing ability, have planning, coordination, communication and management literacy.
e) Have a strong execution force and have general English listening, speaking, reading and writing skills.

Pursuant to GC 8.2 (c), Substitution Fee for replacement of Key Personnel shall be US$5,000.

3. The time node requirements of personnel of operation and maintenance units:

3.1. The operation and maintenance unit shall complete the establishment of the production management team according to the advanced power plant operation and maintenance production management organizational structure. Before the installation of Patuakhali project equipment (expected in August 2022), 50-60 management personnel and key technical personnel (specialist and shift chief operator) are established, and plan to enter the plant according to the site demand. According to the work responsibilities of the Owner in the commissioning process in EPC contractor turnkey contract (including providing commissioning personnel), start the comprehensive production preparation, assist the Owner in the project quality control, and start the training plan for its own personnel and owner personnel.

3.2. Before the system electricity (expected in December 2022), general production personnel of operation and maintenance unit (Main Operator on Duty, Deputy Operator on Duty, Inspection and Patrol Operator, Maintenance Shift Leader and technicians, crew) with 100-150 people entry, according to the system installation and debugging schedule send corresponding professionals into work, under the guidance of debugging and installation unit personnel, complete the equipment single commissioning work, and make single commissioning ledger. Major problems existing in the trial operation of

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individual equipment shall be reported to the corresponding specialty of the owner in time.

3.3. Before the trial operation of the subsystem (expected to be in May 2023), all the operation and maintenance personnel (including security and logistics and other operation and maintenance service personnel) will enter and prepare for the subsystem commissioning. Under the guidance of the commissioning and installation unit personnel, complete the subsystem commissioning and trial operation work, and make the subsystem commissioning and trial operation ledger. Major problems existing in the trial operation of the subsystem shall be reported to the corresponding specialty of the owner in time.

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Schedule F: Specified Capital Works and Finance

As described in Schedule B.

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Schedule G: Contractor's Remuneration

[See Section VII, General Conditions, Sub-Clause 12.1.]

1. Contractor's Base Remuneration

a) For Mobilization Period (Pre-COD)

Description	Unit/Period	Foreign Currency Amount	BDT Amount
Base Remuneration including salary, bonuses, holiday, per diem and related expenses of Staff as per Detailed Staffing Plan	Lump Sum		
Total Excluding Taxes in Bangladesh	Mobilization period		

b) For After COD period

Description	Period	Foreign Currency Amount	BDT Amount
Base Remuneration including salary, bonuses, holiday, per diem and related expenses of Staff as per Detailed Staffing Plan	Per Year		
Total Excluding Taxes in Bangladesh (A)	Per Year		
Monthly Payments = (A) / 12	Per Month		
Total Excluding Taxes in Bangladesh After COD period	Per Five Years		

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2. Contractor's Incentive Payments / Liquidated Damages

Performance Parameter	Minimum / Maximum Value to be Met	Incentive Payment	Liquidated Damage Payment
Dependable Capacity	623.4MW (Per Year) (Minimum)	N/A	USD10,000 below the declared value
Net Output Energy	As per the requirement of BPDB (Per Year)	N/A	USD2,000 for 1 million kWh less than the required Net Output Energy
Target Availability (TAn) as calculated in accordance with Schedule D, Availability Factor	85% (Per Year) (Minimum)	30% x net profit of Employer/kWh	USD30,000 for each 0.1% reduction
Net Plant Heat Rate (NPHR)	• 8507.5 KJ/KWh (100%) • 8761.6 KJ/KWh (75%) • 9437.4 KJ/KWh (50%) (This parameter could be change as per performance guarantee test result)	N/A	USD100 for each 1kJ/kWh increase of Net Plant Heat Rate
Consumption of secondary fuel oil	0.50 milliliter/kWh	N/A	Will be equal to the cost of Fuel Oil plus five percent (5%)
Unscheduled Shutdowns (UNO)	Will be as per PPA	N/A	a) USD10,000 for each extra Unscheduled Shutdown Plus b) Lost Generated Energy x 0.05 US Cents
Number of Hours Shutdown after each Unscheduled Shutdown	Will be as per PPA	N/A	Will be as per PPA

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Maximum Consumption of Limestone (Per unit)	2.69 ton/h (Maximum)	N/A	USD100 for each 1% above the design value per year
The Contractor suffered serious personal injury and above		N/A	USD30,000.00 for each incident
Major Equipment Accidents (Direct Economic Loss of USD 20,0000.00 or unit shutdown for more than 24 hours) Occurring in Contractor's operating and maintenance Responsibility		N/A	USD20,000.00 penalty for each accident
General Equipment Accidents (Direct Economic Loss of USD100,000.00 or unit shutdown for more than 12 hours) Occurring in Contractor's operating and maintenance Responsibility		N/A	USD10,000.00 for each accident
Electrostatic Precipitator Operation Rate	≥95%	N/A	USD100.00 for each 1% lower than the indicator with USD1,000.00 cap
Dust Emission Compliance Rate	100%	N/A	USD100.00 for each 1% lower than the indicator with USD1,000.00 cap
Compliance Rate of Industrial Wastewater Treatment	100%	N/A	USD100.00 for each 1% lower than the indicator with USD1,000.00 cap
Sewage Treatment Facilities Intact Rate	100%	N/A	USD100.00 for each 1% lower than the indicator with USD1,000.00 cap
Plant Noise Level Compliance Rate	100%	N/A	USD100.00 for each 1% lower than the indicator with USD1,000.00 cap
FGD Operation Rate	96%	N/A	USD100.00 for each 1% lower than the indicator with USD1,000.00 cap
SO2 Emission Standard Rate	96%	N/A	USD100.00 for each 1% lower than the indicator with USD1,000.00 cap

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Leakage of Ash Handling Operation	0	N/A	USD100.00 for each ash leakage event

3. Contractor's Capital Works Remuneration:

The Contractor will not receive any remuneration for discharging its responsibilities under GC 9.2.

4. Contractor's Other Remuneration:

Not Applicable

5. Penalty:

1. In case of that the Owner is penalized due to the bidder's violation of PPA, IA and relevant regulations, the Owner shall penalize the bidder at 1.2 times amount of such penalties accordingly.
2. In case of the material provided by the Owner can meet the design quality requirement, but the plant emissions can't satisfy the design control standard and be penalized due to the bidder's reason, the Owner shall penalize the bidder at 1.2 times amount of the penalty accordingly.
3. Standard coal consumption for power generation: the bidder will be fined 10,000USD for each 1g/kWh rising of coal consumption. Assessments are conducted on a monthly, quarterly and annual basis. It is mainly based on annual assessment, and monthly and quarterly as references.
4. Comprehensive auxiliary electricity consumption rate: the bidder will be fined 5,000USD for each 0.1% rising. Assessments are conducted on a monthly, quarterly and annual basis. It is mainly based on annual assessment, and monthly and quarterly as references.
5. if fuel consumption per ignition exceeds the specified value in the term sheet provided by boiler manufacturer, for the exceeding part, the penalty is USD 1000 for each ton.
6. The bidder completes the coal, limestone and other unloading work in a timely manner, and the bidder is responsible for the demurrage fee caused by the untimely receiving and unloading.
7. If the temporary maintenance of equipment exceeds the approved standard construction period, the equipment maintenance contracting fee shall be reduced according to the loss of the purchaser.
8. If the technical ability of the bidder 's personnel is insufficient and the maintenance work cannot meet the site requirements for the work within the maintenance scope, the owner has the right to entrust it separately, and all the expenses incurred shall be deducted from the maintenance contract price.
9. The bidder shall not subcontract part of the work within the scope of contracting listed in the contract to a third party without the consent of the owner.
10. If personal safety and environmental pollution accidents are caused due to the bidder's responsibility, the bidder will bear all responsibilities and accept a fine of 10000-30000 USD.
11. In case of equipment accidents such as unit shutdown or equipment damage due to the bidder's responsibility, the bidder will bear its due responsibility. If it is the main responsible operator of the bidder will be fined 20000-40000 USD, and the secondary responsible operator of the bidder will be fined 10000-20000 USD, and the main responsible person will be expelled from the production site.

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12. If the bidder's personnel operate against rules, command against rules and violate this agreement, they will be punished by 5000USD-10,000USD.
13. If the on-site civilized production fails to meet the relevant requirements, the bidder shall be penalized for one item of 200USD.
14. If the system of " On-site safe operation management system " is not strictly implemented, then the work without ticket is penalized at 100usd each time.
15. Materials wasted arbitrarily shall be compensated according to the original price of materials, and 500USD shall be deducted;
16. If the bidder fails to perform the production task assigned by the owner, 1000USD will be deducted each time;
17. In case of fire, water and gas leakage due to improper measures in on-site construction, 1000USD will be deducted for each item;
18. If the bidder damages the equipment during construction, in addition to restoring the equipment, 1000USD will be deducted for each item;
19. To ensure smooth communication, the communication tools of the bidder's persons in charge of the site shall be kept open at any time, call and respond at any time, and deal with the problems on site in time. If the bidder is not in place in time, the bidder shall be penalized for 1000 USD each time.
20. The bidder must obey the arrangement of the owner. If there are work tasks at night, it shall organize personnel to work overtime. Each time it will be penalized as 1000USD - 3000usd if it disobeys overtime.
21. The technicians provided by the bidder must have the ability to work independently and train backup personnel. If they do not meet the requirements, they must be replaced within one week, otherwise they will be penalized as 2000USD per person per day.
22. If the bidder's personnel fail to go through the leave procedures as required by the agreement, each person will be penalized 1000 USD each time. The on-site personnel were slack in work. They gave a warning for the first time and penalized 1000USD per person for the second time.
23. If the on-site maintenance and defect elimination is delayed due to the insufficient number and skill level of the bidder's personnel, the bidder shall be penalized at 2000 USD each time, and the bidder with adverse consequences shall be penalized at 5000 USD each time.
24. See the detailed rules for the implementation of the owner's education and training management for the training assessment.
25. The evaluation of other projects shall refer to the relevant evaluation methods and relevant regulations of the owner.

6. Rewards:

Deleted

7. Payment Terms:

Foreign Currency Payments shall be made through Letter of Credit. Local Currency Payments shall be made through Direct Debit.

8. Advance Payments:

Amount of Advance Payment shall be equal to ten percent (10%) of the Annual Operating Fee, as applicable for the first year of annual operating fee.

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The Advance Payment shall be deducted in equal installments in monthly basis over a period of twelve (12) months from the monthly payments of Annual Operating Fee, as applicable for the first year.

9. Rate for Delayed Payments:

In the event that the Employer fails to make any payment on its respective due date, the Employer shall pay to the Contractor interest on the amount of such delayed payment at 1% per annum calculated on daily basis for period of delay until payment has been made in full.

10. Adjustment of Remuneration:

[Note: In order to adjust the remuneration for foreign and/or local inflation, a price adjustment provision should be included here if the contract has duration of more than 18 months or if the foreign or local inflation is expected to exceed 5% per annum. The adjustment should be made every 12 months after the date of the contract for remuneration in foreign currency and – except if there is very high inflation in the Employer's country, in which case more frequent adjustments should be provided for – at the same intervals for remuneration in local currency. Remuneration in foreign currency should be adjusted by using the relevant index for salaries in the country of the respective foreign currency and remuneration in local currency by using the corresponding index for the Employer's country. A sample provision is provided below for guidance:

Payments for remuneration made in accordance with Section VII, General Conditions, Clause 12.1 in [foreign and/or] [local] currency shall be adjusted as follows:

a. Remuneration paid in foreign currency pursuant to the rates set forth in Section G.1 of Schedule G shall be adjusted every 12 months (and, the first time, with effect for the remuneration earned in the 13th calendar month after the date of the Contract) by applying the following formula:

$$\mathbf{R_f = R_{fo} \times I_f / I_{fo}}$$

where R_f is the adjusted remuneration, R_{fo} is the remuneration payable on the basis of the rates set forth in Section 1 of Schedule G for remuneration payable in foreign currency, If is the value of the United States Consumer Price Index(US CPI) as published in the Publication of the International Monetary Fund entitled "International Financial Statistics" for the first month of the year and Ifo is the value of the United States Consumer Price Index as published in the publication of the International Monetary Fund entitled "International Financial Statistics" for quarter in the date of the Contract.

b. Remuneration paid in local currency pursuant to the rates set forth in Section 1 of Schedule G shall be adjusted every 12 months (and, for the first time, with effect for the remuneration earned in the 13th calendar month after the date of the Contract) by applying the following formula:

$$\mathbf{R_l = R_{lo} \times I_l / I_{lo}}$$

where R_l is the adjusted remuneration, R_{lo} is the remuneration payable on the basis of the rates set forth in Section 1 of Schedule G for remuneration payable in local currency, I_l is the official index for salaries in the Employer's country for the first month for which the adjustment is to have effect and, I_{lo} is the official index for salaries in the Employer's country for the month of the date of the Contract.*]*

11. Payment of Incentive Bonus/Liquidated Damages:

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By the fifteenth (15th) day of the first month of each contract year, the Contractor and the Employer shall prepare and resolve Liquidated Damages and bonus calculation as specified in Schedule G2, and an adjustment will be made to take account of any difference between the actual amount that is due for such period and the sum of the actual amount billed by the Contractor against Employer, and the difference (if any) shall either become payable by Employer to the Contractor within thirty days of such determination(in the case of any underpayment) or deducted from any payments due to the Contractor from the Employer in the first Monthly Invoice in the Contract Year immediately following such period(in respect of any overpayment). In the last Contract year, if the following payment cannot cover the Liquidated Damage amount, the Employer have the right to draw upon the Performance Security.

