CONTRACT

BETWEEN

M/S GUJARAT MINERAL DEVELOPMENT CORPORATION LIMITED

AND

_____

For a period of 12 months effective from _____

For

DCS and Instrumentation Upgradation of GMDC's 250 (2x125) MW Akrimota Thermal Power Station (ATPS)

District: Kutch in the state of Gujarat

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(On INR XX Stamp Paper)

This **Agreement** (hereinafter referred to as "**the Contract**") is made at Ahmedabad on this _____ day of _____, 2023.

BETWEEN:

Gujarat Mineral Development Corporation Ltd, a company incorporated under Indian Companies act, 1953 and having its corporate office at Khanij Bhavan, 132-Ring Road, Gujarat University Ground, Vastrapur, Ahmedabad 380 052 (hereinafter referred to as "**the Owner**" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors, and assigns) **of the FIRST PART**;

AND

_____, a company incorporated under the Companies Act, 1956/2013 and having its Registered Office at _____ with fax number _____ and its designated representative _____ and hereinafter referred to as "**the Contractor**" (which expression shall mean total service provider unless it be repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns) **of the SECOND PART.**

WHEREAS:

The Contractor is engaged, inter alia, in the business of upgradation of DCS and Instrumentation systems for coal or lignite-based thermal power plants. The Contractor has

acquired expertise in the above business due to its longstanding and availability of required experience and skilled workforce with it. The Contractor has agreed to undertake the Contract for DCS and Instrumentation upgradation of the Owner's 2X125 Akrimota Thermal Power Station

GMDC has been operating a 2X125 MW lignite-based thermal power Plant (Akrimota Thermal Power Station, ATPS) over the past 15 years. ATPS has two units of 125 MW each commissioned in July 2006, and March 2007 respectively. ATPS procures lignite required for generation of power from GMDC's mines (Mata na Madh, and Umarsar) located at proximity (~60 km) and transported directly to the Plant via road. Furthermore, the water supply to the power plant is ensured through nearest Kori creek (through 1.4 km long sea water intake channel).

The Contractor has offered, and the Owner has agreed to avail its services for DCS and Instrumentation system upgradation of the 2X125 MW Akrimota Thermal Power Station.

NOW, THEREFORE, in consideration of the foregoing premises and the mutual covenants and agreements hereinafter set forth, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Owner and the Contractor, intending to be legally bound, hereby agree as follows:

1. Definitions of the terms and conditions of the RFP

1.1 Definitions

For the purpose of the Contract, the following words and expressions in this Section shall have the respective meanings set forth below:

"**Applicable Laws**" shall mean all laws, treaties, ordinances, rules, regulations applicable in India and amendments, re-enactments, revisions, applications, and adaptations thereto made from time to time and in force and effect, judgments, decrees, injunctions, writs and orders of any court, arbitrator or governmental agency or authority, rules, regulations, orders and interpretations of any Governmental Instrumentality, court or statutory or other body having jurisdiction over construction of the Plant, performance of the Work or supply of Goods, operation and maintenance of the Plant, including Applicable Permits, as may be in effect at the time of performance of work or supply of Goods hereunder by the Bidder, which time would include Latent Defects Period as appropriate, provided, however, that if at any time the Applicable Laws are less stringent than the standards set forth in the Contract hereto, the standard set forth in the Contract hereto shall be deemed to be the standards under Applicable Laws.

"**Applicable Permits & Clearances**" shall mean any and all Permits, Clearances, Authorizations, consents, licenses (including without limitation any import or export licenses), lease, ruling, exemption, filing, agreements, or Approvals, required to be obtained or maintained in connection with construction of the Plant, performance of Work, and the operation of the Plant respectively by the Bidder and the Owner in accordance with the Contract and their maintenance, as may be in effect at the time of Bidder's supply of Goods hereunder; which time would include Latent Defects Period as appropriate.

"**Approval**" shall mean the written approval of the Owner and of the statutory authorities, wherever such authorities are specified by any codes or otherwise.

"**Arbitration Act**" shall mean Arbitration and Conciliation Act, 1996, or any amendment or re-enactment thereof.

"**Authorization**" shall mean approvals required under Applicable Law.

"Back-End Sub-Systems" shall mean all hardware and software present in the Control Network (C-net) of each DCS / PLC system in the Plant. It comprises of all the equipment starting from the field instruments, up to the C-net communications module, which includes junction boxes, marshalling and system cabinets, and all the cables connecting the mentioned equipment with the C-net communications card in the respective DCS / PLC system

"**Bid**" shall mean the offer of the Bidder to the Owner in response to the Bid Enquiry

"Bidder" shall mean single corporate entity Bidding for the Contract

"**Bidder Permits**" shall mean all Permits, required by the Bidder from any Government Instrumentality for the performance of his obligations

"**Bidder's Representative**" shall mean the person named as such in the Contract or other person appointed and from time to time communicated to the Owner by the Bidder in his place in accordance with the terms of the Contract.

"**Bid Security/Earnest Money Deposit (EMD)"** shall mean the security provided by the Bidder to the Owner along with the Bid.

"Central DCS for Boiler and Turbine" shall comprise of the following DCS / PLC systems – ABB Symphony Harmony Systems, ABB Symphony Melody System, Honeywell Fail Safety Control System, Moller HP/LP Bypass System, and Allen Bradley SLC 5/04 IP Extraction System

"**Commencement Date**" shall be the date 7 (seven) days from the date of signing of the LoA for services to be provided by the Bidder

"**Contract**" shall mean the documents as set out in the form of Contract Agreement as may be amended, supplemented, or modified from time to time by agreement in Writing between the Parties.

"**Contract Period**" shall mean the period from the Commencement Date up to and including the last day of the Contract.

"**Documents**" shall mean and includes all design documents, engineering documents, Drawings, calculations, computer software (programs), computer media, samples, patterns, models, construction documents, erection documents, Operation and Maintenance Manuals, and other manuals, and the like as well as, all other data and information to be submitted by the Bidder and shall include without limitation, engineering, design and construction drawings, data sheets, specifications, plans, bills of Materials and estimates.

"Front-End Sub-Systems" shall mean all the hardware and software present in the Operations Network (O-net) of the Central DCS for Boiler and Turbine in the CCR, and the hardware and software present in the O-net of the remote DCS / PLC systems in the Plant. It comprises of all the equipment starting from communication module connected to the Control Network (C-net) of the system, up to the operator / engineering workstations for the respective DCS / PLC system, which includes real time data servers, historian servers, printers, and all the cables connecting the equipment with the C-net communications card in the respective DCS / PLC system

"**Governmental Authority**" shall mean the Government of India, the state government, any local authority constituted under an act of legislature, and any other authority exercising any power or function in pursuance of an act of legislature, or any rules and regulations made there under, and any successor thereof having legal jurisdiction over the matter or person in question.

"**Goods**" shall mean all of the equipment, machinery, apparatus, appliances, components and/or other Materials and things, which the Vendors are required to supply to the Owner under the Contract.

"**Good Industry Practice**" shall mean those practices, methods, acts, techniques and standards as may be followed or employed in the performance of the Work or supply of Goods and discharge of its obligations by the Bidder and which (i) are generally accepted internationally for use in the electric utility industry, taking into account conditions in India, in connection with power stations of the same or similar size and type as the Plant, (ii) are

commonly used in prudent electric utility engineering, construction, project management and operations, and (iii) would be expected to result in performance of the Services and completion of Works in a manner consistent with Applicable Laws, Applicable permits, reliability and safety.

"**GUVNL**" shall mean Gujarat Urja Vikas Nigam Limited

"**Lumpsum Charges for DCS and Instrumentation Upgrade**" shall mean the comprehensive DCS and Instrumentation upgradation charges payable by the Owner to the Bidder in respect of execution of all the services and provision of spares as indicated in Section _ of Part _ in this document.

"**Notice in Writing**" or "**Written Notice**" shall mean a Notice in Writing, typed, or printed or handwritten characters, sent (unless delivered personally or otherwise proved to have been received) by registered post or by electronic transmission to the last known private or business address or registered office of the addressee and shall be deemed to have been received when in the ordinary course of post or by electronic media it would have been delivered.

"Overhaul" shall refer to the planned maintenance being undertaken for the 2X125 MW Akrimota Thermal Power Station to enhance performance and reliability of the asset. The Upgradation of DCS and Instrumentation Systems to be undertaken by the Successful Bidder shall be a part of the Overhaul

"Overhauling Activities" shall refer to all the activities that are needed to be performed for successful Overhaul of the 2X125 MW Akrimota Thermal Power Station

"**Owner**" shall mean Gujarat Mineral Development Corporation Limited hereinafter referred to "GMDC", in its capacity as Owner and shall include its successors and assigns, as well as authorized officers.

"**Owner's Representative**" shall mean the person appointed by the Owner from time to time and notified as such to the Bidder to act as Owner's Representative for the purposes of the Contract.

"PMC" shall mean the Project Management Consultancy appointed by Authority / GMDC for providing PMC services for turnaround of GMDC's 2X125 MW Akrimota Thermal Power Station (ATPS)

"Package" shall mean a group of ATPS systems that are Packaged together for the execution of Overhaul

"**Party**" shall mean Owner or Bidder individually and "Parties" means Owner and Bidder collectively.

"**Personnel**" shall mean employees/personnel engaged by the Bidder who are based in India and are directly or indirectly engaged by the Bidder in the performance of the Bidder's obligations under this Agreement at the Plant.

"**Plant**" shall mean the 2X125 MW lignite based thermal power Plant operated by GMDC in Akrimota (Akrimota Thermal Power Station, ATPS), comprising of 2 units of 125 MW each

"Procurement Activities" shall mean the activities needed to be performed for Procurement of all the raw materials and services for DCS and Instrumentation upgrade of the 2X125 MW Akrimota Thermal Power Station

"Remote DCS / PLC Systems" shall comprise of the following DCS / PLC systems – Allen Bradley SLC 04 installed for ACW / CCW, ABB AC800M installed for MHP, Siemens Teleperm XP installed for SWTP and CW Pump House, Allen Bradley Logix 1756 installed for AHP, GE Fanuc CPUE05 installed for Stacker Reclaimer, and the SCADA system for Compressor House and Switchyard

"Successful Bidder" shall mean the Bidder who is selected by Authority / GMDC for providing services for upgradation of DCS and Instrumentation system of GMDC's 2X125 MW Akrimota Thermal Power Station (ATPS) and shall include such Successful Bidder's legal representatives, successors and permitted assigns

"Turnaround" shall refer to the planned maintenance being undertaken for the 2X125 MW Akrimota Thermal Power Station to enhance performance and reliability of the asset

"**Willful Default**" shall mean an intentional or reckless breach or/ and omission by a Party of any of its obligations under the Contract

1.2 Interpretation

Words importing Persons or Parties shall include related firms and corporations and any organization having legal capacity. Words importing the singular also include the plural and vice versa where the context requires. Words importing one gender also include other genders.

Unless inconsistent with the provisions of the Contract, the meaning of any shipping terms and the rights and obligations of the Parties there under shall be as set forth in the latest International Chambers of Commerce (ICC) official rules for interpretation of trade terms as per "INCOTERMS 2010"

1.3 Law, language, and measurements

Applicable Law to this Contract shall be the Indian Law. The respective rights, privileges, duties and obligations of the Owner and the Successful Bidder under the Contract shall be governed and determined by the Laws of State and of the Republic of India.

All correspondence, information, literature, data, manuals, definitive documents, notices, waivers, and all other communication, written or otherwise, between the Parties in connection with this Contract shall be in English. The official text of this Contract shall be English.

All measurements shall be in metric system.

1.4 Stamp duty and similar charges

The costs of stamp duties and similar charges imposed by law on the Contract or Agreement, or any part thereof shall be borne by the Successful Bidder.

1.5 Commencement of Contract

The Successful Bidder, along with the payment of Performance Security, will enter into a Contract with the Owner on appropriate Stamp Paper (to be provided by the Successful Bidder) in token of acceptance of the terms and conditions of the contract, within 7 (seven) days of submission of its acceptance of the Letter of Award (LOA). In case of any necessity arising after executing the Contract and during the execution of the work, which requires alteration/modifications in the Contract, the same can be made in writing by either party, after mutual understanding and consent of both the parties. The Successful Bidder will have to start the work as per the Scope of Work described in the Section _ of Part _ of this document, within 7 (seven) days from the date of acceptance of the LOA. In case of failure to commence the work within the abovementioned period, the liquidated damages shall be levied as per the provision of Section _ of Part _ of this document

1.6 Successful Bidder's use of Owner's documents

Copyright in the Owner's requirements and other Documents issued by the Owner to the Successful Bidder shall (as between the Parties) remain the property of the Owner. Ownership in all documents provided by the Successful Bidder to the Owner pursuant to the Contract including design, engineering, Drawings and Works layout (but excluding proprietary information and Manuals provided by Successful Bidders of equipment for use of the Owner) shall vest in the Owner. The Successful Bidder may, at its Cost, copy, use and communicate any such documents for the purposes of the Contract. They shall not, without the Owner's consent, be used, copied, or communicated to a third-party by the Successful Bidder, except as necessary for the purposes of the Contract including performance of Work or supply of Goods.

The Successful Bidder shall indemnify the Owner in case of breach of this Section by the Successful Bidder. If these Documents are received by a third-party from the Successful Bidder and the third-party makes use of these Documents to cause harm or monetary loss to the Owner or use these Documents for their personal gain / monetary gain, the Successful Bidder shall compensate the Owner for the loss suffered as well as for the value of gain derived by third-party.

1.7 Confidential details

The Successful Bidder shall treat the details of the Contract as private and confidential, except to the extent necessary to carry out his obligations hereunder. The Successful Bidder shall not publish, permit to be published, or disclose any particulars of the Contract in any trade or technical paper or elsewhere without the previous consent in writing of the Owner and at the Owner's sole discretion.

The Successful Bidder shall indemnify the Owner in case of breach of this Section. If the confidential details relating to this Contract or its contents are received by a third-party from the Successful Bidder and the third-party makes use of these details to cause harm or monetary loss to the Owner or use these Documents for their personal gain/ monetary gain, the Successful Bidder shall compensate the Owner for the loss suffered as well as for the value of gain derived by the third-party. The Successful Bidder shall not use the confidential details of the Contract for any other purpose except for the strict purpose of this Contract.

