INDEX SHEET

RFQ No.: **YMV0000440**

PROJECT: **KHURJA (2X660MW) TG & ASSOCIATED PACKAGES**

ITEM DESCRIPTION : **LIR**

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भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division
PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE: PR: 003- Rev 02

SPECIAL COMMERCIAL CONDITIONS OF CONTRACT

Reference is brought to BHEL's Instructions to Bidders (Document Ref: CE: PR: 001- Rev 04) and General Commercial Conditions for Contract (Document Ref: CE: PR: 002- Rev 03).

These two documents along with Special Conditions of Contract annexed to this RFQ will form an integral part of the contract as and when the RFQ culminates into a Purchase Order / Contract.

RFQ No. : **YMV0000440**
RFQ Date : As per E-procurement website
RFQ Due Date : As per E-procurement website
Customer/Project : **KHURJA (2X660MW) TG & ASSOCIATED PACKAGES**
Scope Description : **LIR**

Kindly submit your quotation as **two part bid** (Pre-Qualification Criteria & Techno-Commercial bid-1st part & Price bid-2nd Part) in E-Procurement System portal: https://eprocurebhel.co.in within the Due- Date of __ As per E-procurement website _____ before _ As per E-procurement website _____ hours IST and note that tenders will be opened on the same day at _ As per E-procurement website _____hours IST.

Purchase Executives: Clarifications with regard to the tender shall be addressed to purchase officers whose e-mail IDs are given below:
_____vijaykumarym@bhel.in_____ or _____nandjee@bhel.in_____

Splitting of tendered quantity to MSE vendors for Purchase preference: Non-Splitable

Destination: For Indigenous scope of supply, items are to be directly despatched to BHEL site office/stores located at __**Tehsil Khurja, Bulandshahr** in _**Uttar Pradesh**___ state respectively, India. Detailed Consignee details will be issued by BHEL along with Despatch Clearance.

Terms of Delivery:

- **Indigenous scope of supply:** Ex-works, ___<indicate station of dispatch>_____ (including Packing & Forwarding charges but excluding Taxes).

Under-mentioned details shall be provided against indigenous supplies & services:

a. GSTIN of place of supply : _____

b. HSN (Harmonized System of Nomenclature) code : _____
Applicable tax and Rate : _____&_____

c. GSTIN of place of supply of service : _____

d. SAC (Service Accounting Code) :_____
Applicable tax and Rate : _____&_____

e. GeM Seller ID mandatorily required for PO placement: _____

f. MSE vendor : Yes-MSE supporting documents enclosed/No
(If MSE, supporting documents such as Udyam certificate to be enclosed)

I. Bidders to mandatorily provide confirmation/compliance for the under-mentioned terms:

SL NO.	TERMS	BHEL ACCEPTABLE TERM	BIDDER'S CONFIRMATION	REMARKS,if any
01	**Reverse Auction (RA)**	BHEL shall be resorting to Reverse Auction (Guidelines as available on http://www.bhel.com/index.php/vender) for this tender. RA shall be conducted among all the techno-commercially qualified bidders. Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered as initial bids of bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.	AGREE	
03	**Delivery Period**	Within _10_ weeks from the date of issue of Manufacturing clearance along with approved document. Delay in contractual delivery will attract Penalty as per GCC Clause no.:04.b. Manufacturing clearance will be provided as per latest site delivery schedule. Present delivery schedule is indicated below: Delivery schedule for Unit#1 : 30th December 2022 Delivery schedule for Unit#2 : 30th June 2023 Delivery schedule for Mandatory Spares: 30th October 2023.	AGREE …… weeks	
04	**Terms of Payment at the time of material supply**	Refer Clause "F" of Instructions to Bidder for BHEL standard Payment terms and loading factors applicable for non-compliance against payment terms: **Indigenous Scope :** **b)Supply only** ~~**Imported Scope :**~~ ~~c)Supply with Service(s)~~ ~~**High Sea sales :**~~ ~~e)Supply with Service(s)~~ ~~**Spares :**~~ ~~b) and/or d)/f) depending upon the scope~~	AGREE	
05	**Declaration of local content :** The 'Class-I local supplier'	'Local content' means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes)	Percentage of local content : _____%	

	shall be required to indicate percentage of local content and provide certification that the item offered meets the local content requirement for 'Class-I local supplier'.	minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent. {'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 50%, as defined under Public procurement order no.P-45021/2/2017-PP (BE-II) dt: 16.09.2020. In the event of any Nodal Ministry prescribing higher or lower margin of purchase preference and/or higher or lower percentage of local content in respect of this procurement, same shall be applicable}.' (Refer Clause 'A' Sl. No. 12 of Instructions to Bidders). Note: Non Local suppliers are eligible to participate in the tender	Details of the Location(s) at which the local value addition is made : _____	
06	Declaration as a compliance to Rule 144(xi) of GFR, 2017 amendment dt 23.07.2020 issued by Ministry of Finance, Govt. of India.	The below declaration is to be submitted on Company Letter head duly signed and sealed by authorised signatory, for ascertaining the eligibility of offer in the tender. "I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that our firm is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that our firm fulfils all requirements in this regard and is eligible to be considered." (Refer Clause 'A' Sl. No. 13 of Instructions to Bidders).		

II. **Bidder to note that Deviations shall not be permitted for the below mentioned terms and are deemed to be complied. In case of non-compliance/deviation, offer shall be liable for rejection:**

(1) **Submission of documents post PO viz., drawings /data sheet etc. as indicated in Cl: 04 of GCC:** Within _02_ weeks from the date of receipt of Purchase Order. Delay in submission of complete set of specified documents in NIT, will attract Penalty as per GCC Clause no.:04.a.