Liquidate Damage in any Contract Period shall not exceed USD Twenty Million (USD20,000,000.00) or 20% of contact value which one is higher.

For Information Only

Schedule H: Deleted

Schedule I: Deleted

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Schedule J: Financial Management of the Employer

The Parties responsible for the financial management shall advise the Employer's Representative to give notice to the Contractor within 14 days after the Party became aware, or should have become aware, of Employer's inability to pay its obligations as they fall due.

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Schedule K: Reporting Requirements

Reporting shall be as per Article 2.5, 5.3 and 5.4 of Schedule B, Section 6.

Schedule L: Deleted

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Schedule M: Insurance Required

Risk	Insuring party	Amount Per Occurrence	Detailed description of Risk
General Liability Insurance	Contractor	USD2,000,000 per occurrence in annual aggregate	Liability insurance on an occurrence basis against claims for personal injury (including bodily injury and death) and property damage.
Automobile Liability Insurance	Contractor	Automobile liability insurance in accordance with Bangladesh Laws; where Bangladesh Laws do not require any specific regulations or amounts, the Contractor shall arrange this insurance as it is customarily done according to good industrial practices	Automobile liability insurance against claims for personal injury (including bodily injury and death) or property damage arising out of the use of all owned, leased, non-owned and hired motor vehicles, including loading and unloading, and containing appropriate no-fault insurance provisions where applicable.
Workers' Compensation Insurance	Contractor	Workers' Compensation insurance in accordance with Bangladesh Laws; where Bangladesh Laws do not require any specific regulations or amounts, the Contractor shall arrange this insurance as it is customarily done according to good industrial practices.	Workers' compensation insurance as required by applicable laws, including employer's liability insurance for all employees of Operator.

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Schedule N: Extension and Subsequent Bidding

Pursuant to GC 19.6.1, upon the expiration of the Contract Duration pursuant to GC 2.3, at the option of the Employer, this Contract may be extended for an additional period of no more than the initial Duration of the Contract. At the option of the Employer, the Scope of Services may be amended or retained.

Pursuant to GC 19.6.2, the Contractor shall not be precluded from bidding for similar Contract which is offered by the Employer after the termination or expiration of this contract.

For Information Only

PART 3 – Condition of Contract and Contract Forms

For Information Only

Section VII. General Conditions (GC)

For Information Only

General Conditions

1. Definition and Interpretation

1.1. Definitions

In the Contract the following words and expressions shall have the meanings stated below, unless otherwise required by the context.

1.1.1. The Contract

(a) "Contract" means the General Conditions, the Particular Conditions which include Part A and Part B, the Letter of Acceptance, the Letter of Bid, the Schedules and any Addenda.

(b) "Contract Data" means the pages completed by the Employer entitled Contract Data which constitute Part A of the Particular Conditions.

(c) "Letter of Acceptance" means the letter of formal acceptance, signed by the Employer, of the Letter of Bid, including any annexed memoranda comprising agreements between and signed by both Parties. If there is no such letter of acceptance, the expression "Letter of Acceptance" means the Contract Agreement and the date of issuing or receiving the Letter of Acceptance means the date of signing the Contract Agreement.

(d) "Letter of Bid" means the document entitled Letter of Bid, which was completed by the Contractor and includes the signed offer to the Employer for the Services.

(e) "Schedules" means the documents entitled Schedule of Services Requirements, included in Section VI of the bidding document used to award the Contract.

(f) "Bid" means the Letter of Bid.

1.1.2. Parties and Persons

(a) "Contractor" means the means the company to be formed by the successful bidder(s), who are named as contractor in the Letter of Bid, and incorporated under the Companies Act, 1994 (Act 18 of 1994) of Bangladesh, with its registered office located in Bangladesh, and its permitted successors and assignees.

(b) "Contractor's Personnel" means the Contractor's Representative and all personnel whom the Contractor utilizes on the Facilities, who may include the staff, labor and other employees of the Contractor and of each Subcontractor (including Key Subcontractors); and any other personnel assisting the Contractor in the execution of the Services.

(c) "Contractor's Representative" means the person named by the Contractor in the Contract or appointed from time to time

by the Contractor under Sub-Clause 21.7 [Contractor's Representative], who acts on behalf of the Contractor.

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(d) "Employer" means the person named as employer in the Contract Data and the legal successors in title to this person.

(e) "Employer's Representative" means the person named by the Employer in accordance with Sub-Clause 3.3 (a) to represent and act for the Employer at all times during the performance of the Contract.

(f) "Employer's Personnel" means all staff employed by the Employer.

(g) "Government" means the Government of the People's Republic of Bangladesh.

(h) "Independent Expert" means the person appointed in accordance with Sub-Clause 20.1.2 [Independent Expert].

(i) "Key Staff" means those individuals listed as Key Staff in the Bid, or any person appointed, with the agreement of the Employer, as a Key Staff, for a part of the Services; and the legal successors in title to each of these persons.

(j) "Key Subcontractor" means those Subcontractors listed as Key Subcontractors in the Bid, or any person appointed, with the agreement of the Employer, as a Key Subcontractor, for a part of the Services; and the legal successors in title to each of these persons.

(k) "Party" means the Employer or the Contractor, as the context requires and "Parties" means both.

(l) "Subcontractor" means any person named in the Contract as a subcontractor, or any person appointed as a subcontractor, for a part of the Services; and the legal successors in title to each of these persons.

(m) "Third Party" means a person or an entity other than a Party, the Government, or the Employer.

1.1.3. Dates, Tests, Periods and Completion

(a) "Base Date" means the date 28 days prior to the latest date for submission of the Bid.

(b) "Commencement Date" means the date defined under Subclause 2.2 [Commencement].

(c) "Day" means a calendar day and "year" means 365 days.

(d) "Effective Date" has the meaning given in Sub-Clause 2.1 [Conditions of Effectiveness].

1.1.4. Money and Payments

(a) "Contractor's Account" means paid for the by the Contractor, as defined in Sub-Clause 12.5.1.

(a) "Contractor's Base Remuneration" means the remuneration specified in Schedule G to be the Contractor's Base Remuneration, or is no such

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amount is specified, the amount of the Contractor's Remuneration which is not dependent on meeting Performance Targets.

(b)

(c) "Contractor's Remuneration" means the price defined in Clause 12.1 [Contractor's Remuneration] and includes adjustments in accordance with the Contract.

(d) "Cost" means all expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Facilities, including overhead and similar charges, but does not include profit.

(e) "Foreign Currency" means a currency in which part (or all) of the Contractor's Remuneration is payable, but not the Local Currency.

(f) "Liquidated Damages on Termination for the Employer's Convenience" means the amount specified in the Contract Data pursuant to Sub-Clause 21.10(f)(i) to be payable in the event of Termination by the Employer for Convenience pursuant to Sub-Clauses 21.5 and 21.8.

(g) "Local Currency" means the currency of the Country.

1.1.5. Services and Goods

(a) "Contractor's Equipment" means all apparatus, machinery, vehicles and other things required for the execution and completion of the Services and the remedying of any defects.
But excludes Employer's Equipment (if any), Plant, Materials and any other things intended to form or forming part of the Facilities.

(b) "Goods" means Contractor's Equipment, Materials, Plant, or any of them as appropriate.

(c) "Services" has the meaning given in Clause 4.1 [Services to be Performed and Other Obligations].

1.1.6. Corrupt or Fraudulent Practices

(a) "Coercive Practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party.

(b) "Collusive Practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party.

(c) "Corrupt Practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party.

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(d) "Fraudulent Practice" is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation.

(e) "Obstructive Practice" is (i) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede an Employer's investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or form pursuing the investigation, or (ii) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under Sub-Clause 3.10 [Inspections and Audits by the Employer].

1.1.7. Other Definitions

(a) "Arbitration" means the process described as arbitration in Sub-Clause 20.1.4 [Arbitration].

(b) "Capital Works" means construction work or the procurement and installation of capital equipment intended to extend, rehabilitate or replace the Facilities.

(c) "Condition Precedent" means one of the Conditions of Effectiveness listed in Sub-Clause 2.1 [Conditions of Effectiveness].

(d) "Contractor's Documents" means the calculations, computer programs and other software, drawings, manuals, models and other documents of a technical nature (if any) supplied by the Contractor under the Contract.

(e) "Country" means the country in which the Facilities (or most of it) is located, where the Services are to be executed i.e. People's Republic of Bangladesh.

(f) "Cure Period" means, in respect of a Default Notice given to the Contractor under Sub-Clause 21.1 [Notification and Cure Plans], the period specified in the Default Notice (or if no such period is specified 10 Business Days from the date of the Default Notice) as varied or extended under Sub-Clause 21.2 [Remedying the Default within the Applicable Cure Period].

(g) "Default" means a failure by a Party to perform its obligations under the Contract.

(h) "Delegation of Management Authority" means the delegation to the Contractor of authority to manage the Facilities which is granted under Clause 11 [Delegation of Management
Authority to the Contractor].

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(i) "Pre-Conditions" means something the Employer or a third party shall do or provide, on which performance of the Service is contingent and which is listed as a dependency in Schedule B, Article 7.

(j) "Employer's Equipment" means the apparatus, machinery and vehicles (if any) made available by the Employer for the use of the Contractor in the execution of the Services, as stated in the Specification; but does not include Plant which has not been taken over by the Employer.

(k) "Facilities" means all assets of the Employer which are to be managed by the Contractor and places as may be specified in the Contract as forming part of the Facilities.

(l) "Force Majeure" is defined in Sub-Clause 17.1 [Definition of Force Majeure].

(m) "Laws" means all national (or state) legislation, statutes, ordinances and other laws and regulations and by-laws of any legally constituted public authority.

(n) "Objectives" has the meaning given under Sub-Clause 1.6.2 [Objectives].

(o) "Performance Security" means the security (or securities, if any) under Sub-Clause 16.3 [Performance Security].

(p) "Proposed Substitute Key Staff Member or Key Subcontractor" have the meaning given in Sub-Clause 8.2 [Substitution of Contractor's Key Staff Member or Key Subcontractor].

(q) "Recitals" has the meaning given under Sub-Clause 1.6.1 [Recitals].

(r) "Specified Capital Works" means Capital Works which are the responsibility of the Contractor under Sub-Clause 9.2 [Responsibilities for Specified Capital Works].

(s) "Substitution Fee" is the amount to be paid by the Contractor for substituting another person in place of a Key Staff Member or Key Subcontractor, in accordance with Sub Clause 8.2 [Substitution of Contractor's Key Staff Member or Key Subcontractor].

(t) "Unforeseeable" means not reasonably foreseeable and against which adequate preventive precautions could not reasonably be taken by an experienced contractor by the date for submission of the Bid.

(u) "Value Management Proposal" has the meaning given under Sub-Clause 19.2 [Value Management].

(v) "Variation" means any change to the Services, which is instructed or approved as a variation under Clause 19.1 [Employer Variations].

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(w) "Variation Proposal" has the meaning given under Subclause 19.1.1 [Decision on Employer's Variation Request].

(x) "Variation Request" has the meaning given under Subclause 19.1 [Employer Variations].

1.2. Interpretation

In the Contract, except where the context requires otherwise:

(a) words indicating one gender include all genders;

(b) words indicating the singular also include the plural and words indicating the plural also include the singular;

(c) provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing;

(d) "written" or "in writing" means hand-written, type-written, printed or electronically made and resulting in a permanent record;

(e) the word "Proposal" is synonymous with "proposal" and "Bidder" with "bidder" and "Proposal documents" with "proposal documents".