2. Appointment of Successful Bidder

2.1 Appointment terms

Based on the results of this Bid as per the evaluation criteria mentioned in Section _ of Part _ of this document, the Owner shall appoint the Successful Bidder, and the Successful Bidder shall accept the appointment to deploy skilled, qualified, and competent manpower, and necessary systems, infrastructure, equipment, spares, system, software, and tools as required for efficient execution of the Overhaul, subject to the terms and conditions mentioned in the Contract.

The Owner reserves the right to increase or decrease the contractual work during the Contract period by giving prior notice in writing. Successful Bidder shall not be entitled to any compensation or indemnity on account of increase or decrease in the contractual work.

In case of requirement of execution of additional work as part of the scope of work detailed in Section _ of Part _ of this document during the Contract period, contractor shall be responsible to execute such additional work during the Contract period at the same rate finalized for the respective works. No escalation in the rate of the works for such additional work during the contract period shall be considered.

In case of a requirement of other works which are not covered in the scope of work detailed in Section _ of Part _ of this document, but the same is necessary for successful completion of the upgradation of DCS and Instrumentation System in the plant, the Successful Bidder may be assigned that work at the lowest rate derived and mutually agreed between the Successful Bidder and the Owner.

The MD is authorized to take suitable decision and action in case of requirement to amend/alter the contract conditions/quantities of the works/ extension of the contract period/allotment of additional works/revision of the rates of the work etc., if necessary, in the interest of the Owner.

2.2 Duration of the Contract

The Contract shall be deemed to have come into force and shall be effective from 7 (seven) days from the date of acceptance of the Letter of Award (LOA) by the Owner to the Successful Bidder, and the Successful Bidder shall execute the scope of work for provision of services and supply of material as covered in Section _ within a period of 40 weeks from the date of acceptance of LoA. In the said duration, the Successful Bidder shall complete the following key activities in the Package as per the stipulated timelines, where T shall mean the date of acceptance of the LOA:

S. No	Activity	Duration
1	Mobilization	T + 2 weeks
2	Completion of supplies	T + 24 weeks
3	Completion of pre-overhauling activities	T + 24 weeks
4	Upgradation and commissioning of DCS and Instrumentation systems	T + 32 weeks
5	Completion of Performance Guarantee Testing for both the units	T + 40 weeks

1. Detailed procurement and upgradation execution planning

2. Procurement of equipment / material as per BoQ for the DCS and Instrumentation Upgrade across both units
3. Delivery of equipment / material as per BoQ for the DCS and Instrumentation Upgrade at the Plant
4. Completion of pre-shutdown activities (e.g., mobilization, inspections, civil works, etc.)
5. Repairing, Overhauling, Upgradation, installation, commissioning, and testing of systems for the DCS and Instrumentation Upgrade as per specifications, and scope of work across both units

The Contract shall be deemed to be successfully executed post completion of the aforementioned activities, as certified by competent authority from the PMC and Owner. The Successful Bidder shall strive to complete the execution within the stipulated period of 40 weeks, however, in case of a delay, the Successful Bidder shall ensure completion of its contractual obligations as early as possible, while the Owner reserves the right to levy liquidated damages as described in Section _ of Part _ of this document.

3. Responsibilities of the Successful Bidder

The responsibilities of the Successful Bidder as part of the Contract have been segregated into three key categories – services, supply, and functional requirements. The terms of reference / scope of work have been detailed for each category below.

3.1 Scope of services

The scope of the Contract shall be providing end-to-end services for Upgradation / Overhaul of the DCS across both units of the Plant, as part of the DCS and Instrumentation package. The Successful Bidder shall ensure execution of the scope of work is done in accordance with good industry practice, standards of safety, and mutually agreed terms with the Owner. The activities to be undertaken by the Successful Bidder for execution of the Upgradation / Overhaul shall include, but is not limited to, the following –

3.1.1 Pre-Overhauling Activities

3.1.1.1 Detailed Overhaul Planning

1. The Successful Bidder shall create a detailed consolidated ‘Overhaul Execution Plan’ for the DCS and Instrumentation package in collaboration with the PMC, focusing on sequencing of activities, identification of interdependencies, and indicating clear milestones, in line with timelines mentioned in Section _ (Contract Duration) and Section _ (Payment Milestones)
2. The ‘Overhaul Execution Plan’ shall be used as the single source of truth for monitoring schedule compliance for the Successful Bidder, i.e., deviations in actual timelines vis-à-vis planned timelines
3. The ‘Overhaul Execution Plan’ shall be at an equipment level, encompassing all activities including but not limited to dismantling, procurement, installation of new system, commissioning, and testing

4. The Successful Bidder shall prepare appropriate Quality Assurance Plan (QAP) or Quality Inspection Plan (QIP) and Quality Control Plan (QCP), for execution of the Overhaul and shall get it reviewed by competent authority from the PMC and the Owner. The Successful Bidder shall apprise the Owner about the plans to enable frequent audits, and highlight potential concerns, if any

3.1.1.2 Owner readiness assessment and support

1. The Successful Bidder shall, in collaboration with the PMC, conduct audits and physical verification of existing inventory at the Plant to identify the equipment and associated spares and material readily available to be utilized during the Overhaul
2. Successful Bidder will assess the availability of required spares at the Plant. They will conduct a gap analysis and incorporate the additional material to be procured in the 'Procurement Register' (detailed in Section _) to ensure optimal Procurement and consumption of material
3. The Successful Bidder shall submit a list of deliverables to be provided by the Owner, indicate, and align the support required from the Owner during the execution of the Overhaul to ensure minimal delays

3.1.1.3 Statutory approvals

The Successful Bidder shall obtain, on behalf of the owner, all necessary statutory approvals from Inspection Authorities, or other government authorities, as may be required, as per Applicable Laws along with the associated cost. All necessary documentation prepared and / or obtained for such statutory approvals shall be submitted to the Owner for review prior to submitting for approvals to relevant authorities. Coordination and liaising with competent authority is in the scope of Successful Bidder.

3.1.1.4 Workforce deployment

1. The Successful Bidder shall deploy a 'DCS Package Leader' with strong technical expertise and experience of over 12 years in operations, maintenance, commissioning of Distributed Control Systems, and with prior experience in Upgradation of at least 2 DCS in thermal power plants with capacity >=125 MW in the last 7 years, in coal or lignite-based thermal power Plants in India
2. The Successful Bidder shall deploy two "Instrumentation and Electrical Leaders", as per the table mentioned below, with strong technical expertise and experience of over 7 years in operations, maintenance, commissioning of Distributed Control Systems.
3. The 'DCS Package Leader' shall coordinate with the PMC and the Owner on all matters pertaining to the execution of the Overhaul
4. The minimum requirements for the Successful Bidder to ensure coverage of all equipment within the battery limits has been summarized below:

S. No	Member	Role	Minimum requirement	Minimum Qualification
1	DCS Package Leader	Overall package coordinator	1	Graduation in mechanical / electrical / power / instrumentation / or equivalent engineering (B.E / B.Tech) with at least 12 years of relevant experience
2	Instrumentation and Electrical Lead – Central DCS for Boiler and Turbine	Supervisor for instrumentation and electrical activities, for Central DCS for Boiler and Turbine	1	Graduation in mechanical / electrical / power / instrumentation / or equivalent engineering (B.E / B.Tech) with at least 7 years of relevant experience
3	Instrumentation and Electrical Lead – Remote DCS / PLC systems	Supervisor for instrumentation and electrical activities, for Remote DCS / PLC systems	1	Graduation in mechanical / electrical / power / instrumentation / or equivalent engineering (B.E / B.Tech) with at least 7 years of relevant experience

5. The Successful Bidder shall ensure that all deployed personnel are available at the Plant at all times during the execution of the 'Overhaul Execution Plan'. The 'DCS Package Leader' shall be present at the Owner's corporate office in Ahmedabad for progress review and other meetings that may be organized during the course of the Overhaul. The Successful Bidder, at their own cost, shall arrange for their own accommodation for representatives travelling to Ahmedabad for such meetings
6. The Successful Bidder shall submit details of all deployed personnel for execution of the Overhaul to the PMC prior to deployment and ensure they are in line with Contractual requirements

3.1.1.5 Infrastructure arrangement

1. While the Owner will arrange for the accommodation and food for Successful Bidder's personnel deployed in the Plant on the basis of availability and on a chargeable basis, in case infrastructure is not available, the Successful Bidder shall be responsible for arranging the same for the entire course the Overhaul.
2. The Successful Bidder shall maintain a dedicated shed / workshop for conducting necessary works including but not limited to soldering, fabrication, repair, storage of material, system / equipment testing, calibration etc. The Owner shall provide access to the available facilities and workshop in the Plant with prior written consent, as per availability

3.1.1.6 Safety arrangements

1. The Successful Bidder shall ensure the personnel deployed in the Plant adhere to the appropriate health, safety, and environment (HSE) requirements at the time of deployment. This will include medical tests required, if any, among other requirements to be aligned with the Plant HSE team
2. The Successful Bidder shall make own arrangement for proper electronic as well as electrical grounding of all systems as per the industrial standards, supplied by him as required by the system design. All required accessories including grounding cables are also included in Successful Bidder's scope.
3. The Upgradation / Overhauling work by the Successful Bidder shall be carried out in such a manner that no damage is caused to existing equipment / foundations / structure and all precautions, including strengthening of existing structures, as may be necessary, shall be taken by the Successful Bidder to ensure safety of existing Plant / equipment / foundation / structures

3.1.1.7 Permits

1. The Successful Bidder shall obtain and maintain in effect all applicable permits required in connection with the Successful Bidder's performance of its obligations hereunder, including but not limited to licenses to permit the Successful Bidder to do business in the jurisdictions where the work is to be performed, design, engineering, procurement (including loading / unloading), fabrication, construction, erection, testing and commissioning, start-up testing, tests before taking-over, export, import, and other applicable permits required to move, transport, and deliver material / equipment to and from the Plant
2. Successful Bidder shall obtain all necessary Construction permits. If the Successful Bidder at any time becomes aware, whether as a result of notice from Owner or otherwise, of any applicable permit not obtained by him, the Successful Bidder shall promptly give notice thereof to Owner and the Successful Bidder shall be responsible for obtaining such applicable Permit
3. The Successful Bidder shall provide support to the Owner in obtaining necessary Owner's permits, including but not limited to the following activities:
    i. Overall co-ordination of permitting requirements

ii. Attendance at meetings with Owner and third parties designated by Owner
iii. Preparation of permit applications or, as applicable, application to transfer permits to the Owner
iv. Assistance in preparation of responses to inquiries by governmental instrumentalities/ agencies
v. Assistance in presentations at hearing of governmental instrumentalities / agencies
vi. Provision of all available information and documents required by Owner in connection with obtaining any Owner Permits; and
vii. Such other services as Owner may request from time to time required for Owner permits

3.1.2 Overhauling Activities

3.1.2.1 Dismantling of existing equipment

1. The Successful Bidder shall be responsible for dismantling of existing Central DCS for Boiler, Turbine, and Auxiliaries (if needed), and dismantling of all the Remote DCS / PLC Systems, prior to the initiation of the Overhaul, including but not limited to the cabinets, panels, unit control boards, cables, field instruments and associated devices, process piping and fittings, instruments racks, junction boxes etc. The Successful Bidder shall also need to re-install any dismantled equipment as and when needed during the Overhaul
2. The Successful Bidder shall ensure that all the dismantled components are appropriately stored in 'as it is' condition in the area allocated by the Owner for storing the dismantled equipment
3. The Successful Bidder shall take the complete DCS backup of the existing system configuration, control logics, P&ID graphics, and any other relevant information necessary for system engineering and connectivity, before dismantling the existing system.

3.1.2.2 Requirements from the DCS and Instrumentation Systems of the Plant

1. Successful Bidder's obligations cover complete upgradation of Central DCS for Boiler and Turbine. The Successful Bidder may choose to upgrade / replace the existing system as per the requirements mentioned in Section _ of this document, without compromising the existing control philosophy at the Plant. The Successful Bidder shall guarantee, for the upgraded Central DCS for Boiler and Turbine, active support for a minimum of 15 years after the completion of the Overhaul. In case the Successful Bidder / OEM upgrades any of the supplied hardware / software in the future, making the installed system obsolete, the Successful Bidder shall update the same at the Plant without any costs up to 15 years after the completion of the Overhaul
2. Successful Bidder shall replace and upgrade all the Remote DCS / PLC Systems to certified latest versions, without compromising the existing control philosophy at the Plant, and shall guarantee an active support for a minimum of

15 years after the completion of the Overhaul. In case the Successful Bidder / OEM upgrades any of the supplied hardware / software in the future, making the installed system obsolete, the Successful Bidder shall update the same at the Plant without any costs up to 15 years after the completion of the Overhaul

3. Successful Bidder's obligations, unless specifically excluded, covers the supply, erection and commissioning of all the Remote DCS / PLC Systems. The Successful Bidder shall prepare erection and installation procedure all the Remote DCS / PLC Systems.
4. Successful Bidder's obligations, unless specifically excluded, covers the supply and installation of necessary hardware and software, to enable monitoring / control of select critical parameters (as defined in Section _ and _of Part _ of this document) of the Remote DCS / PLC Systems, from the Central Control Room of the Plant
5. Successful Bidder shall submit a certificate / document from the OEM/Successful Bidder, to certify that all the supplied and installed DCS / PLC systems are the latest versions the respective systems provided by the OEM/Successful Bidder
6. The services required for upgradation of these systems shall include, but are not limited to supply of material, equipment, spare parts, consumables, staff and labor, structures and facilities, transportation (including unloading to and loading from the Plant), insurance, storage as required for complete Upgradation / Overhauling of the DCS / PLC systems
7. Successful Bidder shall, unless specifically excluded, mobilize all resources, spares, consumables, tools & tackles, and procure all items / material / equipment that can be reasonably inferred from the Contract as being required for fulfillment of services defined in this Section
8. All the materials / items / equipment / services required to fulfill the intent of executing complete Upgradation / Overhauling of the Control and Instrumentation systems in the Plant to ensure operability, maintainability, and reliability of the Plant, but not specifically mentioned in this document shall also be deemed to be included. The Successful Bidder shall ensure that the work is consistent with modern power plant practices, and comply with all applicable codes, standards, guides, statutory regulations, safety requirements in force
9. Successful Bidder shall not modify the existing control philosophy of all the control and instrumentation systems. The Successful Bidder shall create, submit, and take the approval of PMC and the Owner for all the detailed engineering documents including loop diagrams, graphic displays, system architectures etc., for all the works defined in Section _ of Part _ of this document. Any modifications in the submitted documents, identified during the Overhaul execution, shall be submitted to the PMC and the Owner for approval. All the documentation shall be done in hard as well as soft form
10. Successful Bidder shall prepare a detailed check list with step-by-step procedure to be carried out for pre-commissioning, loop checking, and commissioning, for all the DCS / PLC systems
11. Successful Bidder shall deploy highly competent engineers, supervisors, and skilled workers for the execution of the Overhaul. The Successful Bidder shall protect all instruments, impulse tubes / fittings, painting from physical damage

and contamination by any foreign material, during the execution of the Overhaul

12. Successful Bidder shall provide identification plates / tags for all the component modules with the following information –
    i. Manufacturer's Name
    ii. Part / model number
    iii. Serial number
    iv. Equipment code
    v. Power supply – Voltage, Current and Frequency
    vi. Manufacturing year