(2) **Validity:** The offer will be valid for a period of _90_ days from the date of part-I bid opening and in case of Negotiation/ Counter-offer/RA, price validity will apply afresh for a period of _60_ days from the date of according final price by bidder (or) up to original validity period, whichever is later.

(3) **Warranty:** _24_ months from the date of dispatch of goods.

(4) **Despatch Documents:** Complete set of despatch documents (original + 1 photocopy set) as per Purchase Order shall be forwarded to Purchase Executive/BHEL directly. Depending upon the project/customer

demands, Despatch documents may include one (or) more documents from the following:

Invoice (01 original and 01 copy with original sign & seal / digitally signed invoice), Lorry Receipt (L/R), Packing List, Warranty certificate, NIL Short-Shipment Certificate, insurance intimation letter, E-way bill, and original POD (Proof of Delivery) on L/R.

The precise list of despatch documents needed for the project will be specified in the Purchase Order.

One set of Invoice, Packing List, Lorry Receipt (or) AWB/BOL shall be e-mailed immediately to BHEL-EDN at the time of despatch.

Note: Detailed Packing List should indicate package-wise content details and also Net & Gross weight of each package.

(5) **Freight Charges (for indigenous scope of supply):** Freight charges shall be to vendor's account. Bidder to quote reasonable Freight charges along with applicable tax, in price bid.

(6) **Evaluation criteria to determine L1 bidder**:
(b) Items will not be split on item-wise lowest offer. Evaluation of the lowest bidder will be done as a combined package basis.

(7) Integrity Pact: ***Not applicable***

With this, we hereby confirm that all the terms & conditions as indicated in Instructions to Bidders (Document Ref: CE: PR: 001- Rev 04) & General Commercial Conditions for Contract (Document Ref: CE: PR: 002- Rev 03) are accepted without any deviation.

Vendor’s Signature with Seal

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भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division
PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE: PR: 002- Rev 03

GENERAL COMMERCIAL CONDITIONS FOR CONTRACT

These 'General Commercial Conditions for Contract for Purchase' herein after referred to as GCC apply to all enquiries, tenders, requests for quotations, orders, contracts and agreements concerning the supply of goods and the rendering of related services (hereinafter referred to as "deliveries") to Bharat Heavy Electricals Limited and any of its units, regions or divisions (hereinafter referred to as "BHEL" or the Purchaser) or its projects/ customers.

Any deviations from or additions to these GCC require BHEL's express written consent. The general terms of business or sale of the vendor shall not apply to BHEL. Acceptance, receipt of shipments or services or effecting payment shall not mean that the general terms of business or sale of the vendor have been accepted.

Orders, agreements and amendments thereto shall be binding if made or confirmed by BHEL in writing. Only the Purchasing department of BHEL is authorized to issue the Purchase Order or any amendment thereof.

Definitions: Throughout these conditions and in the specifications, the following terms shall have the meanings assigned to them, unless the subject matter or the context requires otherwise.

a) 'The Purchaser' means Bharat Heavy Electricals Limited, Electronics division, Mysore road, Bangalore 560 026, a Unit of Bharat Heavy Electricals Limited (A Govt. of India Undertaking) incorporated under the Companies Act having its registered office at BHEL House, Siri Fort, New Delhi-110049, India and shall be deemed to include its successors and assigns. It may also be referred to as BHEL.
b) 'The vendor' means the person, firm, company or organization on whom the Purchase Order is placed and shall be deemed to include the vendor's successors, representative heirs, executors and administrator as the case may be. It may also be referred to as Seller, Contractor or Supplier.
c) 'Contract' shall mean and include the Purchase Order incorporating various agreements, viz. tender/ RFQ, offer, letter of intent/acceptance/ award, the General Conditions of Contract and Special Conditions of Contract for Purchase, Specifications, Inspection/ Quality Plan, Schedule of Prices and Quantities, Drawings, if any enclosed or to be provided by BHEL or his authorized nominee and the samples or patterns if any to be provided under the provisions of the contract.
d) 'Parties to the Contract' shall mean the 'The Vendor' and the Purchaser as named in the main body of the Purchase Order.

Order of Precedence:

In case of any inconsistency or contradiction between any of the documents, the order of precedence shall be Purchase Order, LOI / LOA, Special Conditions of Contract and General Conditions of Contract for commercial conditions; and specific agreement on technical conditions, RFQ/offer and specification for Technical Conditions.

Interpretation:

In the contract, except where the context requires otherwise:

a) words indicating one gender include all genders;
b) words indicating the singular also include the plural and words indicating the plural also include the singular;

c) provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing, and
d) "Written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record.

Applicable Conditions:

1. Price Basis: All prices shall be firm until the purchase order is executed / completed in all respects. No price variations / escalation shall be permitted.

2. Ordering and confirmation of Order:Vendor shall send the order acceptance on their company letter head/ through e-mail within a week from the date of receipt of Purchase Order or such other period as specified/ agreed by BHEL. BHEL reserves the right to revoke the order placed if the order confirmation differs from the original order placed. The acceptance of goods/services/supplies by BHEL as well as payments made in this regard shall not imply acceptance of any deviations.
   The purchase order will be deemed to have been accepted if no communication to the contrary is received within one week (or the time limit as specified/agreed by BHEL) from the date of receipt of the purchase order.