(f) the marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

1.3 Communications

Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

(a) in writing and delivered by hand (against receipt), sent by mail or courier, or transmitted using any of the agreed systems of electronic transmission **as stated in the Contract Data**; and

(b) delivered, sent or transmitted to the address for the recipient's communications **as stated in the Contract Data**.

However:

(i) if the recipient gives notice of another address, communications shall thereafter be delivered accordingly; and

(ii) if the recipient has not stated otherwise when requesting an approval or consent, it may be sent to the address from which the request was issued.

Approvals, certificates, consents and determinations shall not be unreasonably withheld or delayed. When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Independent Expert, a copy shall be sent to the Employer's Representative or the other Party, as the case may be.

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1.4. Law and Language

The Contract shall be governed by the law of the country or other jurisdiction stated in the Contract Data.

The ruling language of the Contract shall be that **stated in the Contract Data**.

The language for communications shall be that stated in the Contract Data. If no language is stated there, the language for communications shall be the ruling language of the Contract.

1.5. Priority of Documents

The documents forming the Contract (as attached hereto) are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence:

(a) the Contract Agreement (if any),

(b) the addenda Nos. (if any)

(c) the Letter of Acceptance, (d) the Particular Conditions,

(e) these General Conditions,

(f) the Schedules of Services Requirements

(g) the Letter of Bid

In the event of any ambiguity or conflict between the Contract Documents listed above, the order of the precedence shall be the order in which the Contract Documents are listed in this Clause 1.5 above.

1.6. Recitals and Objectives

1.6.1. Recitals

The Recitals are the background facts about the Parties, the provision of utility services in the Country and other facts and intentions set out in Schedule A (A.1). The Recitals are not legally binding but may be used as context to assist in interpretation of the contract.

1.6.2. Objectives

The Objectives the Employer wishes to achieve by entering the Contract are set out in Schedule A (A.2)

2. Commencement and Duration

2.1. Conditions of Effectiveness

This Contract shall become effective from the date on which all the following Conditions of Effectiveness: Sub-Clause 2.1 [Conditions of Effectiveness], are fulfilled, [Effective Date], except for Sub-Clause 19.5 [Extension and Subsequent Bidding] and Clauses 1 [Definitions and Interpretations] and 3 [General Provisions], which will effective on the date of signing of the Contract.

(a) Deleted.

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(b) Notification of the Contractor's Representative to the Employer by the Contractor as required by Sub-Clause 3.2 [Contractor's Representative].

(c) Notification of the Employer's Representative to the Contractor by the Employer as required by Sub-Clause 3.3 [Employer's Representative].

(d) Appointment of the Independent Expert in accordance with Sub-Clause 20.1.2 [Independent Expert].

(e) Delivery of the Performance Security to the Employer by the Contractor in accordance with Sub-Clause 16.3 [Performance Security].

(f) Other conditions listed **in the Contract Data.**

2.2. Commencement

(a) Within (7) days of the satisfaction of the conditions specified in Sub-Clause 2.1 [Conditions of Effectiveness], the Employer shall issue a certificate to commence the Services [Certificate of Commencement] to the Contractor. The date of issue of the Certificate of Commencement shall be the "Commencement Date".

(b) The Contractor shall commence the provision of the Services

no later than 3 days after receipt of the Certificate of Commencement and the Employer shall return the Bid Security to the Contractor.

(c) The Contractor and the Employer shall use their best effort and endeavors to procure the satisfaction of the Conditions of Effectiveness specified in Sub-Clause 2.1 [Conditions of Effectiveness] as soon as practicable and in any event no later than sixty (60) days after the date hereof.

(d) If the conditions specified in Sub-Clause 2.1 [Conditions of Effectiveness] are not fulfilled or waived by mutual agreement of the Parties within ninety (90) days of the date hereof, Employer shall have the right to terminate this Contract immediately. If the Contractor has failed to fulfill any of these conditions, the Employer shall forfeit the Bid Security.

2.3. Duration

Unless terminated earlier in accordance with Clause 21 [Default and Termination], this Contract shall remain in effect until the period **stated in the Contract Data** has passed after the Commencement Date.

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3. General Provisions

3.1. Assignment

Neither Party shall assign the whole or any part of the Contract or any benefit or interest in or under the Contract. However, either Party:

(a) may assign the whole or any part with the prior agreement of the other Party, at the sole discretion of such other Party and

(b) may, as security in favor of a bank or financial institution, assign its right to any moneys due, or to become due, under the Contract.

3.2. Contractor's Representative

The Contractor shall appoint a Contractor's Representative following execution of this Contract but on or before of the Effective Date and shall give him all authority necessary to act on the Contractor's behalf under the Contract. If the Contractor is an unincorporated Joint Venture, the Contractor's Representative shall have the authority to bind all members of the Joint Venture.

The Contractor's Representative may delegate any powers, functions and authority to any competent person and may at any time revoke the delegation. Any delegation or revocation shall not take effect until the Employer Representative has received prior notice signed by the Contractor's Representative, naming the person and specifying the powers, functions and authority being delegated or revoked.

The Contractor's Representative shall be fluent in the language for communications defined in Sub-Clause 1.4 [Law and Language]. If these other persons are not fluent in the said language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Employer's Representative.

3.3. Employer's Representative

(a) The Employer shall name its representative before the Effective Date.

(b) The Employer may change its representative from time to time and shall give notice of the change without delay. The Employer shall not change its representative at a time and in such a manner as to impede the progress of the Services.

(c) The Employer's Representative shall represent and act for the Employer at all times during the performance of the Contract. All notices, instructions, orders, certificates, approvals and all other communications under the Contract by the Employer shall be given by the Employer's Representative otherwise provided.

3.4. Communications by the Contractor

All notices, instructions, information and other communications given by the Contractor to the Employer under the Contract shall be given to the Employer's Representative except as herein otherwise provided.

3.5. Subcontractors

The Contractor shall not subcontract the whole of the Services.

The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if they were the acts or defaults of the Contractor. Unless otherwise stated in the Contract Data:

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(a) the Contractor shall not be required to obtain consent to a subcontract for which the Subcontractor is named in the Contract;

(b) the prior consent of the Employer's Representative shall be obtained to other proposed Subcontractors;

(c) the Contractor shall give the Employer's Representative not less than 28 days' notice of the intended date of the commencement of each Subcontractor's work and of the commencement of such work on the Facilities; and

(d) each subcontract shall include provisions which would entitle the Employer to require the subcontract to be assigned to the Employer under Sub-Clause 3.7 [Assignment of Benefit of Subcontract] (if or when applicable) or in the event of termination under Sub-Clause 21.5 [Termination by Employer for Convenience].

The Contractor shall ensure that the requirements imposed on the Contractor by Sub-Clause 15.3 [Confidentiality Obligations of the Contractor] apply equally to each Subcontractor.

Where practicable, the Contractor shall give fair and reasonable opportunity for contractors from the Country to be appointed as Subcontractors.

3.6. Key Subcontractors

The Contractor shall use the services of any Key Subcontractor specified in its Bid, unless the Employer is reasonably satisfied that the:

(a) The Key Subcontractor is not available; or

(b) The performance of the Services will not suffer if the Subcontractor is not used.

The Contractor may provide another person (the "Proposed Substitute Key Subcontractor") in substitution for a Key Subcontractor (as identified in Schedule E) only on fulfillment of the following conditions:

(a) Proving to the reasonable satisfaction of the Employer that the Key Subcontractor is not available;

(b) Proving to the reasonable satisfaction of the Employer that the Proposed Substitute Key Subcontractor is as suitable for the services as the Key Subcontractor that is not available.

3.7. Assignment of Benefit of Subcontract

If a Subcontractor's obligations extend beyond the expiry date of the Contract and the Employer, prior to this date, instructs the Contractor to assign the benefit of such obligations to the Employer, then the Contractor shall do so. Unless otherwise stated in the assignment, the Contractor shall have no liability to the Employer for the work carried out by the Subcontractor after the assignment takes effect.

3.8. Compliance with Laws

The Contractor shall, in performing the Contract, comply with applicable Laws. Unless otherwise stated in the Contract Data:

(a) the Employer shall have obtained (or shall obtain) the planning, zoning, resource abstraction, environmental discharge permission for the normal operation of the Facilities and the Employer shall indemnify and hold the Contractor harmless against and from the consequences of any failure to do so; and

(b) the Contractor shall give all notices, pay all taxes, duties and fees and obtain all permits, licenses and approvals, as required by the Laws in relation to the

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execution and completion of the Services in so far as these relate to the Services themselves and not to the operation of the Facilities and the Contractor shall indemnify and hold the Employer harmless against and from the consequences of any failure to do so.

3.9. Joint and Several Liability

If the Contractor constitutes (under applicable Laws) a Joint Venture of two or more persons:

(a) these persons shall be deemed to be jointly and severally liable to the Employer for the performance of the Contract;

(b) these persons shall notify the Employer of their leader who shall have authority to bind the Contractor and each of these persons; and

(c) the Contractor shall not alter its composition or legal status without the prior consent of the Employer.

4. Obligations of the Contractor

4.1 Services to be Performed and Other Obligations

The Contractor shall perform the Services set out in Schedule B – Services and the other obligations described in Clauses 4, 5, 6, 7, 8 and 9.

4.2. Pre-Conditions

The performance by the Contractor of its obligations under the Contract shall be contingent on the availability of the Pre-Conditions listed in Schedule B.

4.3. Non-Availability of the Pre-Conditions

Unless Schedule B provides a different mechanism for determining the implications of non-availability of the Services, in the event that any of the Pre-Conditions pursuant to Sub-Clause 4.2 [Pe-Conditions] are not available to the extent that, in the opinion of the Independent Expert, the non-availability of such Pre-Conditions:

(a) makes it unreasonable to expect the Contractor to perform some or all of the Services, the Contractor shall be relieved of its responsibilities to perform those services, or

(b) affects the achievement of any of the Performance Targets, such Performance Targets shall be reduced for the duration for which the Pre-Conditions are not available to the extent that the Independent Expert determines at its sole discretion.

4.4. Cost of Performing the Services

The performance of the Services shall be at the cost of the Contractor, unless otherwise specified in Schedule B.

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5. Conflict of Interest

5.1. General

The Contractor shall hold the Employer's interest's paramount, without any consideration for future work and strictly avoid conflict with other assignments or their own corporate interests.

5.2. Contractor not to benefit from commissions, discounts, etc.

(a) The payment of the Contractor pursuant to Sub-Clause 12.1 [Contractor's Remuneration] shall constitute the Contractor's only payment in connection with this Contract and, subject to Sub-Clause 5.3 [Contractor and Affiliates not to Engage in Certain Activities] hereof, the Contractor shall not accept for its own benefit any trade commission, discount or similar payment in connection with activities pursuant to this Contract or in the discharge of its obligations hereunder and the Contractor shall use its best efforts to ensure that any Sub-Contractors, as well as the Personnel and agents of either of them, similarly shall not receive any such additional payment.

(b) Furthermore, if the Contractor, as part of its obligations under the Contract, has the responsibility of advising the Employer on the procurement of goods, works or services, the Contractor shall comply with the Bank's applicable procurement guidelines and shall at all times exercise such responsibility in the best interest of the Employer. Any discounts or commissions obtained by the Contractor in the exercise of such procurement responsibility shall be for the account of the Employer.

5.3. Contractor and Affiliates Not to Engage in Certain Activities

The Contractor agrees that, during the term of this Contract and after its termination, the Contractor and any entity affiliated with the Contractor, as well as any Subcontractor and any entity affiliated with such Subcontractors, shall be disqualified from subsequently providing goods, works or services (other than consulting services) for a project resulting from or directly related to the Contractor's Services for the preparation or implementation of such project.

5.4. Prohibition of Conflicting Activities

The Contractor shall not engage and shall cause its Personnel as well as their Sub-Contractors and their Personnel not to engage, either directly or indirectly, in any business or professional activities that would conflict with the activities assigned to them under this Contract.

6. Know-How Transfer and Training

6.1. Requirement to Transfer Know-How and Systems

The Contractor shall:

(a) Transfer such know-how, management systems, manuals, utility management software and similar knowledge, tools and capacity for managing a utility as are specified in Schedule C.

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(b) Leave with the Employer such, at the Termination or expiration of the Contract, management systems, manuals, utility management software and similar tools as are specified in Schedule C.

6.2. Requirement to Provide Training

The Contractor shall provide such training and development of Employer's Personnel as is specified in Schedule C.

6.3. Cost of Know-How Transfer and Training

The performance of the obligations under this Clause 6 shall be at the cost of the Contractor, unless otherwise specified in Schedule C.

7. Performance Targets

7.1. General

The Performance Targets will be the targets for key indicators set out in Schedule D.