3.1.2.3 Front-End Sub-Systems

Services to be provided by the Successful Bidder for Upgradation / Overhauling of Front-End Systems, as defined in Section _ of Part _ of this document shall include, but is not limited to, the following:

I. Central DCS for Boiler, Turbine, and Auxiliaries

Services to be provided by the Successful Bidder for Upgradation of Front-End Sub-Systems for the Central DCS for Boiler and Turbine shall include, but is not limited to, the following:

i. Replace and upgrade all the Front-End Sub-Systems of the Central DCS for Boiler, Turbine, and Auxiliaries, to the certified latest version
ii. Replace and upgrade Real Time Data Servers (both primary and secondary) with latest Windows OS. Provide a cabinet for all the server controllers in the Engineering Station room
iii. Replace and upgrade the existing communication modules (both primary and secondary) in the Operations Network, with Ethernet / Optical Fiber based interface
iv. Upgrade the Human Machine Interface (HMI) system with latest operational functionalities
v. Replace and upgrade all the existing operator/engineering workstations with a minimum of 32-inch interchangeable workstations
vi. Replace and Upgrade the Alarm Management and Annunciation System, as per the requirements defined in Section _ of Part _ of this document
vii. Replace and upgrade all the operator workstations, engineering workstations, and printers, as per the system configuration provided in Annexure 1. Supply front end desk and new furniture for the HMI system (if needed) with a minimum warranty of 3 (three) years
viii. Supply 2 (two) portable nos. of portable CD drives. Supply 16 nos. of tablets with pre-installed logbook design / application for logging and reporting purposes
ix. Engineer all the functional and protection logics in the upgraded system, as per the existing control logics in the Plant
x. Supply and install all the front-end hardware and software in the DCS needed to enable monitoring and control of all the additional parameters detailed in Annexure _ of the document

xi. Supply and install all the front-end hardware and software needed to enable monitoring of the following flue gas parameters – Opacity (SPM), O2, CO, SOx, NOx, temperature and pressure

xii. Provide cyber-security measures as per the CEA guidelines for thermal power plants. Supply and install a server-based security system for safe and secured updating process of the security patches and the system / application software, developed by OEMs from time to time

xiii. Replace and upgrade the historian servers (both primary and secondary), with 3 hard disks of at least 1 TB under RAID configuration

xiv. Provide data storage and reporting as per the requirements defined in Section _ of Part _ of this document

xv. Replace the Sequence of Events (SOE) module, for sequence of events report generation during Plant breakdown

xvi. Provide system self-diagnostic features as per the requirements defined in Section _ of Part _ of this document

xvii. Provide redundant logic with I/O modules for fail safe operations of all critical control loops / systems

xviii. Supply and install two cameras for furnace visualization via PADO tools detailed in Section _ of Part _ of this document

xix. Supply, install and configure two (2) large screen displays connected to the central DCS for each unit in shift in-charge's office and Plant general manager's office respectively, for monitoring purposes

xx. Supply and install fire alarm and detection system for the entire plant and provide a separate client server for the same in the CCR

xxi. Supply and install hardware and software necessary to provide operations and monitoring facilities for the fire hydrant system in the Plant

xxii. Supply and install Network Healthiness Monitoring system in the CCR for monitoring of C&I network of the Plant

xxiii. Supply and installation of a 200 line EPABX system in the plant area and a 300 line EPABX system in the colony with intercom and cable connections

xxiv. Provide OEM recommended and certified spares for all the equipment replaced / upgraded. The Successful Bidder shall ensure that a minimum of 10% of installed quantity of spare cards are provided

II. Remote DCS / PLC Systems

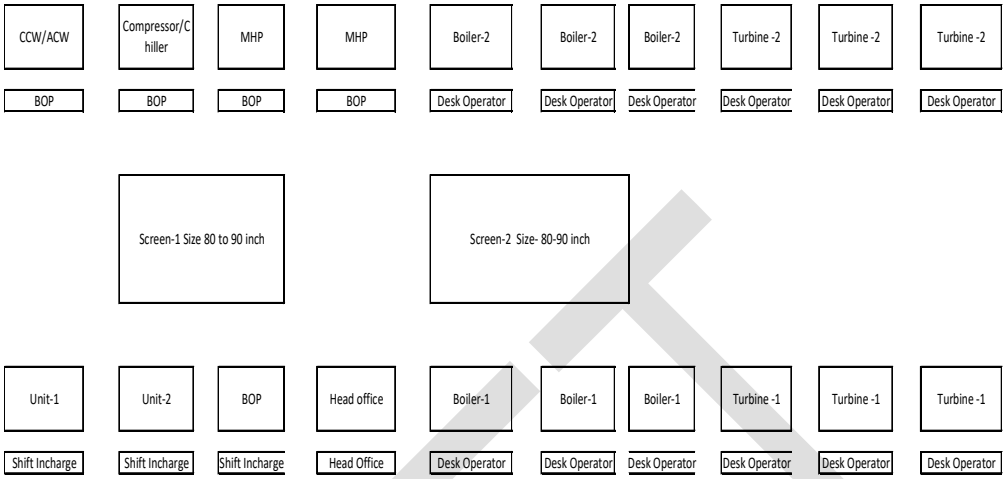
Services to be provided by the Successful Bidder for Upgradation / Overhauling of Front-End Sub-Systems for the Remote DCS / PLC Systems shall include, but is not limited to, the following:

i. Replace and upgrade the Front-End Sub-Systems of all the Remote DCS / PLC Systems, to the certified latest version

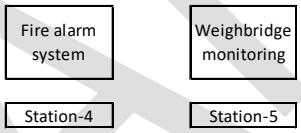
ii. Replace and upgrade Real Time Data Servers (both primary and secondary) with latest Windows OS, for all the Remote DCS / PLC Systems.

iii. Replace and upgrade the existing communication modules (both primary and secondary) in the Operations Network, with Ethernet / Optical Fiber based interface, for all the Remote DCS / PLC Systems
iv. Upgrade the HMI system with latest operational functionalities
v. Replace and upgrade all the operator workstations, engineering workstations, and printers, for all the Remote DCS / PLC Systems as per the system configuration provided in Annexure _. Supply front end desk and new furniture for the HMI system (if needed) with a minimum warranty of 3 (three) years
vi. Engineer best in class graphic displays for local operator and engineering workstations for the PLCs mentioned above
vii. Replace and Upgrade the Alarm Management and Annunciation System, as per the requirements defined in Section _ of Part _ of this document
viii. Provide cyber-security measures as per the CEA guidelines for thermal power plants. Supply and install a server-based security system for safe and secured updating process of the security patches and the system / application software, developed by OEMs from time to time
ix. Provide data storage and reporting as per the requirements defined in Section _ of Part _ of this document
x. Supply and install local historian servers (both primary and secondary) for all the remote DCS / PLC systems with required capacity under RAID configuration
xi. Supply and installation of a SCADA system for the Compressor House, and the Switchyard for monitoring the operating parameters mentioned in Annexure _. Control and monitoring of both the systems should be facilitated from the CCR
xii. Supply and installation of central operator workstations, real time data servers, communication modules, and any other hardware or software that maybe needed to enable monitoring / control of select operating parameters mentioned in Annexure _ and Annexure _ from the CCR. The data related the operating parameters mentioned in Annexure _ and Annexure _, should also get stored for in the central historian for reporting purposes
xiii. Engineer best-in-class control logics and graphic displays in the central operator workstations for monitoring / control of the operating parameters mentioned in Annexure _ and Annexure _, from the CCR
xiv. Supply and install all the front-end hardware and software for all the Remote DCS / PLC Systems, needed to enable monitoring and control of all the additional parameters detailed in Annexure _ of the document
xv. Supply and install all the front-end hardware and software needed to enable monitoring of weighbridge from MHP control room as well as the central control room
xvi. Provide system self-diagnostic features as per the requirements defined in Section _ of Part _ of this document
xvii. Provide OEM recommended and certified spares for all the equipment replaced / upgraded. The Successful Bidder shall ensure that a minimum of 10% of installed quantity of spare cards are provided

The Successful Bidder shall design the Central Operating Station in the CCR for the Plant as per the following schematic –



The Successful Bidder shall design the operating / monitoring system for fire alarm and weighbridge monitoring as per the following schematic –



3.1.2.4 Back-End Sub-Systems

Services to be provided by the Successful Bidder for Upgradation / Overhauling of Back-End Systems, as defined in Section _ of Part _ of this document shall include, but is not limited to, the following:

I. Central DCS for Boiler, Turbine, and Auxiliaries

Services to be provided by the Successful Bidder for Upgradation / Overhauling of Back-End Sub-Systems for the Central DCS for Boiler and Turbine shall include, but is not limited to, the following:

i. Replace / Upgrade all the Back-End Sub-Systems in the Central DCS for Boiler and Turbine, to the certified latest version
ii. Supply and installation of all the hardware and software needed within battery limits for all the field instruments mentioned in the BoQ attached as Annexure _
iii. Supply and installation of all the equipment such as cards, controllers, JBs, LI panels, cables and cable trays etc. as per the BoQ attached as Annexure 3
iv. Replace and upgrade following cards as a minimum for which the vendor support has ceased to exist. The Successful Bidder shall also replace and upgrade all the other necessary hardware and software needed to be upgraded along with the following cards:

v. r

S. No.	DCS	Type of Card	Card Model
1	ABB Symphony Harmony	Processor	IMMFP12
2	ABB Symphony Melody	Processor	CMC 50-2
3	Honeywell FSC	Processor	10020/1/1
4	ABB Symphony Melody	Communication	CCO 30-2
5	Honeywell FSC	Communication	10008/3/P

e availability of a minimum of 25% spare slots in the system cabinet racks for expansion purposes in future

vi. Ensure availability of a minimum of 20% spare channels in all the cards in the DCS. The Successful Bidder shall replace all the cards that don't meet this criterion

vii. Reduce cable congestion in the terminal blocks of marshalling cabinets of the ABB Symphony Melody DCS system, by inserting din type rail for mounting TB block, and execute all the cable connections with cross feruling

viii. Supply and install terminal strips for the cables entering from the field to the marshalling / system cabinets. Terminal strips shall be segregated as follows –
   a. Digital input from field
   b. Digital output from field
   c. Digital input from MCC room
   d. Digital output from MCC room
   e. Digital input from local panels
   f. Digital output to local panels

ix. Use multicore cables and lock type plug-in connectors / cables for interconnections

x. Supply and upgrade the multi-loop controller / processor cards, to have the following functionalities as a minimum –
   a. Data acquisition of analog and digital signals
   b. Mathematical calculations
   c. Control loop processing
   d. Totalization and Integration
   e. Analog relay function
   f. Conversions
   g. Auto tuning
   h. Statistical process calculation
   i. Regulatory control block
   j. Communication with other systems

xi. Supply and install all the hardware and software needed from JBs to the DCS to enable monitoring and control of all the additional parameters detailed in Annexure _ of the document

xii. Supply and install all the hardware and software needed from JBs to the DCS to enable monitoring of the following flue gas parameters – Opacity (SPM), O2, CO, SOx, NOx, temperature and pressure

xiii. Provide an accidental voltage tolerance of 1000 VAC / DC with no damage being passed to any components of the DCS
xiv. Provide protection against any inductive loads, over currents, and short circuits shall be provided in all the I/O circuits
xv. Supply and installation of a central GPS based Master clock, and Slave clocks for all the DCS / PLC systems
xvi. Provide humidity protection layers on all the equipment
xvii. Replace and install all the non-usable cables / wires, as per the standard IEC codes, from junction boxes to the respective DCS / PLC systems
xviii. Termination of wires of different voltages shall be done on separate terminal blocks with color coding. Wiring shall be accomplished with flexible stranded tinned copper wires sized in compliance with the applicable codes
xix. Provide plastic raceways of suitable dimensions for all the wiring, with 40% of spare space for future expansion. Categorize and organize raceways to run electric wires according to their voltage level and function; power supply wires and low voltage signal wires shall not be grouped together in the same raceways
xx. Perform cross feruling on all the cables needed to be laid / replaced.
xxi. Supply and installation of UPS systems (primary and redundant) for the upgraded DCS system (up to system cabinet level). The Successful Bidder shall calculate the UPS load required for the upgraded system as per the best engineering practices
xxii. Provide earthing for all the electrical and electronic equipment as needed
xxiii. All cabinets (marshalling, system etc.) shall have two separate grounding bars – one known as the “safety bar” for equipment / cabinets /console body grounding of appropriate size etc., and other known as the “reference grounding bar” for system input/ output signals and system electronic module for reference zero-volt signal and with the metal cable shielding.
xxiv. Replace and upgrade the Honeywell Fail Safe Control System for boiler operations, and Moller HP/LP Bypass PLC system for turbine operations, with the certified latest version of the system (or its equivalent). Retain the existing control philosophy of both the systems
xxv. Replace and upgrade the existing SWAS system
xxvi. Provide OEM recommended and certified spares for all the equipment replaced / upgraded. The Successful Bidder shall ensure that a minimum of 10% of installed quantity of spare cards are provided