3. Documentation:After receipt of Purchase Order, vendor should submit necessary documents(if & as applicable) like drawings specified, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report , O & M Manuals and/or any other relevant documents as per Specification/Purchase Order, as and when required by BHEL/Customer.
   At any stage within the contract period, the vendor shall notify of any error, fault or other defect found in BHEL's documents /specifications or any other items for reference. If and to the extent that (taking account of cost and time) any vendor exercising due care would have discovered the error, fault or other defect when examining the documents/specifications before submitting the tender, the time for completion shall not be extended. However if errors, omissions, ambiguities, inconsistencies, inadequacies or other defects are found in the vendor's documents, they shall be corrected at his cost, notwithstanding any consent or approval.

4. Penalty:
   a. For delay in documentation: In the event of delay in submission of complete set of specified documents ((like drawings, bill of materials, datasheets, catalogues, quality plan etc. as called in tender specifications including soft copies wherever applicable) in required sets beyond two(02) weeks (or as agreed/indicated in the SCC/Purchase Order) from the date of receipt of Purchase Order(by email), penalty at 0.5% (half percent) per week or part thereof, limited to a maximum of 5% (five percent) of the basic material value of the Purchase Order will be applicable.

      Penalty for delayed documentation if applicable, shall be deducted at the time of first supply payment. If penalty is applicable for duration of less than a week, penalty @ 0.5% (half percent) of the basic material value will be deducted. GST as applicable will be recovered along with penalty amount.

   b. For delay in delivery: In the event of delay in agreed contractual delivery as per Purchase Order, penalty @ 0.5 % (half percent) per week or part thereof but limited to a max of 10% (ten percent) value of undelivered portion (basic material cost) will be applicable. Delivery will commence from the date of issue of Manufacturing clearance along with approved document. The date for which Inspection call is issued by vendor along with test certificates / test reports /Certificate of Conformance / calibration reports, as proof of completion of manufacturing will be treated as date of deemed delivery for penalty calculation. In the absence of furnishing such document indicated above as proof of completion of manufacturing along with inspection call, actual date of inspection will be considered as date of deemed delivery and BHEL will not be responsible for delay in actual date of inspection.

Penalty for delayed delivery if applicable, shall be deducted at the time of first supply payment. If penalty is applicable for duration of less than a week, penalty @ 0.5% (half percent) of the basic material value will be deducted. GST as applicable will be recovered along with penalty amount.

5. Contract variations (Increase or decrease in the scope of supply): BHEL may vary the contracted scope as per requirements at site. If vendor is of the opinion that the variation has an effect on the agreed price or delivery period, BHEL shall be informed of this immediately in writing along with technical details. Where unit rates are available in the Contract, the same shall be the basis for such additional work. Vendor shall not perform additional work before BHEL has issued written instructions/ amendment to the Purchase Order to that effect. The work which the vendor should have or could have anticipated in terms of delivering the service(s) and functionality (i.e.) as described in this agreement, or which is considered to be the result of an attributable error on the vendor's part, shall not be considered additional work.

6. Inspection: Prior written notice of at least 10 days shall be given along with internal test certificates/COC and applicable test certificates. Materials will be inspected by BHEL-EDN-QS/CQS or BHEL nominated Third Party Inspection Agency (TPIA) or BHEL authorized Inspection Agency or Customer / Consultant or jointly by BHEL & Customer / consultant. All tests have to be conducted as applicable in line with approved Quality plan or QA Checklist or Purchase specification and original reports shall be furnished to BHEL-EDN, Bangalore for verification/acceptance for issue of dispatch clearance. BHEL reserves the right for conducting repeat test, if required.
   All costs related to inspections & re-inspections shall be borne by vendor. Whether the Contract provides for tests on the premises of the vendor or any of his Sub-contractor/s, vendor shall be responsible to provide such assistance, labour, materials, electricity, fuels, stores, apparatus, instruments as may be required and as may be reasonably demanded to carry out such tests efficiently. Cost of any type test or such other special tests shall be borne by BHEL only if specifically agreed to in the purchase order.

7. Transit Insurance: Transit insurance coverage between vendor's works and project site shall be to the account of BHEL, unless specifically agreed otherwise. However, vendor shall send intimation directly to insurance agency (as mentioned in dispatch instructions issued by BHEL) through fax/courier/e-mail, immediately on dispatch of goods for covering insurance. A copy of such intimation sent by vendor to insurance agency shall be given to BHEL along with dispatch documents. Dispatch documents will be treated as incomplete without such intimation copy. BHEL shall not be responsible for sending intimations to insurance agency on behalf of the vendor.

8. Mode of dispatch:
   Indigenous Scope: By road on Door Delivery Consignee Copy attached basis through your approved transporter (unless otherwise indicated in Dispatch Instructions), only on receipt of Despatch Clearance from BHEL.
   Imported Scope: By Air/Sea through BHEL approved Freight Forwarder/supplier approved Consolidator respectively as per agreed contractual terms, only on receipt of Dispatch Clearance from BHEL.

9. Changes in Statutory levies:
   If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the execution of Contract, which was or will be assessed on the bidder in connection with performance of the Contract, an equitable adjustment of the Contract Price shall be made to fully take into account any such change by addition to the Contract Price or deduction there from, as the case may be. However, these adjustments would be restricted to direct transactions between BHEL and the bidder /agent of foreign bidder (if applicable). These adjustments shall not be applicable on procurement of raw materials, intermediary components etc. by the bidder /agent.