In performing the Services and exercising its Delegated Management Authority, the Contractor shall use its best endeavors to achieve or exceed the Performance Targets.

Achieving the Performance Targets will not grant the right of any additional remuneration to the Contractor, except to the extent specified in Schedule G, Clause 2.

8. Staff to be Provided by the Contractor

8.1. Provision of Contractor's Personnel

The Contractor shall provide the Contractor's Personnel set out in **Contractor** Schedule E, to fill the positions listed in Schedule E, for the periods or days specified in Contractor's Personnel.
All costs of providing the Staff specified in Schedule E are to be for the Contractor's Account, unless otherwise specified in Schedule E.

8.2. Substitution of Contractor's Key Staff Member or Key Subcontractor

The Contractor may provide another person (the "Proposed Substitute Key Staff Member" or "Proposed Substitute Key Subcontractor") in substitution for a Key Staff or a Key Subcontractor (as identified in Schedule E) only on fulfillment of the following conditions:

(a) Proving to the reasonable satisfaction of the Employer that the Key Staff Member or Key Subcontractor is not available because of ill-heath, death, or because he is no longer employed or subcontracted by the Contractor

(b) Proving to the reasonable satisfaction of the Employer that the Proposed Substitute Key Staff Member or Key Subcontractor is as suitable for the job as the Key Staff Member or Key Subcontractor who is not available. To satisfy itself

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as to the suitability of the Proposed Substitute Key Staff Member or Proposed Substitute Key Subcontractor, the Employer may, among other things:

(i) check the references of the Proposed Substitute Key Staff Member or Proposed Key Subcontractor and/or

(ii) require the Proposed Substitute Key Staff Member or Proposed Substitute Key Subcontractor to attend an interview with the Employer in the Country. Any costs incurred in the Proposed Substitute Key staff Member or Proposed Substitute Key Subcontractor attending the interview will be for the Contractor's Account.

Payment by the Contractor of a Substitution Fee of the amount specified in Schedule E.

8.3. Labor Laws

The Contractor shall comply with all the relevant labor Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration and shall allow them all their legal rights.

The Contractor shall require the Contractor's Personnel to obey all applicable Laws, including those concerning safety at work. The Contractor shall also require its Subcontractors to do the same with their respective personnel.
The Contractor shall keep indemnified the Employer from all obligation pertaining to employment law on account of Contractor's Personnel.

8.4. Health and Safety

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel.

8.5. Contractor's Personnel Qualifications

The Contractor's Personnel shall be appropriately qualified, skilled and experienced in their respective trades or occupations. The Employer's Representative may require the Contractor to remove (or cause to be removed) from the Facilities or the performance of the Services, any Contractor's Personnel, including the Contractor's Representative if applicable, who:

(a) persists in any misconduct or lack of care,

(b) carries out duties incompetently or negligently,

(c) fails to conform with any provisions of the Contract, or

(d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment.

If requested by the Employer, the Contractor shall then substitute the person removed with another person. This substitution must be in accordance with Sub-Clause 8.2.

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8.6. Foreign Personnel

The Contractor may bring in to the Country any foreign personnel who are necessary for the execution of the Services except for the categories of staff specified in the Contract Data that, in accordance with applicable Country Laws, must be hired locally if and to the extent that a sufficient number of appropriately qualified staff is locally available. The Contractor shall ensure that these personnel are provided with the required visas and work permits. Without having proper visa and work permits, no foreign personnel will work in the Facility to discharge obligation under this Contract. The Employer will, if requested by the Contractor, use his best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national, or government permission required for bringing in the Contractor's personnel.

The Contractor shall be responsible for the return of these personnel to the place where they were recruited or to their domicile. In the event of the death in the Country of any of these personnel or members of their families, the Contractor shall similarly be responsible for making the appropriate arrangements for their return or burial.

Where applicable, the Contactor shall ensure that in compliance with prevailing laws of country, the foreign personnel are paying tax to the government for their income generated in Bangladesh.

9. Procurement and Management of Capital Works and Finance

9.1. Responsibility to Manage Employer's Capital Works and Finance

Unless otherwise specified in Schedule F, the Contractor will not be directly responsible for Capital Works or sourcing finance but will be responsible for assisting the Employer's Personnel for these functions, to the extent that this is within the definition of Services to be performed and the Delegation of Management Authority.

9.2. Responsibilities for Specified Capital Works

The Contractor will be responsible for procuring, managing and supervising Capital Works to the extent set out in Schedule F.

The cost of Specified Capital Works will be to the Employer's Account, unless otherwise specified in Schedule F.

The Contractor will not receive any remuneration for discharging its responsibilities under this Sub-Clause 9.2, unless otherwise specified in Schedule G.

9.3. Responsibilities for Specified Finance

The Employer will be responsible for sourcing, negotiating or otherwise procuring finance as specified in Schedule F.

The Contractor shall provide all necessary information and details as required by the lender and shall participate in the negotiations on request of the Employer.

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9.4. Procurement Rules

9.4.1. Procurement for Facility Operations

In discharging its responsibilities to procure, or manage the procurement of, materials, supplies and services for the operations of the Facility, the Contractor will follow good commercial practice designed to ensure fairness, transparency and value for money. No remuneration will be provided for such work, unless it is specified in this Contract.

9.4.2. Procurement for Provision of the Services

The Contractor is free to procure anything required for the provisions of Services as it wishes provided that:

(a) this Contract was awarded competitively to the satisfaction of the Employer and

(b) the thing being procured is for the Contractor's Account.

9.4.3. Procurement for Employer's Capital Works and Specified Capital Works

In discharging its responsibilities to procure, or manage the procurement of anything required for Capital Works and Specified Capital Works, the Contractor will follow good commercial practice designed to ensure fairness, transparency and value for money. No remuneration will be provided for such work, unless it is specified in this Contract.

10. Contractor's Reporting.

10.1. Contractor's Reporting Requirements

Unless otherwise stated in Schedule K, monthly progress reports shall be prepared by the Contractor and submitted to the Employer's Representative in six copies. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the period to which it relates. The Contractor shall comply with all other reporting requirements specified in Schedule K.

11. Delegation of Management Authority to the Contractor

11.1. Delegation of Management Authority

Regardless of the relationship and interdependency between the Employer's Board and the Employer, as may be defined by the Employer's charter or other internal documents, for the purpose of this Contract, the Employer is the Party to the Contract and is deemed to act on behalf and with the authorization of the Employer's Board. In this capacity, the Employer confers on the Contractor the Delegated Management Authority over the areas and to the extent specified in Schedule I. This delegation is irrevocable during the term of the Contract.

11.2. Contractor to be Advisor on Other Management Matters

All management authority not explicitly delegated to the Contractor is retained by the Employer.

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If in the Contractor's opinion it would be beneficial to the performance of the Services and achievement of the Objectives for such management authority to be exercised in a particular way, the Contractor shall advise the Employer of this and provide reasons in writing. The Employer will give the Contractor written notice of its decision within the period specified in the Contract Data. If the Employer decides not to follow the Contractor's advice, it will give written reasons for its decision when it informs the Contractor.0k]

The Contractor shall comply with the decisions of the Employer in management matters which are not the subject of Delegated Management Authority, to the extent that this is consistent with this Contract and in particular with Schedule B, Schedule F and Schedule H.

11.3. Further Delegation During the Term of the Contract

The Employer may delegate further powers to the Contractor during the term of the Contract. Such further delegations are to be in writing.

The delegations may be revocable or irrevocable, as specified in the delegation. Such delegations will be effective unless the Contractor refuses to accept the delegation. To be effective, such refusal must be given in writing within 30 days of receiving the notice of delegation.

11.4. Purpose of Exercise of Delegated Management Authority

The Contractor shall exercise any Delegated Management Authority to perform the Services and meet the Performance Targets, in accordance with good utility management practices.

11.5. Suspension of Delegated Management Authority

The delegation of powers shall be suspended during periods of Suspension of the Service, in accordance with Sub-Clause 18.2

[Employer's Entitlement to Suspend the Services and Delegated Management Authority].

11.6. Employer's Personnel

The Employer's Personnel will continue to be employed by the Employer. They will not become employees of the Contractor by virtue of this Contract.

The Contractor's Personnel will not be employees of the Employer by virtue of this Contract.

The Contractor's power to manage the Employer's Personnel will be as set out in the delegation of management authority to the Contractor under this Clause.

11.7. Deleted

12. Contractor's Remuneration and Costs

12.1. Contractor's Remuneration

12.1.1. Amount and Conditions of Payment

The amount and conditions of payment of the Contractor's Remuneration shall be as specified in Schedule G.

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12.1.2. Responsibility for Payment

Payment of the Contractor's Remuneration shall be the responsibility of the Employer, unless otherwise specified in Schedule G.

12.1.3. Payment to be Made Without Penalty or Deduction

The Contractor's Remuneration shall be paid in full without penalty or deduction unless otherwise provided in Schedule G, or this Contract.

12.1.4. Dates for Payment

The dates for payment of the Contractor's Remuneration shall be as specified in Schedule G.

12.1.5. Currencies for Payment

The Contractor Remuneration shall be paid in the currency or currencies named in Schedule G.

12.1.6. Adjustment of Remuneration for Inflation

The Contractor Remuneration shall be adjusted as stated in Schedule G.

12.2. Advance Payment

The Advance Payment or payment to the Contractor in advance of work done, if any, shall be as specified in Schedule G.

Any advance payment shall be paid as an interest-free loan for mobilization, when the Contractor submits a guarantee in accordance with this Sub-Clause. The total Advance Payment, the number and timing of installments (if more than one) and the applicable currencies and proportions, shall be as stated in Schedule G.

The guarantee shall be in amounts and currencies equal to the Advance Payment. This guarantee shall be issued by a banking company and from within a country (or other jurisdiction) approved by the Employer and duly endorsed by a schedule bank of Bangladesh and shall be in the form annexed to the Particular Conditions or in another form approved by the Employer.

The Contractor shall ensure that the guarantee is valid and enforceable until the advance payment has been repaid. If the terms of the guarantee specify its expiry date and the advance payment has not been repaid by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the guarantee prior to such expiry date until the advance payment has been repaid. If no such renewal takes place, Employer will have the option to enforce the guarantee.

Unless stated otherwise in Schedule G, the advance payment shall be repaid through equal percentage deductions from the Contractor's Base Remuneration.

If the advance payment has not been repaid prior to the Termination of the Contract, the whole of the balance then outstanding shall immediately become due and payable by the Contractor to the Employer. If the balance then outstanding have not been refunded to the Employer, Employer shall have the option to invoke the guarantee.

12.3. Delayed Payment

If the Contractor does not receive payment in accordance with Sub-Clause 12.1 [Contractor's Remuneration], the Contractor shall be entitled to receive financing

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charges at 1% per annum calculated on daily basis on the amount unpaid during the period of delay. This period shall be deemed to commence on the date when payment becomes due and end on the actual date of payment.

The Contractor shall be entitled to this payment without formal notice or certification and without prejudice to any other right or remedy.

12.4. Sufficiency of the Contractor Remuneration

The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Contractor's Remuneration, taking into account all available data and fully understanding the Services to be provided and the conditions in which the Services are to be performed.

12.5. Contractors Costs and Account

12.5.1. Contractor's Account

An item which is expressed to be "for the Contractor's Account" shall be paid for by the Contractor from its own funds and not from the funds of the Employer. The Contractor will be responsible for meeting the cost of items for the Contractor's Account whether or not the Contractor's Remuneration is sufficient to cover the cost, or whether or not the cost was anticipated and whether or not the Contractor has the funds available.

12.6. Employer's Financial Issues

12.6.1. Employer's Account

An item which is expressed to be "for the Employer's Account" shall be paid for by the Employer.

12.6.2. Procedure if the Employer's Incomings are Not Sufficient to Cover its Outgoings

The Employer shall cause the Parties responsible for its financial management to manage it prudently and in accordance with good commercial practice and attempt to pay the obligations of the Employer as they fall due.

In the event that the Employer is unable to pay its obligations as they fall due, the Employer shall cause the Parties responsible for its financial management to follow the rules and processes set out in Schedule J.

13. Obligations and Rights of the Employer

13.1. Access to Land

The Employer hereby grants free of charge to the Contractor, as from the Commencement Date, access to all land within the service area in respect of which access is required for the performance of the Services by the Contractor.

13.2. Right to use Facilities

The Employer hereby grants free of charge to the Contractor, as from the Commencement Date, the right to access and use the Facilities.

If the Contractor suffers delay and/or incurs Cost as a result of a failure by the Employer to give any such right, the Contractor shall be entitled on request to an adjustment in the Contractor's Remuneration sufficient to put it in the same position

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it would have been in had the Employer honored its obligations under this Sub-Clause.