II. Remote DCS / PLC Systems

Services to be provided by the Successful Bidder for Upgradation / Overhauling of Back-End Sub-Systems for the Remote DCS / PLC Systems shall include, but is not limited to, the following:

i. Dismantle all the existing Remote DCS / PLC Systems in the Plant
ii. Replace / Upgrade all the Back-End Sub-Systems of the Remote DCS / PLC Systems, to the certified latest and uniform versions across all the systems

iii. Supply and installation of a SCADA system for the Compressor House, and the Switchyard for monitoring the operating parameters mentioned in Annexure _. Control and monitoring of both the systems should be facilitated from the CCR
iv. Supply and installation of all the hardware and software needed within battery limits for all the field instruments mentioned in the BoQ attached as Annexure _
v. Supply and installation of all the equipment such as cards, controllers, JBs, LI panels, cable and cable trays etc. as per the BoQ attached as Annexure _
vi. Ensure availability of a minimum of 25% spare slots in the system cabinet racks for expansion purposes in future
vii. Ensure availability of a minimum of 20% spare channels in all the cards in the DCS
viii. Supply and install terminal strips for the cables entering from the field to the marshalling / system cabinets. Terminal strips shall be segregated as follows –
    a. Digital input from field
    b. Digital output from field
    c. Digital input from MCC room
    d. Digital output from MCC room
    e. Digital input from local panels
    f. Digital output to local panels
ix. Use multicore cables and lock type plug-in connectors / cables for interconnections
x. Supply and upgrade the multi-loop controller / processor cards, to have the following functionalities as a minimum –
    a. Data acquisition of analog and digital signals
    b. Mathematical calculations
    c. Control loop processing
    d. Totalization and Integration
    e. Analog relay function
    f. Conversions
    g. Auto tuning
    h. Statistical process calculation
    i. Regulatory control block
    j. Communication with other systems
xi. Termination of wires of different voltages shall be done on separate terminal blocks with color coding. Wiring shall be accomplished with flexible stranded tinned copper wires sized in compliance with the applicable codes
xii. Provide plastic raceways of suitable dimensions for all the wiring, with 40% of spare space for future expansion. Categorize and organize raceways to run electric wires according to their voltage level and function; power supply wires and low voltage signal wires shall not be grouped together in the same raceways
xiii. Perform cross feruling on all the cables needed to be laid / replaced.

xiv. Supply and installation of UPS systems (primary and redundant) for all the Remote DCS / PLC Systems. The Successful Bidder shall calculate the UPS load required for the upgraded system as per the best engineering practices

xv. Provide an accidental voltage tolerance of 1000 VAC / DC with no damage being passed to any components of the DCS

xvi. Provide protection against any inductive loads, over currents, and short circuits shall be provided in all the I/O circuits

xvii. Supply and installation of all the processing / communication cards needed for the new operating and engineering workstations of the local PLCs as detailed in Section _ of Part _ of this document

xviii. Dismantling of all the Modbus communication channels between all the Remote DCS / PLC systems and the Central DCS for Boiler and Turbine

xix. Supply and installation of optical fiber communication channels and all the associated hardware / software needed to be installed between the Remote DCS / PLC systems and the Central DCS for Boiler and Turbine, to enable monitoring / control operating parameters detailed in Annexure _ and Annexure _, from the CCR. The Successful Bidder will be responsible to evaluate the length of the optical fiber cable needed to be installed

xx. Supply and install Slave clocks for all the remote DCS / PLC systems, which shall be connected to the GPS based Master Clock in the CCR, to synchronize the clocks of all the systems

xxi. Provide earthing for all the electrical and electronic equipment as needed

xxii. All cabinets (marshalling, system etc.) shall have two separate grounding bars – one known as the “safety bar” for equipment / cabinets /console body grounding of appropriate size etc., and other known as the “reference grounding bar” for system input/ output signals and system electronic module for reference zero-volt signal and with the metal cable shielding.

xxiii. Provide humidity protection layers on all the equipment

xxiv. Supply and install all the hardware and software from JBs to the respective Remote DCS / PLC Systems, needed to enable monitoring and control of all the additional parameters detailed in Annexure _ of the document

xxv. Supply and install all the hardware and software from JBs to the MHP Remote DCS / PLC System, needed to enable monitoring of weighbridge from MHP control room as well as the central control room

xxvi. Upgrade the chiller compressor units (4 Nos., Make – Blue Star) control system

xxvii. Provide OEM recommended and certified spares for all the equipment replaced / upgraded. The Successful Bidder shall ensure that a minimum of 10% of installed quantity of spare cards are provided

3.1.2.5 Training of Owner's Personnel

The Successful Bidder shall be responsible for providing operations and maintenance training for all the hardware and software of the upgraded DCS / PLC systems to the Owner's personnel at the Plant. The Successful Bidder shall also train the Owner's personnel on the Successful Bidder's system to develop a detailed understanding of the HMI system of the upgraded DCS The Successful Bidder shall train the Owner's personnel for efficient and safe Plant operation and maintenance practices.

3.1.2.6 Site acceptance tests (SATs)

The Successful Bidder shall submit the procedure for carrying out the SAT for Owner's approval. The SAT shall be carried out on the basis of this approved document. The Successful Bidder shall test all the items / material / equipment supplied and installed after completing all the services necessary as defined in Section _ of Part _ of this document. The Successful Bidder shall demonstrate the functional integrity of the hardware and software for all the DCS / PLC systems. All the equipment shall be checked thoroughly after its installation and commissioning. The tests as a minimum shall include:

1. Visual, mechanical, and functional testing
2. Redundancy checking of all the redundant units like, Controller, Communication bus, Sub communication I/O modules, power supply unit etc.
3. Demonstration of all system diagnostics features
4. Checking of changeover of redundant devices
5. Demonstration of all system functions
6. Checking of proper functioning of DCS / PLC programming unit
7. Checking of complete engineering configuration of DCS / PLC including Graphics tuning, FLD etc.
8. Loop testing and interlock checking.
9. Demonstration of an overall accuracy of +/- 1% wherever deviations are observed in each loop
10. Checking of System loading time, control loop update time for of all the DCS / PLC systems
11. Communication between internal systems as well as communication with other third-party systems/devices as per specifications

All the SATs shall be done in the presence of the Owner, the PMC, and other representatives deployed by the Owner (if needed). The Owner, the PMC and other Owner's representatives (as needed) shall sign off the SATs, to mark the successful completion of the SATs

3.1.2.7 Commissioning

Commissioning of the Plant shall be done after successful completion of the Performance Guarantee Tests as per Section _ of Part _ of this document. The commissioning shall be divided into the following major steps:

1. Cold commissioning and start up services (without process part)

2. Hot commissioning (including process part)

Each step of commissioning shall be performed by following the set industry practices for –

1. Closed loop control
2. Open loop control
3. Power supply and monitoring
4. Control and Plant network
5. Operator and Engineer stations

The Successful Bidder must ensure that the following requirements are met during the commissioning of the upgraded control and instrumentation systems in the Plant:

1. Conduct necessary loop tests for all the instruments, by simulating the process conditions.
2. Provide one complete set of tools and tackles required for installation, assembly, disassembly, and maintenance of the upgraded systems, at the time of commissioning
3. Ensure that the Plant shall not trip during the commissioning of the upgraded system

3.1.2.8 Post Upgradation Support

The Successful Bidder shall provide an active spares and services support to the Owner, for all the hardware / software supplied and installed during the Overhaul, for a minimum of 15 years after the completion of the Overhaul. The Owner shall formally register a request for support as and when needed, to which, the Successful Bidder shall respond within 5 working days. The Owner also reserves a right, but not an obligation, to invite the Successful Bidder to execute an inspection of the DCS / PLC systems, once in every 3 years for 15 years after the completion of the Overhaul, including running a system diagnosis to identify any potential existing / future potential issues with the system. The Successful Bidder shall provide all the necessary support to fulfil Owner's request in a timely manner. The Successful Bidder shall provide an Undertaking for Post Overhaul Support, in the form of Annexure 16 of this document.

3.2 Scope of supply of material

3.2.1 Procurement planning

1. The Successful Bidder shall create a 'Procurement Register' for DCS and Instrumentation systems in collaboration with the PMC, including but not limited to, detailed item-wise Bills of Quantities (BoQs) with associated costs and technical specifications of all the material / equipment necessary for upgradation of DCS as per the requirements mentioned in Section _ and _ of Part _ of this document, to ensure adherence to desired quality and exercise cost control within Contractual limits. The Successful Bidder shall be responsible to purchase and procure all the items in the Procurement Register

2. The Successful Bidder shall prepare a 'Procurement Plan' for DCS and Instrumentation systems for the purpose of monitoring all Procurement activities and ensuring timely delivery of all material, in line with timelines mentioned in Section _ (Duration of Contract) and Section _ (Payment Milestones)
3. The Successful Bidder shall coordinate with the PMC in maintaining a digital data sheet (in excel format) of the 'Procurement Plan', with the desired timelines and costs vis-à-vis the actual timelines followed and costs incurred by the Successful Bidders to track compliance. The Successful Bidder and PMC shall grant all requisite access to the data sheet to the Owner, and share necessary summaries for reporting purpose, if requested

3.2.2 Material Management

The Successful Bidder shall deploy appropriate material management systems (e.g., ERP solutions) to track movement of material and adherence to schedules and quality. Further, the Successful Bidder shall integrate the system with the digital data sheet described in Section _ of Part _ of this document

3.2.3 Storage of material in Plant

The Successful Bidder shall be responsible for storage of all procured material / equipment at the Plant within the Successful Bidder's shed. The Successful Bidder shall be solely responsible for security of the material / equipment at the Plant. In case of theft / burglary / loss of material, the Successful Bidder shall bear the cost of replenishing the material and ensure timely delivery to minimize impact on the execution of the Overhaul.

3.2.4 Quality Management

The Successful Bidder shall ensure the procurement of material is as per the technical and design specifications, and adhere to highest standard of engineering and workmanship, to ensure after completion of the Overhaul, the Plant shall be capable of performing in a safe, reliable, sustainable, and in a manner acceptable to the Owner.

3.2.5 Packing and transportation

1. The Successful Bidder shall be responsible for packing and transportation of all material and equipment to be repaired / refurbished from the Plant to the Successful Bidder's / supplier's facilities and back to the Plant. The Successful Bidder shall also be responsible for loading, unloading, preservation, and storage of the material during transit
2. The Successful Bidder shall arrange for appropriate transit insurance and clearances from relevant authorities for all material to be transported from the Plant to the Successful Bidder's / supplier's facilities and back
3. The Successful Bidder shall be solely responsible to replace the material that may be damaged or lost in transit and shall bear the cost for all such material. Further, the Successful Bidder shall provide notice in writing to the Owner, copying the PMC and the Owner with the details of the issue, as needed

3.2.6 Factory acceptance tests (FATs)

I. Introduction

1. A 100% integrated system simulation test shall be carried out in the Successful Bidder's staging area to test all the hardware and software supplied by the Successful Bidder
2. The Successful Bidder shall arrange for factory acceptance tests to be conducted for all equipment at the Successful Bidder's facilities, prior to shipping, in the presence of the Owner, the PMC, and other representatives deployed by the Owner, if needed
3. The Successful Bidder shall arrange necessary accommodation and food and beverage requirements, for the Owner, the PMC, and other representatives deployed by the Owner for supervision of the Factory Acceptance Tests
4. During system development, it will be decided if the Factory Acceptance Test will either be performed on the complete Control System or if separate tests will be conducted on each item performing a final integration test
5. Cyber FAT test shall be arranged by the Successful Bidder at the respective OEM's works for the complete system, with installed hardware and software
6. Successful Bidder shall be responsible for making all connections between system components, peripherals, and test equipment, including foreign device interfaces
7. The cost of performing the FAT shall be borne by the Successful Bidder

II. Facilities

1. The Successful Bidder shall assign qualified personnel during the entire test period to perform the test and operations
2. The staging area shall satisfy the following requirements:
   i. Area dimensions shall be enough to easily accommodate all cabinets and equipment necessary to the complete test.
   ii. A warehouse containing at least one item per device type in the supply shall be available to change any device found defective during the test within one working day
   iii. Power supply lines for system equipment shall be suitable for testing purposes

III. Test Procedure

1. Duration will depend upon the real status of the system which will be checked at the FAT beginning
2. The Successful Bidder shall provide three weeks' notice to the PMC and Owner prior to the scheduled test beginning
3. Daily meetings shall be held to state progress, pending points, modifications, and any required rescheduling of activities

IV. Hardware Test

1. FAT shall be performed using hard-wired simulated inputs, with simulators to be provided by the Supplier
2. The Successful Bidder shall provide monitors and equipment to determine the performance of the system under test with respect to loading and response time requirements
3. The Hardware tests shall consist, but not be limited to the following tests:
   i. Check of supply completeness
   ii. Visual check of hardware against Manufacturer's documentation
   iii. Item list check:
      a) Number of Item's modules
      b) Quantities of auxiliary equipment
      c) Quantities of switches and push buttons
      d) Check of system documentation
      e) Quantities of consumable
   iv. System drawings check: System cabling and wiring check
   v. Check of proper change-over of the back-up units in case of unit failure
   vi. Power loss simulation
   vii. Shutdown of operator stations and their reloading
   viii. Shutdown of process stations and their reloading
   ix. Fail on (for redundant systems):
      a) Processor - Master card
      b) Communication - Master card
      c) Power supply - Master card
      d) Processor – Back-up card
      e) Communication - Back-up card
      f) Power supply - Back-up card
   x. Communication fail: for redundant cables/busses and serial links
   xi. Demonstration of diagnostic features
   xii. Power off and power on of any single unit
   xiii. Check of auxiliary devices
   xiv. Check of correct functionality of keyboards
   xv. Testing of the printers
   xvi. Simulation of power-off and restart
   xvii. Test of system interfaces working
   xviii. Check of power supply load
   xix. Check of analogue channels accuracy (tests to be performed as sample)

V. Software Test

The Software tests shall consist, but not be limited to the following tests:

1. Check of database configuration
2. Check of batch sequences (if any) and interlocks configuration
3. Check of monitor displays (all kind of displays)
4. Check of all the report generation variations
5. Check of system internal loading (processors, communication system, etc.)