10. Availing duty/tax exemption benefits by bidder, wherever applicable: BHEL shall issue the required Certificate/s, as per relevant policies of the Govt. of India, to facilitate the bidders to avail any such benefits under the Contract. In case of failure of the bidders to receive the benefits partly or fully from the Govt. of India and/or in case of any delay in receipt of such benefits, BHEL shall neither be liable nor responsible in any manner whatsoever.

11. Taxes against sub-vendor dispatches: All taxes/levies, as applicable in respect of all components, equipments and material to be despatched directly from the sub-vendor's works to Site irrespective of the fact whether such taxes and levies are assessable and chargeable on Vendor or the BHEL, shall be to the vendor's account and no separate claim in this regard will be entertained by BHEL.

12. High Sea Sales (HSS): Customs clearance of the consignment landed on Indian Sea/Air ports will be done by BHEL based on the original HSS documents provided by vendors.
    Any delay in submission of complete/correct HSS documents to BHEL may incur demurrage charges. All demurrage charges on account of incomplete /incorrect HSS documents submission by vendor will be to vendor's account and all such charges will be recovered from any of the available vendor bills with BHEL.

13. Packaging and dispatch:The Seller shall package the goods safely and carefully and pack them suitably in all respects considering the peculiarity of the material for normal safe transport by Sea/ Air / Rail/ Road to its destination suitably protected against loss, damage, corrosion in transit and the effect of tropical salt laden atmosphere. The packages shall be provided with fixtures/ hooks and sling marks as may be required for easy and safe handling. If any consignment needs special handling instruction, the same shall be clearly marked with standard symbols / instructions. Hazardous material should be notified as such and their packing, transportation and other protection must conform to relevant regulations.
    The packing, shipping, storage and processing of the goods must comply with the prevailing legislation and regulations concerning safety, the environment and working conditions. Any Imported/Physical Exports items packed with raw/ solid wood packing material should be treated as per ISPM – 15 (fumigation) and accompanied by Phytosanitory/ Fumigation certificate. If safety information sheets (MSDS – Material Safety Data Sheet) exist for an item or the packaging, vendor must provide this information without fail along with the consignment.
    Each package must be marked with Consignee name, Purchase order number, Package number, Gross weight and net weight, dimensions (LxBxH) and Seller's name. Packing list of goods inside each package with PO item number and quantity must also be fixed securely outside the box to indicate the contents of each box. Total number of packages in the consignment must also be indicated in the packing list.
    Separate packing & identification of items should be as follows.
    1. Main Scope - All items must be tagged with part no. & item description.
    2. Commissioning accessories/spares - All items must be tagged with part no. & item description.
    3. Mandatory spares - All items must be tagged with part no. & item description.
    Nevertheless, vendor shall adhere to dispatch & packing instructions issued by BHEL at the time of dispatch.

14. Assignment of Rights & Obligations; Subcontracting: Vendor is not permitted to subcontract the delivery or any part thereof to third party or to assign the rights and obligations resulting from this agreement in whole or in part to third parties without prior written permission from BHEL. Any permission or approval given by the BHEL shall, however, not absolve the vendor of the responsibility of his obligations under the Contract.

15. Progress report: Vendor shall render such report as to the progress of work and in such form as may be called for by the concerned purchase officer from time to time. The submission and acceptance of such reports shall not prejudice the rights of BHEL in any manner.

16. Non-disclosure and Information Obligations: Vendor shall provide with all necessary information pertaining to the goods as it could be of importance to BHEL. Vendor shall not reveal any specified confidential information that may be divulged by BHEL to Vendor's employees not involved with the tender/ contract & its execution and delivery or to third parties, unless BHEL has agreed to this in writing beforehand. Vendor shall not be entitled to use the BHEL name in advertisements and other commercial publications without prior written permission from BHEL.

17. Cancellation /Termination of contract: BHEL shall have the right to completely or partially terminate the agreement by means of written notice to that effect. Termination of the Contract, for whatever reason, shall be without prejudice to the rights of the parties accrued under the Contract up to the time of termination.
    BHEL shall have the right to cancel/foreclose the Order/ Contract, wholly or in part, in case it is constrained to do so on account of any decline, diminution, curtailment or stoppage of the business.

18. Risk Purchase Clause: In case of failure of supplier, BHEL at its discretion may make purchase of the materials / services not supplied / rendered in time at the RISK & COST of the supplier. Under such situation, the supplier who fails to supply the goods in time shall be wholly liable to make good to BHEL any loss due to risk purchase.
    In case of items demanding services at site like erection and commissioning, vendor should send his servicemen/representatives within 7 days from the service call. In case a vendor fails to attend to the service call, BHEL at its discretion may also make arrangements to attend such service by other parties at the **RISK & COST** of the supplier. Under such situation the supplier who fails to attend the service shall be wholly liable to make good to BHEL any loss due to risk purchase/service including additional handling charges due to the change.

19. Shortages: In the event of shortage on receipt of goods and/or on opening of packages at site, all such shortages, caused by supplier's act or omission, shall be made good at free of cost within a reasonable time that BHEL may allow from such intimation.
    Transit Damages: In the event of receipt of goods in damaged condition or having found them so upon opening of packages at site, supplier shall make good of all such damages within a reasonable time from such intimation by BHEL. In case BHEL raises an insurance claim, the cost of material limited to insurance settled amount less handling charges will be reimbursed to supplier.

20. Remedial work: Notwithstanding any previous test or certification, BHEL may instruct the vendor to remove and replace materials/goods or remove and re-execute works/services which are not in accordance with the purchase order. Similarly BHEL may ask the vendor to supply materials or to execute any services which are urgently required for any safety reasons, whether arising out of or because of an accident, unforeseeable event or otherwise. In such an event, Vendor shall provide such services within a reasonable time as specified by BHEL.