13.3. Payments by the Employer

The Employer shall make payments to the Contractor in accordance with the terms of this Contract.

13.4. Support by the Employer

The Employer shall use its best efforts, without incurring any liability under the Contract, to ensure that the Government shall provide the Contractor such assistance as may be required (e.g., issuance of permits, licenses, approvals, authorizations, etc. for which the Contractor is eligible) during the term of this Contract.

13.5. Supervision by the Employer

(a) The Employer shall supervise the Contractor in the performance of its obligations under this Contract.

(b) The Employer shall review and approve or comment upon all reports submitted by the Contractor pursuant Clause 14 [Employer's Reporting].

(c) The Employer shall be given reasonable access during normal working hours to premises, works and sites of the Contractor for the purposes of inspection and certification. For the avoidance of doubt the term "Employer" as used herein shall include duly authorized officers, employees, representatives of the Employer and the Financial and Technical Auditors, or any person from any government agency.

13.6. Permits, Licenses or Approvals

The Employer shall (where he is in a position to do so) provide reasonable assistance to the Contractor at the request of the Contractor on best effort basis, failure of which will not incur any liability under this Contract:

(a) by obtaining copies of the Laws of the Country which are relevant to the Contract but are not readily available and

(b) for the Contractor's applications for any permits, licenses or approvals required by the Laws of the Country:

(i) which the Contractor is required to obtain

(ii) for the delivery of Goods, including clearance through customs and

(iii) for the export of Contractor's Equipment when it is removed from the Facilities.

13.7. Employer's Personnel Cooperation

The Employer shall be responsible for ensuring that the Employer's Personnel and other contractors on the Facilities co-operate with the Contractor's efforts in performance of the Services.

13.8. Employer's Financial Arrangements

[DELETED]

14. Employer's Reporting

14.1. Employer's Reporting Requirements

The Employer shall comply with the reporting requirements specified in Schedule K.

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15. Intellectual and Industrial Property Rights

15.1. Intellectual Property and Copyright

As between the Parties, the Employer shall retain the copyright and other intellectual property rights in any technical or Employer's Representative inventions or innovations made by or on behalf of the Contractor in providing the Services, and in the Contractor's proprietary software, as applicable, that the Contractor modified for use in connection with the Services (the "Contractor's Innovations and Software").

The Employer, by signing the Contract, gives the Contactor a non-terminable, transferable, non-exclusive, royalty-free license to copy, use and communicate the Contractor's Innovations and Software and any other software used or purchased by the Contractor in the performance of the Services (the "Other Software"), including making and using modifications of them. This license shall,

(a) apply throughout the actual or intended working life, whichever is longer, of the relevant parts of the Facilities;

(b) entitle any person in proper possession of the relevant part of the Facilities to copy, use and communicate the Contractor's Innovations and Software and the Other Software for the purposes of managing, operating and maintaining the Facilities;

(c) in the case of Contractor's Innovations and Software and the Other Software which are in the form of computer programs and other software, permit their use on any computer at the Facilities and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor; and

(d) allow the Employer to make the Contractor's Innovations and Software and the Other Software available for inspection by a prospective bidder who may be involved in the process to select a Subsequent Contractor.

As between the Parties, the Employer owns and will continue to own all data with respect to the Facilities and customers.

15.2. Intellectual Property Infringements

15.2.1. Meaning of Infringement and Claim

In this Sub-Clause, "infringement" means an infringement (or alleged infringement) of any patent, registered design, copyright, trade mark, trade name, trade secret or other intellectual or industrial property right relating to the Services; and "claim" means a claim (or proceedings pursuing a claim) alleging an infringement.

15.2.2. Notice of Claims

Whenever a Party does not give notice to the other Party of any claim within 28 days of infringement, the first Party shall be deemed to have waived any right to indemnity under Sub-Clause 15.2 [Intellectual Property Infringement].

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15.2.3. Contractor to Indemnify Employer

The Contractor shall indemnify and hold the Employer harmless against and from any other claim which arises out of or in relation to the performance of the Services or the Contractor's management of the Facility.

15.2.4. Employer to Indemnify Contractor

The Employer shall indemnify and hold the Contractor harmless against and from any claim alleging an infringement under Clause 15.2 which is or was:

(a) an unavoidable result of the Contractor's compliance with the Contract, or

(b) a result of any Services being used by the Employer:

(i) for a purpose other than that indicated by, or reasonably to be inferred from, the Contract, or

(ii) in conjunction with anything not supplied by the Contractor, unless such use was disclosed to the Contractor prior to the Base Date or is stated in the Contract.

Notwithstanding anything contained herein maximum amount of indemnity under this clause will be maximum 5% of the value of contract.

15.2.5. Right to Manage Settlement and Litigation

If a Party is entitled to be indemnified under this Sub-Clause 15.2 [Intellectual Property Infringement], the indemnifying Party may (at its cost) conduct negotiations for the settlement of the claim and any litigation or arbitration which may arise from it. The other Party shall, at the request and cost of the indemnifying Party, assist in contesting the claim. This other Party (and its Personnel) shall not make any admission which might be prejudicial to the indemnifying Party, unless the indemnifying Party failed to take over the conduct of any negotiations, litigation or arbitration upon being requested to do so by such other Party.

15.3. Confidentiality Obligations of the Contractor

15.3.1. Confidentiality

The Contractor shall keep confidential and shall not, without the written consent of the Employer, divulge to any Third Party any documents, data or other information arising directly or indirectly from the performance of Services under the Contract, whether such information has been furnished prior to, during or following termination of the Contract.

However, the Contractor may furnish to its Subcontractors such documents, data and other information to the extent required for the Subcontractors to perform their work under the Contract, in which event the Contractor shall obtain from such Subcontractors an undertaking of confidentiality similar to that imposed on the Contractor under this Sub-Clause 15.3 [Confidentiality Obligations of the Contractor].

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15.3.2. Use of Information

The Contractor shall not use such documents, data and other information received from the Employer for any purpose other than as are required for the performance of the Contract. The Contractor shall not publish, permit to be published, or disclose any particulars of the Contract, Assets or Facilities in any trade or technical paper or advertising materials without the prior written consent of the Employer.

15.3.3. Exceptions for Publicly Available Information

The obligations of the Contractor under Sub-Clause 15.3 [Confidentiality Obligations of the Contractor] shall not apply to that information which,

(a) now or hereafter enters the public domain through no fault of the Contractor;

(b) can be proven to have been possessed by the Contractor at the time of disclosure and which was not previously obtained, directly or indirectly, from the Employer; or

(c) otherwise lawfully becomes available to the Contractor from a Third Party that has no obligation of confidentiality.

15.4. Deleted

16. Liability, Risk Allocation, Securities, Bonds and Insurance

16.1. Limitation of Liability

Neither Party shall be liable to the other Party for loss of use of any Services, loss of profit, loss of any contract or for any indirect or consequential loss or damage which may be suffered by the other Party in connection with the Contract, whether in contract, tort or otherwise, other than as specifically provided in Sub-Clause 21.9 [Payment on Termination by the Employer for Cause]; Sub-Clause 16.2 [Indemnities]; Sub-Clause 16.6.1 [Consequences of Employer's Risks] and Sub-Clause 15.1 [Intellectual Property and Copyright].

The total liability of the Contractor to the Employer, under or in connection with the Contract, whether in contract, tort or otherwise, shall not exceed the sum stated in the Particular Conditions, or (if such multiplier or other sum is not so stated), the Contractor Base Remuneration.

The total liability of the Employer to the Contractor, under or in connection with the Contract, whether in contract, tort or otherwise, shall not exceed 5% of the value of contract.

This Sub-Clause shall not limit liability in any case of fraud, deliberate default, gross negligence, or reckless misconduct by the defaulting Party.

16.2. Indemnities

The Contractor shall indemnify and hold harmless the Employer, the Employer's Personnel and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:

(a) bodily injury, sickness, disease or death, of any person whatsoever arising out of or in the course of or by reason of the execution and completion of the

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Services, unless attributable to any negligence, willful act or breach of the Contract by the Employer, the Employer's Personnel, or any of their respective agents;

(b) damage to or loss of any property, real or personal, to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's performance or nonperformance of the Services and the remedying of any defects, unless and to the extent that any such damage or loss is attributable to any negligence, willful act or breach of the Contract by the Employer, the Employees Personnel, their respective agents, or anyone directly or indirectly employed by any of them;

(c) Delete

16.3. Performance Security

Unless an amount is not stated in the Contract Data, the Contractor shall obtain (at his cost) a Performance Security for proper performance, in the form, amount and currencies stated in the Contract Data.

The Contractor shall deliver the Performance Security to the Employer within 28 days after receiving the Letter of Acceptance and shall send a copy to the Independent Expert. The Performance Security shall be issued by a banking company and from within a country (or other jurisdiction) approved by the Employer and shall be in the form annexed to the Particular Conditions or in another form approved by the Employer. If the institution issuing the Performance Security is located outside the country of the Employer, it shall have a corresponding financial institution located in the country of the Employer to make it enforceable.

The Contractor shall ensure that the Performance Security is valid and enforceable until the Contractor has executed and completed the Services and been released from liability under this Contract. If the terms of the Performance Security specify its expiry date and the Contractor has not become entitled to receive the Performance Certificate by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the Performance Security prior such expiry date until the Performance Certificate have been issued upon completion of Service. If no such renewal takes place, Employer will have the option to enforce the guarantee.

The Employer shall not make a claim under the Performance Security, except for amounts to which the Employer is entitled under the Contract. .

The Employer shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Employer was not entitled to make the claim.

The Employer shall return the Performance Security to the Contractor within 21 days after receiving a copy of the Performance Certificate.

16.4. General Requirements for Insurances

In this Clause, "insuring Party" means, for each type of insurance, the Party responsible for effecting and maintaining the insurance specified in the relevant Sub-Clause.

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Wherever the Contractor is the insuring Party, each insurance shall be affected with insurers and in terms approved by the Employer. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause.

Wherever the Employer is the insuring Party, each insurance shall be affected with insurers and in terms consistent with the details annexed in Schedule M.

If a policy is required to indemnify joint insured, the cover shall apply separately to each insured as though a separate policy had been issued for each of the joint insured. If a policy indemnifies additional joint insured, namely in addition to the insured specified in this Clause, (i) the Contractor shall act under the policy on behalf of these additional joint insured except that the Employer shall act for Employer's Personnel, (ii) additional joint insured shall not be entitled to receive payments directly from the insurer or to have any other direct dealings with the insurer and (iii) the insuring Party shall require all additional joint insured to comply with the conditions stipulated in the policy.

Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify the loss or damage. Payments received from insurers shall be used for the rectification of the loss or damage.

The relevant insuring Party shall, within the respective periods stated in the Contract Data (calculated from the Commencement Date), submit to the other Party:

(a) evidence that the insurances described in this Clause have been affected and

(b) copies of the policies for the insurances as required by Schedule M.

When each premium is paid, the insuring Party shall submit evidence of payment to the other Party.

Each Party shall comply with the conditions stipulated in each of the insurance policies. The insuring Party shall keep the insurers informed of any relevant changes to the execution of the Services and ensure that insurance is maintained in accordance with this Clause.

Neither Party shall make any material alteration to the terms of any insurance without the prior approval of the other Party. If an insurer makes (or attempts to make) any alteration, the Party first notified by the insurer shall promptly give notice to the other Party.

If the insuring Party fails to effect and keep in force any of the insurances it is required to effect and maintain under the Contract, or fails to provide satisfactory evidence and copies of policies in accordance with this Sub-Clause, the other Party may (at its option and without prejudice to any other right or remedy) effect insurance for the relevant coverage and pay the premiums due. The insuring Party shall pay the amount of these premiums to the other Party and the Contractor Remuneration shall be adjusted accordingly.

Nothing in this Clause limits the obligations, liabilities or responsibilities of the Contractor or the Employer, under the other terms of the Contract or otherwise. Any amounts not insured or not recovered from the insurers shall be borne by the

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Contractor and/or the Employer in accordance with these obligations, liabilities or responsibilities. However, if the insuring Party fails to effect and keep in force an insurance which is available and which it is required to effect and maintain under the Contract and the other Party neither approves the omission nor effects insurance for the coverage relevant to this default, any moneys which should have been recoverable under this insurance shall be paid by the insuring Party.

16.5. Insurance Required

Each Party shall affect and maintain insurance as specified in Schedule M.