6. Check of printing functions (alarm, reports, etc.)
7. Check of time stamping and continuous operation
8. Scan time checking (test to be performed as sample)

VI. Input output working

The I/O working tests shall consist, but not limited to the following tests:

1. Analogue (4-20 mA) inputs check
2. Analogue (4-20 mA) outputs check
3. Digital inputs check
4. Digital outputs check
5. Check of proper correspondence between electrical signals and internal indications. Check of AI/AO/DI/DO points against detailed engineering diagram

VII. System configuration check

1. Database configuration check

VIII. Internal Programs test

1. Energy measures check
2. Flow compensation formulas check
3. Optimization programs check: the proper working of the programs and their ease of handling will be verified
4. Special control algorithms check
5. Special functions check: all the functions implemented inside the system (i.e., data reconciliation checks, etc.)
6. Interlocks checks: the proper working of all the interlock schemes will be checked against engineering Successful Bidder's documentation using external simulators to simulate the field
7. VA / PT (CFAT) tests to be carried out for vulnerability and security assessment

IX. Auxiliary devices

1. Proper working of printers shall be checked
2. Proper working of trip amplifiers, temperature convertors, relays etc. is to be checked

X. Documentation

The Successful Bidder shall prepare documentation and deliver a copy of the same to the PMC and Owner two weeks before the FAT beginning. The Successful Bidder shall provide the following documents:

1. System database
2. Application database
3. Logic Diagrams
4. Factory Acceptance Test Plan

3.3 Functional requirements of DCS

The scope of the Contract shall be providing services as defined in Section _ of Part _ of this document, for Upgradation / Overhauling of the Control and Instrumentation systems across both units of the Plant. The Successful Bidder shall ensure execution of the scope of work is done and shall provide the functionalities in accordance with the best industry practices. The following functional requirements shall be the minimum requirement for optimal performance of the Plant:

3.3.1 General requirements

1. Owner's operators at the Plant shall be able to access all the information related to the DCS for Boilers and Turbines, and select information related to the other remote DCS / PLC systems as defined in Section _ of Part _ of this document, through the operator consoles present in the CCR
2. The DCS / PLC systems shall meet the following requirements without a supervisory computer – Control, Data acquisition and monitoring, Alarming, Logging and report generation, Historical data storage
3. Successful Bidder shall enable monitoring and control of all the Remote DCS / PLC Systems remotely as well as from the CCR. The Successful Bidder shall provide a switch (or an equivalent mechanism) to ensure that at any point of time, the monitoring and control of a Remote DCS / PLC Systems is done either remotely or from the CCR, and not from both the locations. The Successful Bidder shall provide a separate switch (or an equivalent mechanism) for all the Remote DCS / PLC Systems
4. All the cards present in any Remote DCS System, should be interchangeable with the cards of other Remote DCS Systems
5. Plant process and safety shutdown shall be independently performed by the DCS / PLC systems

3.3.2 Data Acquisition Sub-System

The Data Acquisition Sub-System for each DCS / PLC system is defined as all the hardware and software used to interface and multiplex analog and digital inputs from control loops. The hardware and software used in the Data Acquisition Sub-System of all the DCS / PLC systems must meet the following minimum requirements:

1. All I/O modules shall be plug in type, hot-swappable, and intelligent modules
2. Points per I/O card shall not exceed the following limits –
   a. Analog Input/Output – As per manufacturer std., subject to a maximum of 16
   b. Digital Input/Output – As per manufacturer std., subject to a maximum of 32
3. System shall have the capability to interface and multiplex analog and digital inputs from open / closed loops
4. All input modules shall be compatible to receive the following feedback signals from field instruments –
      a. AI input: 4-20 mA for 0% to 100% feedback with 24 V DC
      b. DI inputs: 8 V DC and 24 V DC for open/close feedback
5. System shall have the capability to process both linear and non-linear analog inputs
6. System shall have a provision to replace I/O cards while DCS is powered

7. System shall have the capability to execute advanced diagnostics which can detect any failure in the system and are able to raise diagnostic alarms
8. All the cards present in any Remote DCS System, should be interchangeable with the cards of other Remote DCS Systems

3.3.3 Controller Sub-System

The hardware and software used in the Controller Sub-System of all the DCS and PLC systems must meet the following minimum requirements:

1. Control function of the system shall be executed by microprocessor based multi-loop controller consisting of a set of algorithms which are easily field configurable using user friendly software
2. Controller shall have highly rugged intelligent I/O modules which shall be having isolation from the field
3. All the cards present in any Remote DCS System, should be interchangeable with the cards of other Remote DCS Systems
4. Controller shall have advanced control algorithms to implement regulatory and advanced control strategies. These shall include PID, adaptive, feed forward, dead time, lead-lag, high-low, signal selection, real time computational capability etc. apart from other algorithms as specified in the job specification
5. Controller shall be able to scan close loop in less than 100 mSec for critical loops and 200 mSec for non-critical Loops unless otherwise specified in job specifications
6. Controller shall be able to scan open loop in less than 50 mSec for critical loops and 100 mSec for non-critical loops unless otherwise specified in job specifications
7. Controller load shall not exceed 60% i.e., the number of created control sheets in the controller memory shall not be more than 60% of the maximum capacity
8. Loop execution time shall be freely configurable and should not be a fixed value
9. Loop integrity shall be maintained in controller sub-system architecture by providing one to one controller back-up. In case failure is detected in the active controller, all the control shall be transferred to back up controller automatically within 1 msec
10. Closed loop control system shall provide automatic control of the plant for full applicable operating range of the unit, with operating turndown ratio of not less than six to one
11. Controller shall be capable of accepting process signals from various process sensors and switches, preferably without requiring external or auxiliary signal conditioning devices
12. Controller shall be able to operate in either manual, auto, cascade or computer mode. Mode change-over in either direction shall be seamless. It shall be possible to change set point, tuning constant, operating mode, controller configuration from the central level i.e., operator's interface keyboard and engineer's interface keyboard
13. All main control loops shall be having online pressure, temperature compensation, density correction, auto tuning etc. as per existing control and operation philosophy
14. Controller shall have a provision for slow and fast ramping of set point and output. All controllers shall have anti-reset wind up as a standard
15. Controller shall be able to track computer generated set point and shall hold the last generated value in case of computer failure. In such a scenario, the controller shall fall back on auto mode and continue to operate at the last received set point

16. In cascade loops, the primary controller shall be able to track the set point of the secondary controller when the secondary controller is not operating in cascade mode
17. Controller shall provide a 100 Mbps C-net operations network, and shall not be battery dependent
18. Controller shall have radio clock interface the central time synchronization of all the modules, which shall be connected to the GPS based master clock in the CCR
19. Controller shall be responsive and stable, to maintain the deviations of controlled variables from set point within limits specified so that the equipment being controlled will operate over the specified range
20. During transient conditions causing deviation in performance variables of the plant, the control system shall not permit deviations exceeding those permitted by the manufacturers of the controlled process equipment, and control loops shall bring the controlled variable to the set point in a stable manner
21. The control system network should be separate from the ERP system network

3.3.4 Human Machine Interface Sub-System

The hardware and the software used in the Human Machine Interface Sub-system present in the CCR for all the DCS / PLC systems in the plant, must meet the following minimum requirements:

1. The operator interface sub-system shall provide the centralized information of the Plant in the following fields:
   i. Indication of all analog and digital process variables of control loops
   ii. Manipulation of control loops including changing set point, mode output, configuration, tuning and computational constants
   iii. Alarm displays and annunciation
   iv. Graphic displays and status indication
   v. Logging and trending including historical trend recording
   vi. Trend recording on assignable trend recorders
   vii. Self-diagnostic messages
2. The system shall have graphic displays based on the P&IDs provided by the Owner. A reference or tag number for the applicable I/O can be used to provide mimic animation of the graphic screen. Graphic display for Network Healthiness Monitoring shall be based on the Plant C&I network architecture
3. The system shall have high performance graphics, and display builder with –
   i. Toolbars
   ii. Tab browser
   iii. Templates
   iv. Symbol libraries
   v. Pictures
   vi. Alphanumeric description of tag status
   vii. Graphic symbols changing as a function of tag status
4. The system shall have 3D editing features with dynamic animation facility for system graphics
5. The system shall provide real time access to all the information available within the control system

6. The engineering workstation shall be the primary server and operator workstations shall be the client servers
7. The system shall have operator hints message facility for guidance to the operator
8. Any changes made in the data base of one monitor shall automatically update the data base of other monitors of the same console
9. Sufficient data handling capacity/bandwidth shall be present in the installed servers, with a provision to measure the data handling capacity/bandwidth
10. All the cards present in any Remote DCS System, should be interchangeable with the cards of other Remote DCS Systems
11. Logging of all measured and computed parameters, operator actions, alarms etc. shall be possible from operator consoles
12. The historians shall capture and store historical data of all the DCS / PLC systems up to a minimum of six months
13. The historians shall capture the data at a minimum of 1 sec interval and the sampling rate shall be changeable as per the operators' inputs
14. Logs / reports shall be generated on hourly, daily, weekly, or monthly basis, as per the job specification given by the operator
15. The system shall have Performance Analysis, Diagnostic, and Optimization tools, and performance monitoring systems as per latest applicable standards such as PTC-6 and PTC-4. The PADO tools should have following minimum functionalities
    i. Provision of logbook
    ii. Efficiency calculator
    iii. Summarization of equipment running hours
    iv. Block wise DC display software
    v. Furnace visualization via camera
16. The system shall be capable of generating the following types of reports. All reports must have programmable time range, system scope etc. –
    i. Trending reports
    ii. Real time customizable MIS reports
    iii. Sequence of events reports (with a timestamp of 1 mSec)
    iv. Maintenance reports
    v. Alarms and interventions reports
17. The sequence of events reports shall check for all the alarms detailed in Annexure 5
18. Each activity in the DCS / PLC system must be logged in the server and reports including all events, operator actions, process alarms, occurrence time etc. The logger shall have facility to print out reports
19. Data across all the operator / engineering system shall be consistent i.e., the data available on one station shall also be available on all other stations, so that failure of one OS does not make the data of that station disappear
20. The system shall be able to generate all the reports in familiar Microsoft Office and PDF formats
21. All the historical data shall be stored on a non-volatile memory device like hard disk with RAID configuration, which can be subsequently recalled by operator on any screen
22. All USB ports must be blocked for pen drive / mass storage
23. All real time clocks in the HMI system shall be synchronized with the master clock

24. Engineer interface sub-system shall have configuration, tuning, composing and maintenance capabilities, along with all the capabilities of an operator console
25. Configuration display shall provide a detailed display for each loop, indicating the configuration of that loop and all other interrelated loops. It shall also display the following:
    i. Loop configuration giving designation of each block
    ii. Control block interconnection showing soft wiring or hard wiring value of each block parameter linked P&ID, ratio, bias, dead-time, lead time etc.
26. The system shall provide the ability to graphically develop control system strategies, develop and maintain global system databases and manage system libraries of reusable software components
27. The system shall use a common system-wide database to eliminate duplicate entry and automate the configuration of interrelated configuration tasks
28. The system shall have an integrated explorer which presents a unified, single view of the system which the user can organize and navigate
29. Users shall be able to add additional applications to enable creation and management of operator displays, advance turning of control loops, batch language support and network management
30. All detailed diagnostics of the DCS shall be available on the operator and engineering console
31. Electrical & electronic earth monitoring data must be online for status & rectification purpose in the DCS

3.3.5 Alarm Management System

The hardware and the software used in the Alarm Management System present in the CCR for all the DCS / PLC systems in the Plant, must meet the following minimum requirements:

1. Advanced alarm management system shall be present with categorization of alarms and features such as alarm grouping, filtering, and inhibiting, leading to advanced statistical analysis and alarm reports.
2. Alarms shall be provided for any deviations of Plant performance as per the existing control philosophy of the Plant, as well as the failure of all the DCS and Instrumentation system equipment such as field instruments, cables, cards, servers, buses, power supply, cooling fan etc.
3. Alarm and annunciation system shall be modular and programmable by an engineer. The system shall have provision to set process alarm limits from the engineering keyboard i.e., alarm limits on absolute value of measured variable, rate of change of measured variable, high and low deviation set points etc.
4. Lamps shall be LED based and replaceable. Hooter shall be solid state type with audibility of 100 dB at 3 meters. Hooter shall have provision to set different tone for different functions
5. Display of process and system alarms on the operator consoles on an immediate basis as and when they occur, by flashing a page and group number of the input under alarm irrespective of the type of display on the operator's console
6. Retention of the audio alarm and visual flashing even after the condition returns to normal unless it is acknowledged by the operator

7. Provision to display alarm summary and alarm history up to six months. It shall be possible to display a summary of all alarms in the sequence of their occurrence. The alarm display list shall contain the following information
    i. The date and time of occurrence
    ii. Point identification
    iii. Point description
    iv. Type of alarm
    v. Serial number of alarms in the sequence of its occurrence
8. Alarm Information Management System (AIMS) shall have following minimum features:
    i. Logical processing of events and alarms
    ii. Facility to analyze frequency of occurrence of events in a pre-defined period
    iii. Standalone system with server PC connected to the DCS
9. Capability to display and print out the alarm history up to a minimum of six months. The alarm display and print out shall list the following for each alarm as a minimum:
    i. The date and time of occurrence
    ii. Point identification
    iii. Point description
    iv. Type of alarm
    v. Time of acknowledgment
    vi. Time of return to normal
    vii. Serial number of alarms in the sequence of occurrence

3.3.6 Communication Sub-System

The hardware and the software used in the Communication Sub-System of all the DCS / PLC systems must meet the following minimum requirements:

1. Communication sub-system shall be a digital communication bus, that provides a high-speed data transfer rapidly and reliably between the operator consoles, process I/O and other back-end devices, process computer and other devices connected to it.
2. Communication speed across all the systems shall be minimum 100 Mbps
3. Communication bandwidth usage shall not exceed 60% of the total capacity
4. Communication speed on the communication bus shall be sufficient to update the operator console data base once in every second.
5. The mechanism used by the communication system for error checks and control shall be transparent to the application information
6. Automatic transfer to the backup device or bus without interrupting the system operations, in case of main bus failure or any communication device failure
7. The network connectivity should be manually manageable and should have the facility to shutdown unused ports
8. All the cards present in any Remote DCS System, should be interchangeable with the cards of other Remote DCS Systems

3.3.7 Power supply

The power supply system in all the DCS / PLC systems must meet the following minimum requirements:

1. UPS back up time must be more than 24 hours
2. Redistribution of power shall be done with proper isolation through required rating of fuses and MCB. Cabinet shall be provided with one ammeter and voltmeter. 230V AC shall also be terminated and further distributed to all panel
3. Isolating switches and fuses with reverse protection shall be employed to isolate and protect the load; the suppliers shall guarantee cut out selectivity. The supplier shall provide the following data regarding power supply:
    a. Total power consumed
    b. Peak power consumed
    c. Maximum tolerable no-voltage period
    d. Power dissipated as heat i.e., Number of units to be powered. The vendor shall ensure redundancy of power supply for each cabinet/rack