21. Indemnity Clause: Vendor shall comply with all applicable safety regulations and take care for the safety of all persons involved. Vendor is fully responsible for the safety of its personnel or that of his subcontractor's men / property, during execution of the Purchase Order and related services. All statutory payments including PF, ESI or other related charges have to be borne by the vendor. Vendor is fully responsible for ensuring that all legal compliances are followed in course of such employment. Vendor shall fully indemnify and keep indemnified BHEL against all claims of whatsoever nature arising during the course and out of execution of this Order/Contract.

22. Product Information, Drawings and Documents: All specified drawings, technical documents or other technical information received by Vendor from BHEL or vice versa shall not, without the consent of the other party, be used for any other purpose than that for which they were provided. They may not, without the consent of the Disclosing party, otherwise be used or copied, reproduced, transmitted or communicated to third parties. All information and data contained in general product documentation, whether in electronic or any other form, are binding only to the extent that they are by reference expressly included in the contract.
    Vendor, as per agreed date/s but not later than the date of delivery, provide free of charge information and drawings which are necessary to permit and enable BHEL to erect, commission, operate and maintain the product. Such information and drawings shall be supplied in as many numbers of copies as may be agreed upon.
    All intellectual properties, including designs, drawings and product information etc. exchanged during the formation and execution of the Contract shall continue to be the property of the disclosing party.

23. Intellectual Property Rights, Licenses: If any Patent, design, Trade mark or any other intellectual property rights apply to the delivery (goods/related service) or accompanying documentation shall be the exclusive property of the Vendor and BHEL shall be entitled to the legal use thereof free of charge by means of a non-exclusive, worldwide, perpetual license. All intellectual property rights that arise during the execution of the Purchase Order/ contract for delivery by vendor and/or by its employees or third parties involved by the vendor for performance of the agreement shall belong to BHEL. Vendor shall perform everything necessary to obtain or establish the above mentioned rights. The Vendor guarantees that the delivery does not infringe on any of the intellectual property rights of third parties. The Vendor shall do everything

necessary to obtain or establish the alternate acceptable arrangement pending resolution of any (alleged) claims by third parties. The Vendor shall indemnify BHEL against any (alleged) claims by third parties in this regard and shall reimburse BHEL for any damages suffered as a result thereof.

24. Force Majeure: Notwithstanding anything contained in the purchase order or any other document relevant thereto, neither party shall be liable for any failure or delay in performance to the extent said failures or delays are caused by the "Act of God" and occurring without its fault or negligence, provided that, force majeure will apply only if the failure to perform could not be avoided by the exercise of due care and vendor doing everything reasonably possible to resume its performance.
    A party affected by an event of force majeure which may include fire, tempest, floods, earthquake, riot, war, damage by aircraft etc., shall give the other party written notice, with full details as soon as possible and in any event not later than seven (7) calendar days of the occurrence of the cause relied upon. If force majeure applies, dates by which performance obligations are scheduled to be met will be extended for a period of time equal to the time lost due to any delay so caused.

    Notwithstanding above provisions, in an event of Force Majeure, BHEL reserves for itself the right to cancel the order/ contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements for completion of deliveries and other schedules.

25. Warranty:
    Wherever required, and so provided in the specifications/ Purchaser Order, the Seller shall ensure that the goods supplied shall comply with the specifications laid down, for materials, workmanship and performance.
    Unless otherwise specified in SCC, warranty period shall be applicable for a period of 24 months from the date of delivery of goods or 18 months from the date of commissioning of goods, whichever is earlier.
    The warranty period as described above shall apply afresh to replaced, repaired or re-executed parts of a delivery. Unless otherwise specifically provided in the Purchase Order, Vendor's liability shall be co terminus with the expiration of the applicable warranty period.

26. Limitation of Liability: Vendor's liability towards this contract is limited to a maximum of 100% of the contract value and consequential damages are excluded. However the limits of liability will have no effect in cases of criminal negligence or wilful misconduct.
    The total liability of Vendor for all claims arising out of or relating to the performance or breach of the Contract or use of any Products or Services or any order shall not exceed the total Contract price.

27. Liability during warranty: Vendor shall arrange replacement / repair of all the defective materials / services under its obligation during the warranty period. The rejected goods shall be taken away by vendor and replaced / repaired. In the event of the vendor's failure to comply, BHEL may take appropriate action including disposal of rejections and replenishment by any other sources at the cost and risk of the vendor.
    In case, defects attributable to vendor are detected during Warranty period or where the commissioning call is issued within the warranty period, vendor shall be responsible for replacement/ repair of the goods as required by BHEL at vendor's cost even after expiry of warranty period.
    Further if the equipment or any part thereof cannot be used by reason of such defect and/or making good of such defect, the warranty period of the equipment or such part, as the case may be, shall be extended by a period equal to the period during which the equipment or such part cannot be used by BHEL because of any of the aforesaid reasons. Upon correction of the defects in the facilities or any part thereof by repair/replacement, such repair/replacement shall have the warranty period for a period of twelve (12) months from the time such replacement/repair of the equipment or any part thereof has been completed.

28. Liability after warranty period: At the end of the warranty, the Vendor's liability ceases except for latent defects. For the purpose of this clause, latent defects shall be the defects inherently lying within the material or arising out of design deficiency which do not manifest themselves during the warranty Period, but later. The Contractor's liability for latent defects warranty for the equipment including spares shall be limited to a period of six months from the end of the warranty period of the respective equipment including spares or first time commissioning, whichever is later but not later than one (01) year from the date of expiry of warranty period.