16.6. Employer's Risks

The risks referred to in Sub-Clause 16.7 [Consequences of Employer's Risks] below, insofar as they directly affect the execution of the Services in the Country, are:

(a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,

(b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel and other employees of the Contractor and Subcontractors, revolution, insurrection, military or usurped power, or civil war, within the Country,

(c) riot, commotion or disorder within the Country by persons other than the Contractor's Personnel and other employees of the Contractor and Subcontractors,

(d) munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, within the Country, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity,

(e) pressure waves caused by aircraft or other aerial devices traveling at sonic or supersonic speeds,

(f) use or occupation by the Employer of any part of the Permanent Services, except as may be specified in the Contract,

(g) any operation of the forces of nature which is Unforeseeable.

16.7. Consequences of Employer's Risks

Notwithstanding anything contained in the Contract, the Contractor shall have no liability whatsoever for or with respect to,

(a) destruction of or damage to the Facilities or any part thereof;

(b) destruction of or damage to property of the Employer or any Third Party; or

(c) injury or loss of life,

if such destruction, damage, injury or loss of life is caused by any Employer's Risks and the Employer shall indemnify and hold the Contractor harmless from and against any and all claims, liabilities, actions, lawsuits, damages, costs, charges or expenses arising on consequence of or in connection with the same.

If the Facilities or any property of the Contractor used or intended to be used for the purposes of the Services sustains destruction or damage by reason of any Employer's Risks, the Employer shall pay for,

(a) replacing or making good any property or investments of the Contractor so destroyed or damaged; and

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(b) replacing or making good any such destruction or damage to the Facilities or any part thereof,

so far as may be required by the Employer and as may be necessary for completion of the Services.

If the Employer does not require the Contractor to replace or make good any such destruction or damage to the Facilities, the Employer shall either request a change in accordance with Sub-Clause 19.1 [Employer Variations] excluding the performance of the Services in respect of that part of the Facilities thereby destroyed or damaged or, where the loss, destruction or damage affects a substantial part of the Facilities, shall terminate the Contract, pursuant to Sub-Clause 17.7 [Release from Performance].

Notwithstanding anything contained in the Contract, the Employer shall pay the Contractor for any increased Costs that are in any way attributable to, consequent on, resulting from, or in any way connected with any Employer's Risks, if the Contractor notifies the Employer in writing of any such increased cost as soon as practicable.

If, during the term of the Contract, any Employer's Risks occur that financially or otherwise materially affect the execution of the contract by the Contractor, the Contractor shall use its reasonable efforts to execute the Contract with due and proper consideration given to the safety of its and its Subcontractors' personnel engaged in the work on the Services. If the execution of the Services becomes impossible or is substantially prevented for a single period of more than 60 days or an aggregate period of more than 120 days on account of any Employer's Risks, the Parties will attempt to develop a mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other.

In the event of termination pursuant to this Sub-clause, the rights and obligations of the Employer and the Contractor shall be as specified in Sub-Clause 17.7 [Release from Performance].

17. Force Majeure

17.1. Definition of Force Majeure

(a) In this Clause, "Force Majeure" means an exceptional event or circumstance:
which is beyond a Party's control,

(b) which such Party could not reasonably have provided against before entering into the Contract,

(c) which, having arisen, such Party could not reasonably have avoided or overcome and

(d) which is not substantially attributable to the other Party.

Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

i) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,

ii) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel and other employees of the Contractor and Subcontractors, revolution, insurrection, military or usurped power, or civil war,

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iii) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel and other employees of the Contractor and Subcontractors, or the Employer's Personnel

iv) munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity and

v) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.

17.2. Notice of Force Majeure

If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.

The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.

Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.

17.3. Duty to Minimize Delay

Each Party shall at all times use all reasonable endeavors to minimize any delay in the performance of the Contract as a result of Force Majeure.

A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.

17.4. Consequences of Force Majeure

If the Contractor is prevented from performing its substantial obligations under the Contract by Force Majeure of which notice has been given under Sub-Clause 17.2 [Notice of Force Majeure] and suffers delay and/or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled to:

(a) an extension of time for any such delay, if completion of the services is or will be delayed and

(b) if the event or circumstance is of the kind described in subparagraphs (i) to (iv) of Sub-Clause 17.2 [Definition of Force Majeure] and, in the case of sub-paragraphs (ii) to (iv), occurs in the Country, payment of any such Cost.

17.5. Force Majeure Affecting Subcontractor

If any Subcontractor is entitled under any contract or agreement relating to the Services to relief from force majeure on terms additional to or broader than those specified in this Clause, such additional or broader force majeure events or circumstances shall not excuse the Contractor's non-performance or entitle him to relief under this Clause.

17.6. Optional Termination, Payment and Release

If the execution of substantially all the Services in progress is prevented for a continuous period of 84 days by reason of Force Majeure of which notice has been

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given under Sub-Clause 17.2 [Notice of Force Majeure], or for multiple periods which total more than 140 days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 7 days after the notice is given and the Contractor shall proceed in accordance with Sub-Clause 21.12 [Actions on Termination].

17.7. Release from Performance

Notwithstanding any other provision of this Clause, if any event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises which makes it impossible or unlawful for either or both Parties to fulfill its or their contractual obligations or which, under the law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance:

(a) the Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract and

(b) the sum payable by the Employer to the Contractor shall be the same as would have been payable under Sub-Clause 21.11 [Payment on Termination for Prolonged Force Majeure] if the Contract had been terminated under Subclause 17.6 [Optional Termination, Payment and Release].

18. Suspension of Services

18.1. Suspension by Contractor

18.1.1. Suspension for Non-Payment

If the Employer:

(a) fails to pay the Contractors any sum due under the Contract within the period specified in the Contract;

(b) delete;

(c) delete;

(d) fails to provide possession of or access to the Facilities;

the Contractor may, after giving not less than 14 days' notice to the Employer, suspend work (or reduce the rate of work) unless and until the failure or breach which gave rise to the suspension has been rectified.

18.1.2. Deleted

18.1.3. No Prejudice to Other Remedies

The Contractor's action shall not prejudice his entitlements to financing charges under Sub-Clause 12.3 [Delayed Payment]. If such default continues for couple of months, then Contractor's action shall not prejudice his entitlements to termination under Sub-Clause 21.7 [Termination by the Contractor for Cause].

18.1.4. Compensation for Costs from Suspension

If the Contractor suffers delay and/or incurs Cost as a result of suspending work (or reducing the rate of work) in accordance with this Sub-Clause, the Contractor shall be entitled to:

(a) an extension of time for any such delay and

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(b) payment of a costs as agreed with Employer actually and reasonably incurred as a result of the suspension.

18.2. Employer's Entitlement to Suspend the Services and Delegated Management Authority

The Employer may suspend the Services and Delegation of Management Authority, if this is necessary in the public interest, by notice to the Contractor. Such notice shall specify the effective date of the suspension, the reasons for the suspension and the date on which the suspension will end.

If the Employer suspends the Services in accordance with this sub Clause 18.2, the Contractor shall then cease to perform its obligations under the Contract. However, the Contractor shall still be entitled to the Contractor's Remuneration under the Contract.

If the suspension continues for more than 15 days, the Contractor in consultation with the Employer will reduce Contractor's Personal from the Facility to ensure reduce Contractor's Remuneration under the Contract for the suspension period.

If the suspension continues for more than 180 days, the Contractor may, by notice to the Employer, treat the suspension as Termination for Employer Convenience.

19. Contract Variation, Extension and Rebidding

19.1. Employer Variations

At any time during the Term of the Contract the Employer's Representative may request a Variation by giving to the Contractor a

Variation Request. A Variation Request shall specify

(a) A brief description of the Change to the Services

(b) the effect on any other provisions of the Contract

(c) a reasonable period within which the Contractor is required to respond.

19.2. Decision on Employer's Variation Request

On receiving a Variation Request the Contractor shall respond in writing as soon as practicable and in any event within the period stipulated in accordance with Sub-Clause 19.1 [Employer Variations], either by giving reasons why he cannot comply (if this is the case) or by submitting a Variation Proposal containing:

(a) a description of the proposed work to be performed and a program for its execution,

(b) an estimate of the adjustment in Operator Remuneration which would be necessary to put the Contractor in the same financial position as if the Variation were not implemented The Employer shall then:

(a) Accept the Variation Proposal, which shall then modify the Contract so far as is specified in the Variation Proposal; or

(b) Notify the Contractor that is has decided not to proceed with Variation or

(c) Notify the Contractor that it does not agree with the proposed adjustment in Operator Remuneration or other terms of the Contract and refer the issue for determination through the Dispute Resolution procedure under Sub-Clause 20.1

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[Dispute Resolution].

19.3. Value Management

The Contractor may, at any time, submit to the Employer's Representative a written Value Management Proposal which (in the Contractor's opinion) will, if adopted:

(a) reduce the cost of providing the services; or

(b) further the Objectives of the Contract; or (c) otherwise be of benefit to the Employer.

The Value Management Proposal shall be prepared at the cost of the Contractor and shall include:

(a) description of the proposed Change to the Services

(b) a description of the proposed work to be performed and a program for its execution,

(c) any proposed adjustment in Operator Remuneration (d) the effect on any other provisions of the Contract.

If the Value Management Proposal would allow the same Services to be performed at lower cost, then the proposed adjustment in the Operator Remuneration shall be such as to share the benefits of the savings equally between the Contractor and the Employer.

If the effect of the Value Management Proposal would be to increase both the scope of the Services and the cost of the Services, then the proposed adjustment in the Operator Remuneration shall be such as to put the Contractor in the same financial position as it would be if the Value Management Proposal were not implemented.

19.4. Decision on Value Management Proposal

On receiving a Value Management Proposal, the Employer shall either:

(a) Accept the Value Management Proposal, which shall then modify the Contract so far as is specified in the Value Management Proposal; or

(b) Decline to accept the Value Management Proposal.

19.5. Adjustments for Changes in Law

"Change in Law" means a change in the Laws of the Country

(including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the Base Date, which affect the Contractor in the performance of obligations under the Contract.

If the Contractor incurs additional Cost as a result of a Change in Law, the Operator Remuneration shall be adjusted so as put the Contractor in the same financial position as it would be if the Change in Law had not occurred.

If the Parties cannot agree on the required adjustment to the Operator Remuneration, either Party may refer the issue for determination through the procedure under Sub-Clause 20.1 [Dispute Resolution].

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19.6. Extension and Subsequent Bidding

19.6.1. Extension of the Contract

Unless otherwise provided for in Schedule N, the Contract may be extended for an additional period of no more than the initial term of the Contract. Such an extension may be requested by the Employer, following the process set out in 19.1 [Employer Variation], or by the Contractor following the process set out in 19.2 [Value Management], must be agreed by the Parties and may not be determined under the Dispute Resolution process.

However, the Parties may agree to refer the request for an extension to the Independent Expert. If the parties refer the request for an extension to the Independent Expert they shall agree, prior to the referral, whether the Independent Expert's recommendation will be advisory only, or binding.

If requested to make a recommendation under this section, the Independent Expert shall be guided by:

(a) The Objectives of the Contract

(b) Such additional objectives as the Employer may inform him of which appear to him to be reasonable

(c) The need for the Contractor to make a fair profit on its efforts, which he may assess by reference to the profits actually achieved or expected to be achieved under the Contract

(d) The desirability of rewarding the Contractor for success in achieving the Employer's objectives.

19.6.2. Subsequent Bidding for a Similar Contract

Unless otherwise provided in Schedule N, the contractor shall not be precluded from bidding for any similar contract which is offered by the Employer after the termination or expiration of this contract. In case of such a subsequent bidding, the Contractor will be requested by the Employer to provide in due time a detailed report satisfactory to the Employer about the Services under this Contract, such Report to be made available by the Employer to all other potential bidders.

20. Dispute Resolution

20.1. Dispute Resolution

20.1.1. Amicable Settlement

(a) If any dispute arises out of or in connection with this Contract, either Party may give notice to the other Party of the same, whereupon the Parties shall meet promptly and in a good faith attempt to reach an amicable settlement.

(b) In the event that the Parties do not resolve a dispute in accordance with this Sub-Clause within twenty (20) days of notice of the dispute being given, then either Party may refer the dispute to the Independent Expert for determination pursuant to the procedure set forth in Sub-Clause 20.1.2 [Independent Expert].