3.3.8 Redundancy

The hardware and the software of all the DCS / PLC systems must meet the following minimum requirements to ensure redundancy:

1. Each system must be 100% redundant, including I/O cards, I/O bus, processor cards, servers, server controllers, control network bus, communication network bus, power supply, cooling fans, historian, operator / engineering workstations, UPS (including UPS batteries), hard disks etc.
2. Multi-loop controller shall have the highest order of redundancy with respect to the control processor, remote I/O communication bus, communication with I/O modules, interface units to all nodes, floating power supply etc.
3. Each server must have redundant hard disk and power supply at all levels
4. Communication system shall be deterministic based on IEEE802.4, dual redundant, consisting of two separate communication buses and two separate communication system interfaces for each device. In case of systems having traffic directors, redundant traffic directors shall also be provided
5. All redundant system must be hot type, with availability of networking line diagram graphic display for quick diagnostic
6. Recovery of the system after failure of any primary component shall be automatic, swift, and transparent for the operator with consistent inputs/outputs during the switchover of the equipment. The switch over time shall be one millisecond
7. The Primary and redundant CPU and communication modules may be placed in different racks in the system cabinet so that in case of failure of one rack or its power supply, the system still keeps running by switching over to its corresponding back up device placed in the healthy rack
8. Design and provide redundant protective earthing system as per international standard required for the DCS / PLC systems
9. Redundancy as per the existing design philosophy shall be retained wherever not mentioned explicitly

3.3.9 Self-diagnostics

The hardware and the software used in the self-diagnostics of all the DCS / PLC systems must meet the following minimum requirements:

1. System shall have an extensive set of self-diagnostic routines which shall locate and identify the system failure at least up to module level. Individual module failures shall be indicated on the operator screen display
2. The self-diagnostic message for a sub-system failure shall appear on the operator console irrespective of the display selected on the screen
3. System self-diagnostic display shall be available which shows different sub-systems over the communication subsystem, showing the status of each sub-system
4. Failure of a sub-system or module shall be annunciated with a change in color for the associated loops or point tags

3.3.10 Cyber security

The hardware and the software used for all the DCS / PLC systems in the Plant must meet the following minimum requirements to ensure cyber-security:

1. Integrated security functions are required on all the operator and engineering workstations to prevent unauthorized operations
2. Access and authorization to different control functions shall be initialized based to different levels such as user group, tag importance level, operation mark and other defined security levels
3. System shall have security provisions such as password protections at different security levels
4. Antivirus and other relevant precautionary software shall be installed in all the systems. However, it should not affect the application or operation of the Plant. The validity of the antivirus software should be a minimum of 3 years
5. Manual data deletion from the system shall not be possible for operators and engineers
6. Local system for IT data backup, restoration and retention shall be setup for servers, storage, and any other necessary requirements
7. Online value forcing must be traceable and logged
8. Centralized server-based system shall be provided for surveillance and security, system and application program updates. The switching changeover time between the Di-Militarized Zone and Plant's LAN switches should be less than 1 sec

3.4 Reporting and Governance

The Successful Bidder shall prepare and submit a comprehensive 'Overhaul Completion Report' incorporating the key activities undertaken, results of the Site Acceptance Tests, and list of material supplied to the Owner as part of the Overhaul, within 2 weeks of completion of the Overhaul, to mark the completion of the Overhaul.

Further, the Successful Bidder shall prepare and submit fortnightly progress reports with the PMC and the Owner. Each progress report shall include:

1. Photographs and detailed descriptions of progress including each stage of design, procurement, manufacture, delivery at Site, construction, erection, testing and commissioning

2. A detailed description of the milestones achieved, and the Work/Services performed prior to the date of the fortnightly progress report and the extent to which payments therefore have been received against the milestones
3. A description of the current status (the name of manufacturer, manufacture location, percentage progress, and the actual or expected dates of commencement of manufacture, Successful Bidder's inspections, tests, and delivery) of supplies and Equipment and of Successful Bidder's and all Major Sub-Contractors activities and engineering, manufacturing and construction progress as compared with the Project Schedule.
4. Copies of quality assurance reports including test results (i) from the manufacturing and supply facilities of all Sub-Contractors and (ii) with respect to all supply and installation activities at the Facility Site
5. Safety statistics required under Applicable Laws, including details of any hazardous incidents and activities relating to environmental aspects and public relations.
6. Comparisons of actual and planned progress, with details of any aspects which may jeopardize the completion in accordance with the Contract, including Overhaul Execution Plan and the mitigation measures / action plan being (or to be) adopted to overcome such aspects. It shall include a clear identification and evaluation of problems and deficiencies in the Services (including but not limited to an evaluation of any factors which are anticipated to have a material effect on the Project Schedule).
7. Any other information as considered necessary by Owner / Owner's Representative.

3.5 Standards for performance of obligations

The Successful Bidder represents and warrants that it has the requisite skills, experience, expertise, and capacity to fulfill its obligations and responsibilities under the Contract. The Successful Bidder shall perform all of its services hereunder in accordance and compliance with:

1. Accepted prudent industry practices
2. Standard Operating Procedures, Standard Maintenance Procedures, Hazard Identification and Risk Assessment with mitigation and control measures, and Manufacturer's Recommendations
3. Incident reporting with corrective and preventive measures
4. Implementation of lessons learnt from incidents on similar facilities
5. All Applicable Laws
6. All applicable clearances to be obtained and maintained including but not limited to all relevant health and safety legislations, environment permits and licenses

The Successful Bidder shall have round-the-clock qualified, trained, and experienced, with valid necessary certifications, crew of adequate strength who are alert and vigilant for carrying out all the normal and emergency operations, start-up, and shutdown of DCS and Instrumentation systems. Startup and shutdown of the Plant will be done by the Plant engineers under the supervision of Successful Bidder.

3.6 Standards for Sub-Contracting

For the purpose of performing its obligations under the Contract, the Successful Bidder may appoint Sub-Contractors with prior written intimation to the Owner as deemed fit. Appointment of such Sub-Contractors by the Successful Bidder shall at no time mean that the Successful Bidder is relieved of its primary duty and liability to perform its obligations as set out in the Contract. The Successful Bidder shall be responsible for:

1. Obtaining any and all necessary authorizations required for use of all Plant infrastructure / facilities in connection with the performance of its obligations hereunder
2. Ensuring adherence to standard operating procedures and safety standards by the Sub-Contractor and be liable in the event of any issue affecting the performance of the asset

4. Responsibilities and rights of the Owner

4.1 Responsibilities of the Owner

The Owner shall be responsible for the following key activities pertaining to the execution of the Overhaul of the Plant

1. Access to Plant infrastructure

The Owner will arrange for the Successful Bidder's accommodation and food and beverage requirements at the Plant for the key Personnel deployed on ground to oversee the execution of the Overhaul, on chargeable basis and on the basis of availability of accommodation. In case infrastructure is not available, the Successful Bidder shall be responsible for arranging the same. The Successful Bidder shall ensure that the Personnel are available at the Plant for the entire course of Overhaul and shall take requite consent from the Owner with prior intimation through a Written Notice in case of any changes in availability of Personnel.

2. Access to documents and data

The Owner shall provide the Successful Bidder with access to available drawings, documents, OEM manuals, and operational information required for the successful execution of the Overhaul. In case any technical drawing, document is unavailable with the owner, then the same shall be developed by the Successful Bidder at its own cost and risk.

3. Shutdown and startup activities

The shutdown (prior to commencement of the Overhaul), and startup of the plant (post successful completion of the performance guarantee tests) shall be done by the Owner, in the presence and supervision of the Successful Bidder.

4.2 Rights of the Owner

The Owner, throughout the tenure of the Contract, reserves the following rights relating to preparation and execution of the Overhaul of the Plant, not specifically granted to the Successful Bidder.

1. General policies and procedures

The Owner reserves the rights for review and determination of general policies and procedures not previously delegated to the Successful Bidder as part of the scope of work.

2. Audits

The Owner may, from time to time, designate any responsible person on its behalf to conduct audits, pertaining to the Owner's capacity defined in the Contract, of financial (billing and invoicing), technical, safety, and to visit and inspect the Plant to discuss such affairs, which relate to the services provided by the Successful Bidder, with its authorized representatives

3. Access to data

The Owner reserves the rights to access all records, documents, and data relating to the services provided by the Successful Bidder and / or the Successful Bidders, during the preparation and the execution of the Overhaul, including for making copies thereof or extracts.

The Owner shall have the right, at all times, on reasonable notice and at the premises of the Successful Bidder to examine drawings / design documents which have been prepared by the Successful Bidder and / or the Successful Bidders.

5. Performance Guarantee Testing (PGT) and acceptance procedures

5.1 Performance Guarantee Testing (PGT)

1. The Performance Guarantee Testing shall be done after the completion of Overhaul for all the packages (Boiler, Turbine etc.) in the Plant
2. The Successful Bidder shall submit for Owner's approval, the detailed Performance Test procedure containing the following:
    i. Object of the test
    ii. Various guaranteed parameters and tests as per contract
    iii. Method of conductance of test and test code
    iv. Duration of test, frequency of readings and number of test runs
    v. Method of calculation
    vi. Correction curves
    vii. Instrument list consisting of range, accuracy, least count, and location of instruments
    viii. Scheme showing measurement points
    ix. Sample calculation
    x. Acceptance criteria

xi. Any other information required for conducting the test
xii. VAPT (CFAT) tests for vulnerability assessment and security updates

3. The Successful Bidder shall make the equipment ready for carrying out the performance guarantee tests post completion of the Overhaul
4. The tests shall be binding on the Successful Bidder to determine compliance of the 'Unit' / 'Equipment' with the performance guarantees.
5. All instruments required for performance testing shall be of the type and accuracy required by the code and prior to the test, the Successful Bidder shall get these instruments calibrated in an independent test institute. All test instrumentation required for performance tests shall be supplied by the Successful Bidder and shall be retained by him upon satisfactory completion of all such tests at site. All costs associated with the supply, calibration, installation, and removal of the test instrumentation shall be borne by the Successful Bidder. All calibration procedures and standards shall be subjected to the approval of the Owner.
6. All special equipment, tools and tackles, instruments, measuring devices required for successfully conducting the PGTs shall be provided by the Successful Bidder
7. After the conductance of Performance test, the Successful Bidder shall submit the test evaluation report of Performance test results to Owner promptly but not later than two weeks from the date of conductance of Performance test. However, preliminary test reports shall be submitted to the Owner after completing each test run

5.2 Performance guarantee parameters

The Successful Bidder shall conduct the PG Tests after the completion of Overhaul for all the packages (Boiler, Turbine etc.) in the Plant. The Successful Bidder shall adhere to the performance based functional requirements set forth in Section _ of Part _ of this document, and the requirements detailed below in this Section, in order to ensure successful completion of the Overhaul and obtain an 'Operation Acceptance Certificate' by the PMC:

1. Processor spare duty cycle time:
   i. Under maximum load, each MMIPIS (Man machine interface system & plant information system) processor in the system bus present in the CCR, shall have 40% free time when measured over any two seconds, and 50% free time when measured over any one-minute period
   ii. Under maximum load, each control system processor of the all the DCS and PLCs shall have 20% free time when measured over any one-minute period
2. Display response time:
   i. The system shall acknowledge all operator requests in one of the following manners within one second of pressing the last button: Commencement of the requested display OR acknowledgment of operator request in a suitable manner
   ii. The response time for screen update after execution of the control command from the time the command is issued shall be two seconds
   iii. All displays shall update automatically in every two seconds
3. System accuracy requirements
   i. The overall system accuracy for the all the DCS and PLCs, from signal input terminal to output presentation on the operator displays and printers for the least accurate input range, and maximum scan rate shall not be worse than +/- 0.1%
4. Loop testing

i. The Successful Bidder shall test all the loop including, but not limited to, the critical loops detailed in Annexure 6 of this document
ii. The loop cycle time should adhere to the requirements defined in Section _ of Part _ of this document

5.3 Notice of tests

The Successful Bidder shall issue 21 days' notice to the Owner of the date after which he will be ready to commence the tests and the Successful Bidder shall commence the tests promptly thereafter.

5.4 Retesting

If the unit fails to pass the test (which in the case of performance tests means not achieving the acceptable limits), the Owner reserves the right to ask the Successful Bidder to repeat such tests on the same terms and conditions. The retest shall be conducted by the Successful Bidder within 14 (fourteen) days of notification from the Owner.

5.5 Delayed tests

If the tests could be carried out but are being unduly delayed by the Successful Bidder, the Owner may by notice inform the Successful Bidder to conduct the tests within 14 (fourteen) days after the receipt of such notice. The Successful Bidder shall conduct the tests on such days within that period as the Successful Bidder may fix and of which he shall issue notice to the Owner.

If the Successful Bidder fails to conduct the tests within such notice the Owner may himself proceed with the tests. All tests so conducted by the Owner shall be at the risk and cost of the Successful Bidder and the cost thereof shall be deducted from the contract price or charged to the Successful Bidder. The tests shall then be deemed to have been conducted by the Successful Bidder and the test results shall be binding on the Successful Bidder.

5.6 Independent inspector

The Owner reserves his right to appoint an independent inspector at his own cost as his representative to discuss the test program, to approve the instrumentation, to witness the tests and to analyze the test results.

It is the Successful Bidder's responsibility to co-ordinate for suitably carrying out the performance tests. The duration of the test shall be in accordance with the agreed test codes at the loads after necessary stabilizing period to obtain steady state conditions. All other tests to prove the guarantees as indicated in the Successful Bidder's offer shall also be conducted.

The equipment parameters during the performance test shall be adjusted as far as practicable to the guaranteed performance test conditions. The tests shall be conducted to prove guaranteed parameters as defined in the contract.

The performance test results shall be reported as computed from the performance test observations with corrections for site conditions, variations in load, etc., and test conditions.

Such correction curves shall be submitted along with the bid. No additional allowances for errors in measurement are permissible.

5.7 Reporting of test results

Immediately after the conclusion of the performance test, The Successful Bidder shall submit a test report (Six copies of each test) to the Owner stating whether the unit has passed or failed such test, accompanied by sufficient test data and calculations to demonstrate the level of performance attained with respect to each of the tested parameters.