29. Compliance with Laws: Vendor shall, in performing the contract, comply with all applicable laws. The vendor shall make all remittances, give all notices, pay all taxes, duties and fees, and obtain all permits, licences and approvals, as required by the laws in relation to the execution and completion of the contract and for remedying of any defects; and the Contractor shall indemnify and hold BHEL harmless against and from the consequences of any failure to do so.

30. Settlement of Disputes:Except as otherwise specifically provided in the Purchase Order, decision of BHEL shall be binding on the vendor with respect to all questions relating to the interpretation or meaning of the terms and conditions and instructions herein before mentioned and as to the completion of supplies/work/services, other questions, claim, right, matter or things whatsoever in any way arising out of or relating to the contract, instructions, orders or these conditions or otherwise concerning the supply or the execution or failure to execute the order, whether arising during the schedule of supply/work or after the completion or abandonment thereof. Any disputes or differences among the parties shall to the extent possible be settled amicably between the parties thereto, failing which the disputed issues shall be settled through arbitration. Vendor shall continue to perform the contract, pending settlement of dispute(s).

31. Arbitration Clause in case of Contract with vendors other than Public Sector Enterprise (PSE) or a Government Department:

    Arbitration & Conciliation:

    The parties shall attempt to settle any disputes or difference arising out of the formation, breach, termination, validity or execution of the Contract; or, the respective rights and liabilities of the parties; or, in relation to interpretation of any provision of the Contract; or, in any manner touching upon the Contract, or in connection with this contract through friendly discussions. In case no amicable settlement can be reached between the parties through such discussions, in respect of any dispute; then, either Party may, by a notice in writing to the other Party refer such dispute or difference to the sole arbitration of an arbitrator appointed by Head of the BHEL–EDN. Such Sole Arbitrator appointed, shall conduct the arbitration in English language.
    The Arbitrator shall pass a reasoned award and the award of the Arbitration shall be final and binding upon the Parties.
    Subject as aforesaid, the provisions of Arbitration and Conciliation Act 1996 (India) or statutory modifications or re-enactments thereof and the rules made thereunder and for the time being in force shall apply to the arbitration proceedings under this clause. The seat of arbitration shall be Bangalore.
    The cost of arbitration shall be borne as decided by the Arbitrator upon him entering the reference.
    Subject to the Arbitration Clause as above, the Courts at Bangalore alone shall have exclusive jurisdiction over any matter arising out of or in connection with this Contract.
    Notwithstanding the existence or any dispute or differences and/or reference for the arbitration, the parties shall proceed with and continue without hindrance the performance of its obligations under this Contract with due diligence and efficiency in a professional manner except where the Contract has been terminated by either Party in terms of this Contract.

    Arbitration Clause in case of Contract with a Public Sector Enterprise (PSE) or a Government Department:

    In the event of any dispute or difference relating to the interpretation and application of the provisions of the Contract, such dispute or difference shall be referred by either party for Arbitration to the Sole Arbitrator in the Department of Public Enterprises to be nominated by the Secretary to the Government of India in-charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 shall not be applicable to arbitration under this clause. The award of the Arbitrator shall be binding upon the parties to the dispute, provided, however, any Party aggrieved by such Award may make further reference for setting aside or revision of the Award to the Law Secretary, Department of Legal Affairs, Ministry of Law and Justice, Government of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary or Additional Secretary when so authorized by the Law Secretary, whose decision shall bind the Parties hereto finally and conclusively. The Parties to the dispute will share equally the cost of arbitration as intimated by the Arbitrator.'

32. Applicable Laws and Jurisdiction of Courts: Prevailing Indian laws both substantive and procedural, including modifications thereto, shall govern the Contract. Subject to the conditions as aforesaid, the competent courts in Bangalore alone shall have jurisdiction to consider over any matters touching upon this contract.

33. General Terms: That any non-exercise, forbearance or omission of any of the powers conferred on BHEL and /or any of its authorities will not in any manner constitute waiver of the conditions hereto contained in these presents.
    That the headings used in this agreement are for convenience of reference only.
    That all notices etc., to be given under the Purchase order shall be in writing, type script or printed and if sent by registered post or by courier service to the address given in this document shall be deemed to have been served on the date when in the ordinary course, they would have been delivered to the addressee.

ಭಾರತ್ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್
भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division
PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE:PR:001- Rev 04

INSTRUCTIONS TO BIDDERS

Bidder is requested to read the instructions carefully and submit their quotation taking into consideration of all the points:

A. GENERAL INSTRUCTIONS:

1. Any Purchase Order resulting from this enquiry shall be governed by the Instructions to Bidders (document reference: CE: PR: 001 – Rev 03), General Conditions of Contract (document reference: CE: PR: 002 - Rev 02) and Special Conditions of Contract, if any, of the enquiry.
2. Any deviations from or additions to the "General Conditions of Contract"or "Special Conditions of Contract" require BHEL's express written consent. The general terms of business or sale of the bidder shall not apply to this tender.
3. Regret letter (either through post or by mail or by EPS) indicating reasons for not quoting must be submitted without fail, in case of non-participation in this tender.

   Supplier shall be liable for removal as a registered vendor of BHEL when the supplier fails to quote against four consecutive tender enquiries for the same item or all enquiries in last two years for the same item, whichever is earlier.
4. Procurement directly from the manufacturers is preferred. However, if the OEM/ Principal insist on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer/ supplier in the same tender.