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20.1.2. Independent Expert

(a) By the date of Contract signing, the Contractor shall indicate to the Employer in writing its acceptance of one of the potential Independent Experts proposed in the Contract Data by the Employer or otherwise present to the Employer for its acceptance, a counter-proposal with the names of one or more individuals. The Employer shall respond in writing to the Contractor by the date stated in the Contract Data and in case of a negative response, with a copy to the appointing entity or official named in the Contract Data, who shall then appoint the Independent Expert after due consultation with both Parties. If the Contractor fails to indicate its acceptance of one of the Employer-proposed individuals or present a counter-proposal, or if the Employer fails to respond to the Contractor's counterproposal by the due dates indicated above for each event, or if the Parties fail to agree upon the appointment of a replacement person within 42 days after the date on which the Independent Expert declines to act or is unable to act as a result of death, disability, resignation or termination of appointment, then the appointing entity or official named in the Contract Data shall, upon request of either or both of the Parties and after due consultation with both Parties, appoint the Independent Expert. The appointment(s) made by the appointing entity or official shall be final and conclusive. Each Party shall be responsible for paying one-half of the remuneration of the appointing entity or official.

(b) The Independent Expert shall be a professional experienced in the type of services covered under the Contract and with the interpretation of contractual documents and shall be fluent in the language for communications defined in the Contract. The Independent Expert shall be (and the terms of this appointment shall so provide that he or she is) independent of the Parties and shall act impartially. The Independent Expert's appointment may be terminated only by mutual agreement between the Parties. The Expert's terms of appointment shall expire as the Parties may mutually agree.

(c) In making its determination, the Independent Expert shall:
   (i) have regard to the Services required to be performed hereunder and the terms and conditions of this Contract; and
   (ii) ensure that the position of the Parties is restored to the position they would have been in if the event triggering the dispute under this Section had not occurred and all the Parties had complied with the Contract.

(d) The Party who initially issued the notice of intention to refer the dispute to the Independent Expert shall within ten (10) days of

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such notice submit to the Independent Expert and to the other Party the following documents:

(i) A description of the dispute;

(ii) A statement of that Party's position; and

(iii) Copies of relevant documentary evidence in support.

(e) Within ten (10) days of receipt of the above documents, the other Party shall submit:

(i) A description of the dispute;

(ii) A statement of that Party's position; and

(iii) Copies of relevant documentary evidence in support.

(f) The Independent Expert may call for such further documentary evidence and/or interview such persons as it deems necessary in order to reach their decision.

(g) The expert shall give notice to the Parties of its decision within twenty (20) days of receipt of the documents provided under Section d) or e) as the case may be.

(h) Unless this Contract has already been terminated or abandoned, the Parties shall in every case continue to proceed with the performance of their rights and obligations under this Contract with all due diligence whilst the Independent Expert is reviewing the dispute

(i) The decision of the Independent Expert shall be binding unless and until one Party, within ten (10) days of the date of such decision, issues a notice of intention to refer the matter to arbitration in accordance with Sub-Clause 20.1.4 [Arbitration].

(j) Each Party shall bear its own costs of preparing the materials for and making presentations to the Independent Expert.

20.1.3. Payment of the Independent Expert

The costs of engaging the Independent Expert shall be borne equally by the Parties. The Independent Expert shall be paid as follows, in the currency named in the Contract Data or as otherwise indicated in the appointment notice issued in accordance with Sub-Clause 20.1.2 [Independent Expert]:

(a) a retainer fee per year, which shall be considered as payment in full for:

(i) being available on 28 days' notice for all site visits and hearings;

(ii) becoming and remaining conversant with all Facility developments and maintaining relevant files;

(iii) all office and overhead expenses including secretarial services, photocopying and office supplies incurred in connection with his duties; and

(iv) all services performed hereunder except those referred to in sub-paragraphs (b) and (c) of this Sub-Clause.

The retainer fee shall be paid with effect from the last day of the year in which the appointment becomes effective; until the last day of the Contract expires, unless the Independent Expert resigns or his appointment is otherwise terminated by the Parties.

(b) a daily fee which shall be considered as payment in full for:

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(i) each day or part of a day up to a maximum of two days' travel time in each direction for the journey between the Independent Expert's home and the site, or another location of a meeting that the Independent Expert is required to attend;
(ii) each working day on Site visits, hearings or preparing decisions; and
(iii) each day spent reading submissions in preparation for a hearing.

(c) all reasonable expenses including necessary travel expenses (air fare in less than first class, hotel and subsistence and other direct travel expenses) incurred in connection with the Independent Expert's duties, as well as the cost of telephone calls, courier charges, faxes and telexes: a receipt shall be required for each item in excess of five percent of the daily fee referred to in sub-paragraph (b) of this Sub-Clause;

(d) delete

20.1.4. Arbitration

Unless indicated otherwise in the Contract Data, all disputes arising out of or in connection with this Contract, not settled by amicable settlement or by the Independent Expert, in respect of which the Independent Expert's determination has not become final and binding, shall be finally settled by arbitration. Unless otherwise agreed by both Parties:

(a) For contracts with the contractors:
(i) international arbitration with proceedings administered by the international arbitration institution appointed in the Contract Data, in accordance with the rules of arbitration of the appointed institution;
(ii) the place of arbitration shall be the city where the headquarters of the appointed arbitration institution is located or such other place selected in accordance with the applicable arbitration rules; and
(iii) the arbitration shall be conducted in the language for communications defined in Sub-Clause 1.4; and

(b) Deleted

The arbitrators shall have full power to open up, review and revise any determination of the Independent Expert, relevant to the dispute. Nothing shall disqualify representatives of the Parties from being called as a witness and giving evidence before the arbitrators on any matter whatsoever relevant to the dispute.

Neither Party shall be limited in the proceedings before the arbitrators to the evidence or arguments previously put before the Independent Expert to obtain its determination, or to the reasons for dissatisfaction given in its notice of dissatisfaction. Any decision of the Independent Expert shall be admissible in evidence in the arbitration.

Arbitration may be commenced prior to or after completion of the Services. The obligations of the Parties and the Independent Expert

shall not be altered by reason of any arbitration being conducted during the progress of the Services.

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20.1.5. Survival

The dispute resolution provisions contained in Sub-Clause 20.1.4 [Arbitration] shall survive termination of this Contract.

21. Default and Termination

21.1. Notification and Cure Plans

If a Default occurs, the Party not in Default may, in addition to any other remedies it has, give the Defaulting Party a notice in writing ("Default Notice") specifying:

(a) that a Default has occurred;
(b) the events or circumstances constituting the Default; and
(c) if the Default is capable of being cured or remedied, a reasonable Cure Period in which to cure or remedy the Default.

The Party not in Default may specify in the Default Notice:

(a) that it requires the Defaulting Party to provide to the Party not in Default a written plan ("Cure Plan") which specifies the reason the Default occurred, how the Defaulting Party intends to remedy the Default, the time that the Defaulting Party will require to remedy the Default and includes additional information on such matters as the Party not in Default requires; and
(b) a reasonable time by which the Defaulting Party must provide the Cure Plan to the Party not in Default.

The Party not in Default may, by notice to the Defaulting Party, vary the Cure Period having regard to information provided to it in relation to a Cure Plan.

21.2. Remedying the Default within the Applicable Cure Period

Upon receipt of a Default Notice, if the Default is capable of being cured or remedied, the Defaulting Party must cure or remedy the Default within the Cure Period.

In addition to its obligations under Sub-Clause 21.1 [Notification and Cure Plans], if the Party not in Default has required the Defaulting Party to provide a Cure Plan, the Defaulting Party must:

(a) provide a Cure Plan within the time requested by the Defaulting Party;
(b) comply with the Cure Plan; and
(c) report to the Party not in Default on progress in relation to the Cure Plan at the times and in the manner specified by the Party not in Default.

The Defaulting Party may, by notice to the non-Defaulting Party, request an extension to a Cure Period. The Defaulting Party may only request such an extension once in relation to a particular Default. The notice must specify:

(a) the reason why the Defaulting Party is not able to cure or remedy the Default within the existing Cure Period,
(b) the additional time that the Defaulting Party requires to cure or remedy the Default and
(c) any other information that is relevant to the Party not in Default's assessment of the request.

The Defaulting Party may not give such a notice unless it has diligently sought to cure or remedy the relevant Default. The Party not in Default must not unreasonably withhold its consent to a request for such an extension of a Cure

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Period unless the Party not in Default believes, on reasonable grounds, that the extension of the Cure Period would have a material adverse effect on the provision of the Services or the use by the Party not in Default of the Facilities.

21.3. Failure to Cure

If the Party not in Default has given a Default Notice to the Defaulting Party and:

(a) where the Default is capable of being cured or remedied, the Defaulting Party does not provide a Cure Plan acceptable to the Party not in Default within the time required in the Default Notice (if applicable);

(b) where the Default is capable of being cured or remedied, the Defaulting Party does not diligently pursue the Cure Plan (if applicable) or otherwise comply with its obligations under Sub-Clause 21.2 [Remedying the Default within the Applicable Cure Period];

(c) where the Default is capable of being cured or remedied, the Default is not cured or remedied within the Cure Period and, if applicable, in accordance with the Cure Plan; or

(d) the Default is not capable of being cured or remedied.

The Party not in Default may (without prejudice to any of its other rights with respect to the Default), exercise all or any of the following remedies:

(a) sue the Defaulting Party for compensation for the Default and exercise all available legal and equitable remedies including without limitation suing for specific performance, injunctive relief or such other orders as the Party not in Default considers appropriate;

(b) terminate this Agreement.

21.3.1 Employer's Right of Step in

If the Employer has given a Default Notice to the Contractor, and the Default is not being cured or remedied, and notice of termination has been served, the Employer shall have the option/right to step in the Facilities without incurring any further liabilities.

21.4. Ways the Contract may be Terminated

The Contract may be terminated by:

(a) The Employer for Convenience, in accordance with Sub-Clause 21.5 [Termination by the Employer for Convenience],

(b) The Employer for Cause, in accordance with Sub-Clause 21.6 [Termination by the Employer for Cause], or

(c) The Contractor for Cause, in accordance with Sub-Clause 21.7 [Termination by the Contractor for Cause].

21.5. Termination by the Employer for Convenience

The Employer shall be entitled to terminate the Contract, at any time for the Employer's convenience, by giving notice of such termination to the Contractor. The termination shall take effect 28 days after the Contractor receives the notice.

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The Employer shall not terminate the Contract under this Sub-Clause in order to arrange for the Services to be executed by another contractor or to avoid a termination of the Contract by the Contractor under Sub-Clause 21.7 [Termination by the Contractor for Cause].

After this termination, the Contractor shall proceed in accordance with Sub-Clause 21.12 [Actions on Termination] and shall be paid in accordance with Sub-Clause 21.8 [Payment on Termination by the Employer for Convenience].

21.6. Termination by the Employer for Cause

The Employer shall be entitled to terminate the Contract for cause, if the Contractor:

(a) in accordance with Sub-Clause 21.3 [Failure to Cure], is the Defaulting Party referred to in that Sub-Clause,
(b) fails to comply with Sub-Clause 16.3 [Performance Security],
(c) abandons the Services or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract for a period of 7 days,
(d) without reasonable excuse fails to proceed with the Services,
(e) subcontracts the part of the Services or assigns the Contract without the required agreement and authorization of Employer, where applicable,
(f) becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events, or
(g) gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an inducement or reward:
  (i) for doing or forbearing to do any action in relation to the Contract, or
  (ii) for showing or forbearing to show favor or disfavor to any person in relation to the Contract,
  (iii) or if any of the Contractor's Personnel, agents or Subcontractors gives or offers to give (directly or indirectly) to any person any such inducement or reward as is described in this sub-paragraph (f). However, lawful inducements and rewards to Contractor's Personnel shall not entitle termination, or.
(h) Engages, as determined by the Employer, in any Corrupt Practice, Coercive Practice, Collusive Practice, Fraudulent Practice or Obstructive Practice.

In any of these events or circumstances, the Employer may, upon giving 14 days' notice to the Contractor, terminate the Contract and expel the Contractor from the Facilities. However, in the case of subparagraph (e) or (f), the Employer may by notice terminate the Contract immediately.

The Employer's election to terminate the Contract shall not prejudice any other rights of the Employer, under the Contract or otherwise.

21.7. Termination by the Contractor for Cause

The Contractor shall be entitled to terminate the Contract if:

(a) in accordance with Sub-Clause 21.3 [Failure to Cure], if the Employer is the Defaulting Party referred to in that Subclause,

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(b) the Employer fails to pay any part of the Contractor's Remuneration within 56 days of it falling due
(c) the Employer substantially fails to perform his obligations under the Contract in such manner as to materially and adversely affect the ability of the Contractor to perform the Contract,
(d) the Employer fails to comply with Sub-Clause 3.1 [Assignment], or
(e) the Employer becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events.

In any of these events or circumstances, the Contractor may, upon giving 14 days' notice to the Employer, terminate the Contract. However, in the case of sub-paragraph (g), the Contractor may by notice terminate the Contract immediately.

The Contractor's election to terminate the Contract shall not prejudice any other rights of the Contractor, under the Contract or otherwise.