The report(s) shall include as a minimum, the following:

1. Description of the test procedures
2. Standards that were used
3. Instrumentation details and calibration
4. Full schematic diagrams with indication of instrument test location and identification tag of same
5. Test logs and summary of test readings used for performance calculations
6. Full set of correction curves
7. Computation of test results
8. Computations to prove measurement uncertainty is within acceptable limits
9. Conclusions of performance tests: test passed or not

5.8 Acceptance of test report

Within fourteen (14) days of receipt such test report(s), the Owner shall submit a notice to the Successful Bidder stating either:

1. That Owner concurs with the information provided in the Successful Bidder's test report(s), or
2. That Owner disputes some or all of the information provided in the Successful Bidder's test report(s), the areas being disputed, and the levels of performance being disputed.

If Owner concurs with the information in the Successful Bidder's test report(s), the Owner shall, within fourteen (14) days of receipt of the test report, provide a written notice to the Successful Bidder accepting the results of the tests.

If Owner disputes any or all of the results contained in the Successful Bidder's test report(s), representatives of the Successful Bidder, Owner and the Engineer shall meet within fourteen (14) days of the receipt of the Owner notice at a mutually acceptable location to review and discuss the dispute.

5.9 Disagreements as a result of tests

If the Owner and the Successful Bidder disagree on the interpretation of the test results, each shall give a statement of his views to other within reasonable time after such disagreement arises. The statement shall be accompanied by all relevant evidence. The Owner and the Successful Bidder shall mutually discuss and agree regarding the results of the test.

6. Defect Liability

1. The Successful Bidder warrants that the DCS and Instrumentation and any part thereof shall be free from defects in the design, engineering, materials, and workmanship of the equipment supplied and of the work executed
2. The Defect Liability Period shall be 18 (eighteen) months from the date of Completion of the Overhaul (or any part thereof) or 12 (twelve) months from the date of Operational Acceptance of the equipment (or any part thereof), whichever first occurs, as certified by the PMC/Owner /any agency on behalf of the Owner
3. If during the Defect Liability Period any defect should be found in the design, engineering, materials, and workmanship of the equipment supplied or of the work executed by the Successful Bidder, the Successful Bidder shall promptly, in consultation and agreement with the Owner regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Successful Bidder shall, at its discretion, determine) such defect as well as any damage to the equipment caused by such defect. All the costs associated to the remedying of the defects shall be born by the Successful Bidder
4. The Owner shall give the Successful Bidder a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The Owner shall afford all reasonable opportunity for the Successful Bidder to inspect any such defect.
5. The Successful Bidder shall guarantee 99.7 percent system availability for a continuous period of 180 days. An Availability Test shall be conducted to assure this level of availability. The system availability can be calculated as follows –

$$\text{Availability} = \left[1 - \frac{\text{Downtime (during test period) of DCS/ PLC systems}}{\text{Total test period}}\right] \text{X } 100$$

   Downtime shall start upon loss of a DCS / PLC system function and shall end upon full restoration of the affected system function, during the test period. If the accrued down time exceeds 0.3 percent of 180 days, during availability test run, a new 180-day test run shall start at the time when the system becomes available again. Before the initiative of the new 180-day test, the Successful Bidder shall promptly, in consultation and agreement with the Owner regarding appropriate remedying of the defects leading to unavailability greater than 0.3 percent, and at its own cost, repair, replace or otherwise make good (as the Successful Bidder shall, at its discretion, determine) such defect as well as any damage to the equipment caused by such defect. The Successful Bidder shall submit the suitable procedure to conduct and monitor the availability test to the Owner for approval.
6. The Successful Bidder shall provide on-site support to the Owner, for a minimum of 3 months after the date of Completion of Overhaul (or any part thereof) or Operational Acceptance of the equipment, whichever first occurs, as certified by the PMC/Owner/any agency on behalf of the Owner
7. The Owner shall afford the Successful Bidder all necessary access to the Plant to enable the Successful Bidder to perform its obligations under this clause
8. The Successful Bidder may, with the consent of the Owner, remove from the Plant, any equipment or any part of the equipment that are defective if the nature of the defect, and/or any damage to the Plant caused by the defect, is such that repairs cannot be expeditiously carried out at the Plant

9. If the repair, replacement or making good is of such a character that it may affect the efficiency of the equipment or any part thereof, the Owner may give to the Successful Bidder a notice requiring that tests of the defective part of the equipment shall be made by the Successful Bidder immediately upon completion of such remedial work, whereupon the Successful Bidder shall carry out such tests.
10. If such part fails the tests, the Successful Bidder shall carry out further repair, replacement or making good (as the case may be) until that part of the equipment passes such tests. The tests in character shall in any case be not less than what has already been agreed by the Owner and the Successful Bidder for the equipment
11. If the Successful Bidder fails to commence the work necessary to remedy such defect or any damage to the equipment caused by such defect within a reasonable time (which shall in no event be considered to be less than fifteen (15) days), the Owner may, following written notice to the Successful Bidder, proceed to do such work, and the reasonable costs incurred by the Owner in connection therewith shall be deducted by the Owner from any payment due to the Successful Bidder or claimed under the Performance Security
12. If the equipment or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period shall be extended by a period equal to the period during which the equipment or such part cannot be used by the Owner because of any of the aforesaid reasons. Upon correction of the defects in the equipment or any part thereof by repair/ replacement, such repair/re placement shall have the Defect Liability Period extended by a period of twelve (12) month from the time such replacement/repair of the equipment or any part thereof
13. At the end of the Defect Liability Period, the Successful Bidder liability ceases except for latent defects. The Successful Bidder's liability for latent defects warranty shall be limited to a period of five (5) years from the end of Defect Liability Period. For the purpose of this clause, the latent defects shall be the defects inherently lying within the material or arising out of design deficiency which do not manifest themselves during the Defect Liability Period
14. In case, there is any dispute between Owner and Successful Bidder regarding latent defects, a third party as mutually agreed upon by the Owner and the Successful Bidder shall be engaged by the Owner for settling the dispute
15. The third party, so engaged by the Owner, shall be paid fee plus reasonable expenditures incurred in the execution of its duties as mentioned above. These costs shall be recoverable from the Successful Bidder and the Successful Bidder shall bear and / or reimburse such costs to the Owner if the latent defect has been proved. If the dispute regarding latent defects cannot be settled as above, then the dispute shall be settled as per Section _ (Arbitration) as deemed fit

7. Successful Bidder performance measurement

Key performance indicators (KPIs) have been defined to assess the performance of the Successful Bidder towards the Contractual obligations. The KPIs and associated liquidated damages for performance below thresholds have been detailed below:

7.1 Key performance indicators (KPIs)

The Successful Bidder shall adhere to the following KPIs and targets during the Overhaul. In case of shortfall, liquidated damages shall be applicable and in case of superior performance, incentives shall be applicable as per the following sections:

Phase	KPI	Liquidated damages	Incentive
Procurement of material / equipment	Schedule compliance with 'Procurement Plan' for DCS and Instrumentation Upgrade prepared by the Successful Bidder as per Section _ of Part _ of this document	0.5% of total lumpsum price for supply of material / equipment for every week of delay in completion of 'Procurement Plan'	NA
Execution of Overhaul	Schedule compliance with 'Overhaul Execution Plan' for DCS and Instrumentation Upgrade prepared by the Successful Bidder as per Section _ of Part _ of this document	0.5% of total lumpsum price for Overhaul execution for every week of delay in completion of 'Overhaul Execution Plan'	0.5% of total lumpsum price for Overhaul execution for every week of delivering ahead of schedule in completion of SATs, as defined in the 'Overhaul Execution Plan'. The incentive shall be awarded to the Successful Bidder only on successful and timely completion of PG tests defined in Section _ of Part _ of this document

Note – Any delay of more than 3 days shall be accounted as a week of delay while calculating the liquidated damages

7.2 Overall ceiling on Liquidated damages and incentives

1. All liabilities due from the Successful Bidder arising out of the shortfall of performance levels mentioned under Section _, as per the liquidated damages defined in Section _, during the course of the Overhaul, shall be restricted to a maximum of 10% of the lump sum price for supply of material and Overhaul execution defined in Section _ of Part _ of this document
2. All incentives due to the Successful Bidder arising out of the enhanced performance levels mentioned under Section _, as per the incentives defined in Section _, during the course of the Overhaul, shall be restricted to a maximum of 5% of the lump sum price for supply of material and Overhaul execution defined in Section _ of Part _ of this document

8. Payment Terms

8.1 Lumpsum Charges for DCS and Instrumentation Upgrade

The Successful Bidder shall quote the lumpsum charge for supply of material and lumpsum charge for Overhaul execution (services) for the duration of the execution of the Overhaul, as per the Price Bid format specified in Annexure 17 of this document.

8.2 Payment milestones

The Owner hereby covenants to pay the Successful Bidder for performance of the Contractual terms as payment terms specified hereunder –

T – date of acceptance of LOA

Category	Activity	% of total contract value	Timelines
Supply of material	Mobilization fee	10%	T + 2 weeks
	Dispatch of all equipment / spares, material - satisfactory evidence of FATs and shipment to be provided, and invoices to be produced	45%	T + 20 weeks
	Receipt of all equipment on site after successful completion of FATs, and physical verification and certification of the same	20%	T + 24 weeks
	Completion of SATs for equipment across both units and issue of certificate by PMC	5%	T + 32 weeks
	Completion of Guarantee Tests for both units and issue of Operation Acceptance Certificate by the PMC	5%	T + 40 weeks
	Submission of final 'Overhaul Completion Report' approved by Authority	5%	T + 42 weeks
	Completion of defect liability (warranty period) and successful completion of the Availability Test detailed in Section _ of Part _	10%	18 (eighteen) months from the date of Completion of the Overhaul or 12 (twelve) months from the date of Operational Acceptance of the equipment, whichever first occurs
Overhaul execution	Mobilization fee	5%	T + 2 weeks
	Monthly payments against progressive installation of equipment on site	15% (per month)	Monthly payments in equal installments for 3 months during Overhaul execution
	Completion of the Overhaul activities and SATs for DCS and Instrumentation for both the units, and issue of Completion Certificate by the PMC	15%	T + 32 weeks
	Completion of Guarantee Tests for both units and issue of Operation Acceptance Certificate by the PMC	20%	T + 40 weeks
	Submission of final 'Overhaul Completion Report' approved by Authority	5%	T + 42 weeks
	Completion of defect liability (warranty period) and successful completion of the Availability Test detailed in Section _ of Part _	10%	18 (eighteen) months from the date of Completion of the Overhaul or 12 (twelve) months from the date of

Category	Activity	% of total contract value	Timelines
			Operational Acceptance of the equipment, whichever first occurs

1. The Successful Bidder shall submit invoices upon achieving milestones stated in sub clause hereinabove. Authority shall make payment within 30 days of submission of invoices upon verifying the milestone for which invoice is submitted subject to deduction of any damages pursuant to Contract conditions
2. Applicable GST, over and above approved Lumpsum Charges for DCS and Instrumentation Upgrade, at the time of invoicing shall be reimbursed by the Owner upon submission of proof thereof. The risk of applicability of any taxes, duties, and levies except GST, shall rest with the Successful Bidder
3. The Owner shall be entitled to deduct tax at source as may be applicable. The TDS certificate(s) shall be submitted as per the due date specified in the Income Tax Act

9. Insurance

9.1 Insurance of Equipment

Successful Bidder shall, at their sole cost, in the joint names of Owner, Successful Bidder, and the Sub-Contractors, take insurance cover for full replacement value for the following:

1. "Material Damage Insurance" (Storage-cum-Erection Insurance) on an “All Risk" basis (including terrorists act, SRCC) of loss or of damage arising during period of Insurance coverage to any part of the Contract works, material and supplies Successful Bidder any transit and off-site storage, and anywhere in India for ex-works Indian factory and foreign supplies, materials, etc.
2. Such insurance shall be administered and managed by the Successful Bidder and shall be affected from the Commencement date of Contract and thereafter shall operate from the time the relevant property leaves the premises of the manufacturers in the country of origin, and shall continue during the ordinary course of transit and during storage on or off the Plant site, if any, and during erection and commissioning until the date on which Owner takes over the care, custody, and control of the Plant/Equipment, to the exclusion of the Successful Bidder

9.2 Rented Equipment

1. All construction equipment shall be brought to and kept at the Site at the sole cost, risk and expense of the Successful Bidder. Owner shall not be liable for any loss or damage thereto. The Successful Bidder, at his sole discretion, may maintain adequate, appropriate and prudent insurance with respect to such construction equipment. The Successful Bidder shall obtain adequate insurance to cover all construction equipment rented or leased from third parties and also for the construction equipment of Sub-Contractor.

2. Any insurance policy carried by the Successful Bidder, any Sub-Contractor or any third party on or in respect of any construction equipment shall provide for waiver of the underwriter's right to subrogation against Owner, their assignees, subsidiaries, parent companies, affiliates, employees, insurers, and underwriters.

9.3 Statutory Insurance Benefits

The Successful Bidder shall maintain with respect to the Work to be done under the Contract, in each applicable jurisdiction, all statutory benefits and other insurance required by law including without limitation unemployment insurance.

9.4 Third Party Insurance

1. Successful Bidder shall, in the joint names of Owner, Successful Bidder and the Sub-Contractor's prior to the commencement of any work in the Plant pursuant to this Agreement, insure in an amount not being less than project cost thereof against any liability for damage or death or personal injury occurring in the Plant, obstruction, loss of amenity, trespass, nuisance or advertising liability pursuant to the Contract. Such insurance shall be endorsed or amended as to be considered primary, and any other insurance maintained by Owner shall be in addition and not contributory to this insurance.
2. Indemnity amount indicated above shall be the minimum coverage that the Successful Bidder takes under the policy. Notwithstanding the above coverage, the Successful Bidder at their discretion will take policy for an appropriate coverage not less than the indemnification amount prescribed as above, so as to meet all the liabilities that may arise on account of third-party risks from the commencement of contract till the Owner takes over the care, custody, and control of the Plant, to the exclusion of Successful Bidder.

9.5 Insurance against Accident, etc. to Workmen; Other Insurance

The Successful Bidder shall, at its sole expense, insure and shall maintain insurance as required by Indian and all other applicable laws for all actions, suits, claims, demands, costs, charges, and expenses arising in connection with the death of or injury to any person employed by the Successful Bidder or its Sub-Contractor for the purpose of the performance of the Work.