   Moreover, either the agent could bid on behalf of the manufacturer/ supplier or the manufacturer/ supplier could bid directly but not both. Agent/Representative authorized by the OEM/Principal in turn cannot further sub authorize any other firm for submitting the offer or for placement of order.

   In case bids are received from the manufacturer/ supplier and his agent, bid received from the agent shall be ignored.
5. Consultant / firm (and any of its affiliates) shall not be eligible to participate in the tender/s for the related goods for the same project if they were engaged for consultancy services for the same project.
6. If an Indian representative/associate/liaison office quotes on behalf of a foreign based bidder, such representative shall furnish the following documents:
   a. Authorization letter to quote and negotiate on behalf of such foreign-based bidder.
   b. Undertaking from such foreign based bidder that such contract will be honored and executed according to agreed scope of supply and commercial terms and conditions.
   c. Undertaking shall be furnished by the Indian representative stating that the co-ordination and smooth execution of the contract and settlement of shortages/damages/replacement/repair of imported scope

till the equipment is commissioned and handed over to customer will be the sole responsibility of the Indian representative/associates/agent/liaison office.

d. Refer **Annexure I** on "Guidelines for Indian Agents".

7. In case of imported scope of supply, customs clearance & customs duty payment will be to BHEL account after the consignment is received at Indian Airport /Seaport. Bidders must provide all original documents required for completing the customs clearance along with the shipment.

   Warehousing charges due to incomplete or missing documentation will be to supplier's account. All offers for imported scope of supply by air, must be made from any of the gateway ports (within the country) indicated **(Refer Annexure II).**

8. The offers of the bidders who are on the banned list and also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of the banned firms is available on BHEL website: http://www.bhel.com/vender_registration/vender.php

9. Business dealings with bidders will be suspended if they are found to have indulged in any malpractices/misconduct which are contrary to business ethics like bribery, corruption, fraud, pilferage, cartel formation, submission of fake/false/forged documents, certificates, information to BHEL or if they tamper with tendering procedure affecting the ordering process or fail to execute a contract, or rejection of 3 consecutive supplies or if their firms / works are under strike/lockout for a long period. Bidder may refer "Guidelines for Suspension of Business Dealings with Suppliers/ Contractors" available on www.bhel.com for more details.

   The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies / guidelines.

10. The bidder along with its associate/collaborators/sub-contractors/sub-vendors/consultants/service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to your notice.

11. Offer is to be submitted in English language only.

12. For this procurement, the local content to categorize a supplier as a Class-I local supplier/ Class-II local supplier/ Non-local supplier and purchase preference to Class-I local supplier, is as defined in Public procurement (Preference to Make in India), Order 2017 dated 16.09.2020 issued by DPIIT.

    In case of subsequent Orders issued by the Nodal Ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of price bids against this NIT. Default margin of purchase preference shall be 20% for Class-I local supplier only.

13. The Bidder shall mandatorily submit Declaration as mentioned under Rule 144(xi) of General Financial Rules, 2017 amendment dt 23.07.2020 issued by Ministry of Finance, Govt. of India. Where applicable, evidence of valid registration by the Competent Authority shall be attached.

    The Competent Authority for the purpose of registration under this Order shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT). Refer Annexure-X for 'Restrictions under Rule 144(Xi) of General Financial Rules,2017 amendment dt: 23.07.2020'.

B. GUIDELINES FOR PREPARATION OF OFFER:

1. Quotation shall be submitted in Single Part Bid, Two Part Bid or Three Part Bid, as called for in the tender:

   - **SINGLE PART BID**: Technical and Commercial Bid with prices along with price summary & filled in BHEL Standard Commercial terms and conditions in a single sealed envelope.

   - **TWO PART BID**: Unpriced offer i.e. "Techno-commercial Bid" with filled in BHEL Standard Commercial terms and conditions in a sealed envelope **along with the copy of the "Price Bid"without the prices** should be enclosed in one cover and the cover must be super scribed **"Techno-commercial offer)** and Priced offer i.e. "Price Bid"containing price summary in a separate sealed envelope and must be super scribed **"Price Bid"**.

     Both these envelopes shall be enclosed in a single sealed envelope superscribed with enquiry number, due date of tender and any other details as called for in the tender document.

   - **THREE PART BID**: Pre-qualification Bid (Part-I), Techno Commercial Bid with filled in BHEL Standard Commercial terms and conditions (Part-II), and Price Bid (Part-III). All three envelopes shall be enclosed in a single sealed envelope superscribed with enquiry number, due date of tender and any other details as called for in the tender document.

   If any of the offers (Part I, Part II or Part III) are not submitted before the due date and time of submission (or) if any part of the offer is incomplete, the entire offer of the bidder is liable for rejection.

2. Supplier shall ensure to superscribe each envelope with RFQ number, RFQ Date, RFQ Due date and time, Item Description and Project clearly & boldly. Also mention on the envelope whether it is "Techno Commercial Bid" or "Price Bid" or "Pre-Qualification Bid".

   Please ensure complete address, department name and purchase executive name is mentioned on the envelope (before dropping in the tender box or handing over) so that the tender is available in time for bid opening.

3. BHEL standard Commercial Terms and Conditions (duly filled, signed & stamped) must accompany Technical-Commercial offer without fail and should be submitted in original only.

   The above indicated submission of Offers in "sealed envelope/hard copy" as mentioned in points B.1-B.3 is applicable for tenders that are not floated through E-Procurement System (EPS).