21.8. Payment on Termination by the Employer for Convenience

Upon termination of this Contract pursuant to Sub-Clause 21.5 [Termination by the Employer for Convenience] the Employer shall make the following payments to the Contractor:

(a) any portion of the Remuneration payable to the Contractor for Services satisfactorily performed or Performance Target achieved prior to the Termination of the Contract;
(b) the Costs reasonably incurred by the Contractor in the removal of the Contractor's Equipment, Materials and Supplies from the Facilities;
(c) Deleted
(d) the reasonable Costs incurred by the Contractor in protecting and handing over the Facilities pursuant to Sub-Clause 21.12 [Actions on Termination]; and
(e) Deleted
(f) payment in compensation for lost profits under the contract, which shall be the amount for Liquidated Damages on Termination for Employer Convenience specified in the Contract Data

The only payments to be made to the Contractor on termination by the Employer pursuant to Sub-Clause 21.5 [Termination by the Employer for Convenience] are those set out in this Sub-Clause 21.8.

Employer shall make the following deductions from the payments due to the Contractor:

(a) any advance, debt or other monies due from the Contractor to the Employer and
(b) any claim that the Employer (acting reasonably) may have against the Contractor whether for damages or otherwise.

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Notwithstanding anything contained in this Contract, save for the above, the Contractor shall not make any other claim for lost or foregone profits, revenues, consequential damages or any other costs, damages, expenses or losses of any kind as a result of or in connection with the termination of this Contract.

21.9. Payment on Termination by the Employer for Cause

Upon termination of this Contract pursuant to Sub-Clause 21.6 [Termination by the Employer for Cause], the Employer shall make the following payments to the Contractor

(a) any portion of the Remuneration payable to the Contractor for Services satisfactorily performed or Performance Target achieved prior to the Termination of the Contract and

(b) the reasonable Costs incurred by the Contractor in protecting and handing over the Facilities pursuant to Sub-Clause 21.12 [Actions on Termination].

Employer shall make the following deductions from the payments due to the Contractor:

(a) any advance, debt or other monies due from the Contractor to the Employer and

(b) any claim that the Employer (acting reasonably) may have against the Contractor whether for damages or otherwise.

(c) the amount of damage/ penalty, the Employer is expected to pay to any party for failure to achieve Clause 2 Schedule G, and

(d) the amount of profit the Employer would be expected to lose as a result of early termination of the Contract,

The only payments to be made to the Contractor on termination by the Employer pursuant to Sub-Clause 21.6 [Termination by the Employer for Cause] are those set out in this Sub-Clause 21.9.

Notwithstanding anything contained in this Contract, save for the above, the Contractor shall not make another claim for lost or foregone profits, revenues, consequential damages or any other costs, damages, expenses or losses of any kind as a result of or in connection with the termination of this contract.

21.10. Payment on Termination by the Contractor for Cause

Upon termination of this Contract pursuant to Sub-Clause 21.7 [Termination by the Contractor for Cause] the Employer shall make the following payments to the Contractor:

(a) Any portion of the Remuneration payable to the Contractor for Services satisfactorily performed or Performance Target achieved prior to the Termination of the contract.

(b) The Costs reasonably incurred by the Contractor in the removal of the Contractor's Equipment, Materials and Supplies from the Facilities;

(c) Deleted;

(d) The reasonable Costs incurred by the Contractor in protecting and handing over the Facilities pursuant to Sub- Clause 21.12 [Actions on Termination];

(e) Deleted;

(f) a payment in compensation for lost profits under the contract, which shall be:

(i) the amount for Liquidated Damages on Termination for Employer Convenience specified in the Contract Data,

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(ii) Deleted

Employer shall make the following deductions from the payments due to the Contractor:

(a) any debt or other monies due from the Contractor to the Employer and

(b) any claim that the Employer (acting reasonably) may have against the Contractor whether for damages or otherwise

Notwithstanding anything contained in this Contract, save for the above, the only payments to be made to the Contractor on termination by the Employer pursuant to Sub-Clause 21.7 [Termination by the Contractor for Cause] are those set out in this Sub-Clause 21.10. The Contractor shall not make another claim for lost or foregone profits, revenues, consequential damages or any other costs, damages, expenses or losses of any kind as a result of or in connection with the termination of this Contract.

21.11. Payment on Termination for Prolonged Force Majeure

Upon termination of this Contract pursuant to Sub-Clause 17.6 [Optional Termination, Payment and Release] the Employer shall make the following payments to the Contractor:

(a) any portion of the Remuneration payable to the Contractor for Services satisfactorily performed or Performance Target achieved prior to the Termination of the Contract

(b) deleted

(c) deleted

(d) the reasonable Costs incurred by the Contractor in protecting and handing over the Facilities pursuant to Sub-Clause 21.12 [Actions on Termination].

(e) deleted

Employer shall make the following deductions from the payments due to the Contractor:

a) any advance, debt or other monies due from the Contractor to the Employer and

b) any claim that the Employer (acting reasonably) may have against the Contractor whether for damages or otherwise.

21.12. Actions on Termination

In all cases of Termination, the Contractor shall promptly:

(a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting the Facilities, or handing the over for safe and uninterrupted operation by the Employer or another party, including co-operating with the Employer in such manner as the Employer reasonably requires to ensure that the Services provided by the Contractor can be provided by another service provider or by the Employer itself.

(b) leave the Facilities

(c) deliver to the Employer all records related to the Contract and Services

(d) deliver all documents, know-how, information technology software and other intellectual property required for the provision of the Services and management of the Facility which were required to be left with the Employer at the Termination of the Contract under Clauses 6 [Know-How Transfer and Training] and 15 [Intellectual and Industrial Property Rights].

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Section VIII. Particular Conditions (PC)

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The following Particular Conditions shall supplement the GC. Whenever there is a conflict, the provisions herein shall prevail over those in the GC.

Part A - Contract Data

Conditions	Sub-Clause	Data
Employer's Name and Address	1.1.2(f) & 1.3 (b)	RPCL-NORINCO Intl. Power Limited (RNPL), Atlanta Trade Center (7th Floor), House # 01, Road # 1/A, Sector# 04, Uttara, Dhaka-1230, Bangladesh.
Electronic Transmission Systems	1.3(a)	Email addressed to: kazitanvir@hotmail.com with copy to pd1320rnpl@gmail.com
Governing Law	1.4	Laws of England and Wales.
Ruling Language	1.4	English
Language for Communications	1.4	English
Additional Conditions of Effectiveness	2.1(f)	NIL
Period of Contract	2.3	Mobilization period + Sixty (60) months
Contractor's Responsibility for the Acts or Defaults of its Subcontractors	3.5	NIL
Compliance with Laws	3.8	NIL
Categories of Staff that must be hired locally if and to the extent that a sufficient number of appropriately qualified staff is locally available	8.6	Target to start replacement some of the working level positions of O & M personnel (engineers to technician) from the beginning of the second year and substantial replacement by end of Contract Period.
Period within which the Employer should make a decision on Contractor's Management Advice	11.2	Ninety (90) days
Maximum Total Liability of the Contractor to the Employer	16.1	USD Two Hundred Million (USD200,000,000.00)

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Performance Security	16.3	The performance security will be in the form of a performance bond in the amount(s) of USD Twenty Million (USD20,000,000) or 20% of contact value which one is higher.
Periods for required submissions by the relevant insuring Party to the other Party	16.4	Period (calculated from the Commencement Date) for submission of: (a) evidence that the insurances described in Clause 16 have been effected: Ninety (90) Days and (b) copies of the policies for the insurances as required by Schedule M: One Hundred and Eighty (180) Days
List of Employer-Proposed Potential Independent Experts	20.1.2	Will be negotiated during Pre-Contract Discussion
Date by which the Employer shall respond to Contractor's Counterproposal (if any)	20.1.2	Thirty (30) Days
Appointing entity or official in case of disagreement between the Parties	20.1.2	Chairman, RPCL-NORINCO Intl Power Limited.
Currency for Payment of the Independent Expert	20.1.3	Will be negotiated during Pre-Contract Discussion
Arbitration	20.1.4	By International Arbitration
International Arbitration Institution	20.1.4(a)(i)	International arbitration shall be in accordance with the rules Singapore International. Arbitration Centre (SIAC) Arbitration shall be administered by SIAC. The place of arbitration shall be the place of the institution administering the arbitration.
Amount of Liquidated Damages on Termination for Employer Convenience	21.10 (f)(i)	Equal to one Monthly Payments, which shall not exceed 5% of the value of contract.

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Part B - Specific Provisions

NIL

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Section IX. Annex to the Particular Conditions - Contract Forms

For Information Only

Notification of Award

Letter of Acceptance

[letterhead paper of the Employer]

[date]

To: *[name and address of the Contractor]*

This is to notify you that your Bid dated *[date]* for execution of the *[name of the Contract and identification number, as given in the Contract Data]* for the Contractor Remuneration of the equivalent of *[amount in numbers and words] [name of currency]*, as corrected and modified in accordance with the Instructions to Bidders, is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms included in Section IX, Annex to the Particular Conditions - Contract Forms, of the Bidding Document

Authorized Signature: _ Name and Title of Signatory: __
Name of Agency:

Attachment: Contract Agreement

For Information Only

Contract Agreement

THIS AGREEMENT made the _____ day of _____, _____, between _____ of _____ (hereinafter "the Employer"), of the one part and _____ of _____ (hereinafter "the Contractor"), of the other part:

WHEREAS the Employer desires that the Services known as _____ should be executed by the Contractor and has accepted a Bid by the Contractor for the execution and completion of these Services and the remedying of any defects therein,

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.

the addenda Nos. _____(if any)
the Letter of Acceptance
the Particular Conditions
the General Conditions;
the Schedules of Services Requirements,
the Letter of Bid

3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Services therein in conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Services, the Contractor Remuneration or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of _____ on the day, month and year indicated above.

Signed by _____ (for the Employer)

Signed by _____ (for the Contractor)

Signed by _____(Contractor's Parent Company) *[This last signature line to be added when the Successful Bidder is required to incorporate in the Employer's Country, pursuant to ITB 40.3 and a Parent Company Guarantee is not required in the corresponding PDS]*

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Performance Security

Performance Bond

By this Bond_____ as Principal (hereinafter called "the Contractor") and_____] as Surety (hereinafter called "the Surety"), are held and firmly bound unto_____] as Oblige (hereinafter called "the Employer") in the amount of _____, for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contractor Remuneration is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Contractor has entered into a written Agreement with the Employer dated the day of _____, 20 _, for _____ in accordance with the documents, plans, specifications and amendments thereto, which to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.

NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be and declared by the Employer to be, in default under the
Contract, the Employer having performed the Employer's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

(1) complete the Contract in accordance with its terms and conditions; or

(2) obtain a Bid or bids from qualified Bidders for submission to the Employer for completing the Contract in accordance with its terms and conditions and upon determination by the Employer and the Surety of the lowest responsive Bidder, arrange for a Contract between such Bidder and Employer and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contractor Remuneration; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "Balance of the Contractor Remuneration," as used in this paragraph, shall mean the total amount payable by Employer to Contractor under the Contract, less the amount properly paid by Employer to Contractor; or

(3) pay the Employer the amount required by Employer to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.

The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

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Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Handback Certificate.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Employer named herein or the heirs, executors, administrators, successors and assigns of the Employer.

In testimony whereof, the Contractor has hereunto set his hand and affixed his seal and the Surety has caused these presents to be sealed with his corporate seal duly attested by the signature of his legal representative, this _____ day of _____ 20 _____.

_____ SIGNED ON _____ on behalf of _____

By _____ in the capacity of _____

In the presence of

_____

_____ SIGNED ON _____ on behalf of _____

By _____ in the capacity of _____

In the presence of

_____

For Information Only

Advance Payment Security

Demand Guarantee

_____ *[Bank's Name and Address of Issuing Branch or Office]*

Beneficiary: _____ *[Name and Address of* Employer*]*

Date: _____

ADVANCE PAYMENT GUARANTEE No.: _____

We have been informed that _____ *[name of Contractor]* (hereinafter called "the Contractor") has entered into Contract No. _____ *[reference number of the contract]* dated _____ with you, for the execution of _____ *[name of contract and brief description of* Services*]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum _____ *[amount in figures]* (_) *[amount in words]* is to be made against an advance payment guarantee.

At the request of the Contractor, we _____ *[name of Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ *[amount in figures]* (_) *[amount in words]*[i] upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Services.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on its account number _____ at _____ *[name and address of Bank]*.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, on the ___ day of _____, 2___[ii]. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

_____

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

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[i] The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Employer.

[ii] Insert the expected expiration date of the Contract. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months] [one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."