9.6 Disclosure

Each Party shall, upon request, promptly furnish the other Party any information which is reasonably available and is related to the fulfillment of the contractual obligations as is necessary to enable the other Party to comply with its disclosure obligations under the insurance which it has taken out, the terms of which have been disclosed to the other Party in writing.

At the Owner's request, the Successful Bidder shall provide evidence of insurance covers, or a certificate of all insurances maintained.

9.7 Remedy on Failure to Insure

If the Successful Bidder fail to effect and keep in force the insurance for which it is responsible under the Contract, Owner may effect and keep in force any such insurance, and pay such premiums as may be necessary for that purpose, and from time to time, after receipt of a reimbursement request therefore accompanied by relevant supporting documentation, deduct the amount so paid by Owner from any amounts due or which may become due to the Successful Bidder under the Contract or otherwise from the Owner.

9.8 Limitation of Liability

Notwithstanding any other provisions, except in cases of criminal negligence or willful misconduct,

1. Whether expressed or implied, in no event, whether as a result of breach of contract, warranty, indemnity, tort (including negligence) strict liability or otherwise, shall either Party be liable to the other for loss of contract, loss of profit or revenue, loss of use, loss of data or information, loss of power, cost of replacement power, increased cost of operation and cost of capital or for any indirect, special, collateral or consequential damages
2. The aggregate liability of the Successful Bidder to the GMDC, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Value, provided that this limitation shall not apply to any obligation of the Successful Bidder to indemnify the GMDC with respect to patent infringement.

9.9 Claims for losses/damages

1. Successful Bidder/Sub-Contractor shall make all claims with the underwriter/s and undertake all formalities/step required for settlement of claims
2. Successful Bidder/Sub-Contractor shall hold harmless the Owner for non-settlement/short settlement/part settlement or repudiation of claims by the underwriter/s
3. Successful Bidder shall be obliged to replace / repair the Equipment/ components/parts/spares etc., without waiting for loss settlement by the underwriter/

10. Non fulfilment of terms and conditions and Termination of Contract

1. If at any time during the currency of this contract, if any breach occurs due to the reasons attributed to the Successful Bidder, the Owner shall be at liberty to terminate this contract without assigning any reasons, whatsoever, for such termination and any losses and/or damages occurring due to such termination shall be borne by the Successful Bidder.
2. If the Successful Bidder fails to carry out the work as per terms and conditions of the contract to the satisfaction of the Owner, the Owner shall be entitled to forfeit the Performance Security paid by the Successful Bidder as per Section _ of Part _ of this document. This, however, shall not absolve the Successful Bidder from its obligation to fulfill the contract. In such event, the Owner shall have a right to complete and / or to get the work completed at the cost & risk of the Successful Bidder and the Successful Bidder shall be responsible to pay such cost incurred by the Owner to complete the work and / or to get the work completed

3. Likewise, if the Successful Bidder does not fulfill the terms and conditions of the Contract and does not carry out the work up to the entire satisfaction of the Owner, the Owner has the right to forthwith terminate the Contract at its sole discretion, without assigning any reason, Under such events, the Owner shall be entitled to forfeit the Performance Security paid by the Successful Bidder as per Section _ of Part _ of this document, and the Owner shall have a right to complete the work and / or to get the work completed at the risk and cost of the Successful Bidder
4. For any reasons, if it is required, the Owner reserves rights to cancel, terminate, amend and / or alter the Contract and / or bifurcate and / or increase and/or reduce the Contract work at any time without giving any notice or reason to the Successful Bidder and without incurring any responsibility.

11. General terms and conditions

11.1 Statutory Obligations

1. That the Successful Bidder shall obtain license under the Factories Act 1948 and any other applicable laws, and it shall pay wages and benefits in accordance with the applicable laws and shall not pay less than as notified by the Government Authorities from time to time and shall maintain the employment records as required under applicable laws
2. That the Successful Bidder shall get his own License under Contract Labor (Regulation and Abolition) Act. It shall be binding to get the same renewed from time to time and shall maintain all the records as per the act
3. That the Successful Bidder shall be responsible to enroll his employees, deduct, add and deposit in the relevant accounts the contributions as required under the Employees State Insurance Act, 1952 and the Employees Provident Funds and Miscellaneous Provisions Act 1952 and any other enactment's covered under the various applicable labor laws as well as maintain all books of records for the staff and employees deputed by it for this contract such as required under any laws applicable. The Successful Bidder shall also furnish a copy of such statements as documentary proof to the Owner
4. That if the Successful Bidder is not covered under the Employees State Insurance Act, 1952 then it shall be the duty of the Successful Bidder to take appropriate insurance cover under the Workmen Compensation Act and take Group Personal Accident Policy for all the employees deputed at the project site
5. The Successful Bidder has to issue to the employee's Identity card with their photos and shall also maintain relevant register
6. That the Successful Bidder shall give leave/holiday to its workforce as per the provisions of labor laws applicable
7. Every person deployed by the Successful Bidder in a Plant must wear safety gadgets to be provided by the Successful Bidder
8. Any statutory clearance, permission required for the work, its completion, commissioning shall be in the Successful Bidder’s scope
9. The Successful Bidder will be required to obtain License from the office of the Labor Commissioner for the required strength of labor, before commencement of work at site and the same shall be maintained updated and valid throughout the currency of the contract

10. If any amount becomes payable by the Owner as a result of any claim or application in terms of the provisions or non-compliance of provision of the any Acts, and the Rules and Regulations, By-laws or the Orders made there under, applicable from time to time, such amounts shall be recoverable from the Successful Bidder for which the Owner will not be responsible for any compensation
11. That the Successful Bidder would obey with all applicable laws and maintain all such necessary records as necessitated under such enactments
12. The Successful Bidder shall also indemnify the Owner against any claims, compensations, damages, loss, liquidated damages etc. for breach and / or non-fulfillment of the prevailing Rules and Regulations and other statutory provisions in force from time to time and applicable to the work during the currency of contract
13. The Successful Bidder shall comply with other statutory provisions of Law. The Successful Bidder shall comply with all applicable laws, ordinances, approved standards, rules and regulations, and shall procure all necessary municipal and governmental permits, licenses and inspection and shall pay all fees and charges in connection with the items covered by the contract. The Successful Bidder shall serve the Owner harmless as a result of any in factions thereof. Successful Bidder will be solely liable for all non-compliances. The following are some of the major Government of India Acts and Regulations to be complied with by the Successful Bidder. The List is illustrative and not exhaustive.
    a. The Factories Act of 1948 (63 to 1948) and Amendments and Rules (Amended up to date)
    b. The Electricity Act, 2003 and rules made there under
    c. The Indian Boiler Regulation Act, 1950 and rules made there under
    d. The Minimum Wages Act, 1948
    e. The Employees Compensation Act 1923 and Amendment Act 2010
    f. The Payment of Wages Act 1936 and Amendment Act 2012
    g. Payment of Bonus Act 1965 and Amended up to date
    h. Contract Labor Regulations& Abolition Act 1970
    i. Interstate Migrant Workmen (Regulations) Act 1979

11.2 Bankruptcy

1. If the Successful Bidder commits an act of Bankruptcy or goes into liquidation except for construction purposes, or if its business is carried on by a receiver, such receiver, liquidator or any person in whom the contract may become vested shall forthwith give notice thereof in writing to the Owner and in reasonable time during which he shall take all reasonable steps to prevent stoppage of performance of the contract, have the option of carrying out the contract subject to his or their providing such guarantees as may be required by the Owner but not exceeding the value of the work for the time being remaining unexecuted
2. In the event of stoppage of performance under the contract, the period of option under this clause shall be decided by the Owner considering the situation, provided that the above option is not exercised, the Owner may terminate the contract by serving notice in writing to the Successful Bidder. The power and provision so reserved to the Owner on taking of the work out of the Successful Bidder's hands shall apply as far as they may be when the contract is so terminated

11.3 Notice

Written notice shall be deemed to have been duly served if delivered to the individual or to Successful Bidder or to the Signing Authority of the Owner from whom it is intended, or if delivered at or sent by mail or post, to the last business address known to him who gives the notice.

11.4 Canvassing not Permitted

1. Successful Bidder should not canvass their offer personally or otherwise by approaching the Chairman or the Member of the Owner. If any Successful Bidder wants to make any representation regarding his offer, he should write to the General Manager (Power), if he desires, but personal and oral representations are not permitted
2. In spite of the above clear instructions, any Successful Bidder is found to canvass his offer or against his competitor's offer through personal approach to the competent authority or the officials of the Owner, their offer will be rejected without assigning any reason and the firm even is blacklisted

11.5 Indemnification

The Successful Bidder shall fully indemnify, save harmless and defend Owner, Owner's shareholders, the Owner, and the directors, agents and employees of the Owner (the "Owner Indemnified Parties") from and against any and all claims, including reasonable legal costs, (collectively the "Damages") by third Parties in respect of death or bodily injury or in respect to loss or damage to any property (other than the Plant or part there of not yet taken over) which arises out of or in consequence of the Services whilst the Successful Bidder has responsibility for the care of the works to the extent resulting from Successful Bidder's or their agents or employees intentional act, negligence, or strict liability or omission in the performance of the Services hereunder; provided that the foregoing obligation shall not apply to the extent the Owner Indemnified Parties are contributory negligent or strictly liable or to the extent such damages are caused by the intentional acts or omissions of the Owner Indemnified Parties. The Successful Bidder shall provide Undertaking of Indemnity, in the form of Annexure 15 of this document.

11.6 Arbitration

All questions, disputes, differences whatsoever which may at any time arises between the parties to this RFP and subsequent contract in connection with the RFP and subsequent contract or any matter arising out of or in relation thereto, shall be referred to Sole Arbitrator as per the provisions of Arbitration and Conciliation Act, 1996 and subsequent amendment thereto and the venue of arbitration proceedings shall be at Ahmedabad only. The Language of the Arbitration shall be in English only.

11.7 Governing Law

This RFP and subsequent Contract shall be construed and interpreted in accordance with and governed by the laws of India.

11.8 Jurisdiction

The matter related to any dispute or difference arising out of this RFP and subsequent contract shall be subject to the exclusive jurisdiction of Court at Ahmedabad only.

11.9 Completion of Work

1. Upon the Successful Bidder fulfilling the entirety of its obligations under the Contract to the satisfaction of the Owner and subject to terms and conditions of the Contract, it shall become eligible to apply for a Completion Certificate. The General Manger of the Owner shall formally issue the Completion Certificate, after verifying from the completion documents and satisfying himself that the Works under the Contract have been completed in accordance with all the provisions of this Contract. The Successful Bidder, after obtaining the Completion Certificate shall become eligible to present the final bill for the Works executed by it under the Contract
2. Upon completion of Works under the Contract and before the application for the Completion Certificate, the Successful Bidder shall clear the project of the Owner of all rubbish, dirt, structures, scrap, oily rags etc. Failure to clear the project may constrain the Owner to clear the said site at the risk and cost of the Successful Bidder
3. The Successful Bidder shall provide the Owner with any and all documents/records/proofs that may be demanded before issuance of Completion Certificate

11.10 Accident and Responsibilities of Successful Bidder

1. The entire responsibility on account of any accidents, damage or personal injury which may occurred to any of the Successful Bidder's vehicles/ equipment or his/its employees, or any outside party shall be exclusively that of the Successful Bidder and no claim whatsoever shall be entertain by the Owner on this account. The Successful Bidder shall keep the Owner indemnified from all the consequence
2. In the event of any breakdown or accident during the course of any operation, the Successful Bidder shall notify the facts to the Project Authority, or any other officer immediately present there of such incidence and shall simultaneously make adequate remedial arrangements on his/its own cost and risk and as per the instruction of the Project Authority
3. The Successful Bidder shall pay all claims, damages and compensation with cost arising out of or resulting there from to the third party(s) and in case the Owner would be required to face any proceedings all to pay any amount on the aforesaid account, it shall be deemed to have been discharge on behalf of the Successful Bidder, the same amount shall be recovered half-an hour rest interval in between. The Successful Bidder shall ensure that the attendance of all the supplied manpower shall be taken through biometric attendance machine

11.11 Foreclosure

1. In case of any necessity arising due to local working conditions or any unforeseen reason not in the control of the Owner or of the Successful Bidder, Committee comprising of representative of the Owner, Successful Bidder and Outside Expert from

Technical and Financial background shall be constituted and Committee will look into the reasons/causes and analyze the conditions as to whether the work awarded is feasible to continue with the existing terms and conditions of the contract or any other available option or to Fore Close the contract in the interest of both the Owner and the Successful Bidder

2. If after study of the prevailing conditions of the contract under execution, committee recommends to Foreclose the contract keeping in view the financial implication to both the Owner and Successful Bidder, guideline/Modality of the Fore Closure of the contract shall be decided by the committee considering the work executed and unexecuted, period of the contract completed and balance period of the contract, value of the work executed and value of the work unexecuted etc.

11.12 Force majeure

1. Force majeure is herein defined as any cause which is beyond the control of the Successful Bidder or the Owner as the case may be which they could not foresee or with a reasonable amount of diligence could not have foreseen and which substantially affect the performance of the contract, such as:
2. Natural phenomena such as flood, draughts Cyclone, earthquake and epidemics, declaration of war
3. Acts of any government, including but not limited to war, declared or undeclared priorities, quantities, embargoes, providing either party shall within fifteen (15) days from the occurrence of such a cause notify the other in writing of such cases
4. The Successful Bidder will advise, in the event of his having resort to this clause by a registered letter duly certified by the statutory authorities, the beginning and end of the cause of delay, within fifteen days of the occurrence and cessation of such Force Majeure condition. In the event of delay lasting over two months, if arising out of Force Majeure, the contract may be terminated at the discretion of the Owner
5. For delay arising out of Force Majeure, the Successful Bidder will not claim extension in completion date for a period exceeding the period of delay attributable to the causes of Force Majeure and neither company nor the Successful Bidder shall be liable to pay extra costs (like increase in rates, remobilization, advance, idle charges for labor and machinery etc.) provided it is mutually established that the Force Majeure conditions did actually exist
6. If any of the Force Majeure conditions exists in the place of operation of the Successful Bidder even at the time of submission of bid, he will categorically specify them in his bid and state whether they have been taken into consideration in their quotations
7. The Successful Bidder or the Owner shall not be liable for delays in performing his obligations resulting from any Force Majeure cause as referred to and/ or defined above. The date of completion will, subject to hereinafter provided, be extended by a reasonable time