4. Validity: Unless otherwise specified in SCC (special commercial conditions of contract), the offer will be valid for a period of 90 days from the date of part-I bid opening and in case of Negotiation/Counter-offer/Reverse Auction, price validity will apply afresh for a period of 60 days from the date of according final price by bidder (or) up to original validity period, whichever is later.

5. Any of the terms and conditions not acceptable to supplier, shall be explicitly mentioned in the Techno-Commercial Bid.

   If no deviations are brought out in the offer it will be treated as if all terms and conditions of this enquiry are accepted by the supplier without deviation.

6. Deviation to this specification/item description, if any, shall be brought out clearly indicating "DEVIATION TO BHEL SPECIFICATION" without fail, as a part of Techno-Commercial Bid.

   If no deviations are brought out in the offer it will be treated as if the entire specification of this enquiry is accepted without deviation.

7. Suppliers shall submit one set of original catalogue, datasheets, bill of materials, dimensional drawings, mounting details and/or any other relevant documents called in purchase specification as part of Technical Bid.
8. "Price Bid" shall be complete in all respects containing price break-up of all components along with all applicable taxes and duties, freight charges (if applicable) etc. Once submitted no modification / addition / deletion will be allowed in the "Price Bid." Bidders are advised to thoroughly check the unit price, total price to avoid any discrepancy.
9. In addition, bidder shall also quote for erection & commissioning charges/erection supervision & commissioning charges (E&C service charges), documentation charges, testing Charges (type & routine), training charges etc. if & as applicable along with corresponding tax. The price summary must indicate all the elements clearly.
10. Wherever applicable, bidders should indicate "lumpsum" Erection and Commissioning (or) Erection Supervision and Commissioning charges, as applicable (including To & Fro Fare, Boarding, Lodging, Local Conveyance etc.) for carrying out E&C activity and further handing over to customer.

    The quotation shall clearly indicate scope of work, likely duration of commissioning, pre-commissioning checklist (if any).
11. Wherever bidders require PAC (Project Authority Certificate)/applicable certificates for import of raw materials, components required for DECC,EPCG Power Projects, Export Projects or other similar projects wherein supplies are eligible for customs duty benefits, lists and quantities of such items and their values (CIF) has to be mentioned in the offer. Prices must be quoted taking into account of such benefits.
12. Prices should be indicated in both figures & words**.** Bid should be free from correction/overwriting, using corrective fluid, etc. Any interlineation, cutting, erasure or overwriting shall be valid only if they are attested under full signature(s) of person(s) signing the bid else bid shall be liable for rejection.

    Any typographical error, totalling mistakes, currency mistake, multiplication mistake, summing mistakes etc. observed in the price bids will be evaluated as per **Annexure III** "Guidelines for dealing with Discrepancy in Words & Figures – quoted in price bid" and BHEL decision will be final.
13. Documents submitted with the offer shall be signed and stamped in each page by authorized representative of the bidder. However, this requirement is not mandatory for offers uploaded through E-Procurement System (EPS).

C. <u>GUIDELINES FOR OFFER SUBMISSION:</u>

The under-mentioned clauses 1, 2&3 will not be applicable for EPS tenders.

1. Offers / Quotations must be dropped in tender box before 13.00 Hrs. on or before due date mentioned in RFQ.The offers are to be dropped in the proper slot of the Tender Box kept in our reception area with caption "CE, SC&PV, DEFENCE".

   Tenders are opened on 3 days in a week (Monday/Wednesday/Friday). Tender must be deposited in the slot corresponding to the day (Monday - Box no.4/Wednesday - Box no. 6 /Friday - Box no.8) while depositing the offer.

2. E-Mail/ Internet/EDI offers received in time shall be considered only when such offers are complete in all respects. In case of offers received through E-mail, please send the offer to the email ID specified in the SCC document of the tender.

3. Offers of Vendors who already have a valid Technical/Commercial MOU with BHEL-EDN for the items of the RFQ shall mention the relevant MOU reference no. and give only such other details not covered in the MOU.

4. In cases where tender documents are bulky, or due to some reasons tender documents are required to be submitted by hand or through posts/couriers, the offers are to be handed over either of the two purchase officers whose names are mentioned in the SCC document of tender RFQ.
5. Tenders will be opened on due date, time and venue as indicated in the RFQ in the presence of bidders at the venue indicated in the RFQ. For EPS tenders, e-mail notifications will be automatically generated and forwarded to registered e-mail ID/s of bidders during opening of tenders.
6. Bidder will be solely responsible:
   a. For submission of offers before due date and time. Offers submitted after due date and time will be treated as "Late offers" and will be rejected.

   b. For submission of offers in the correct compartment of the tender box based on the day of due date (Monday/Wednesday/Friday). Please check before dropping your offer in the correct tender box.

   c. For depositing offers in proper sealed condition in the tender box. If the bidder drops the tender in the wrong tender box (or) if the tender document is handed over to the wrong person, BHEL will not be responsible for any such delays.

   d. For offers received through email etc., suppliers are fully responsible for lack of secrecy on information and ensuring timely receipt of such offers in the tender box before due date & time (This clause will not be applicable for EPS tenders).

   The above indicated submission of Offers as mentioned in points 6.a-6.d is applicable for tenders that are not floated through EPS.

   e. In case of e-tender, all required documents should be uploaded before due date and time. Availability of power, internet connections, system/software requirements etc. will be the sole responsibility of the bidder.

      Wherever assistance is needed for submission of e-tenders, help-line numbers as available in the web-site of service provider of BHEL may be contacted.

      Purchase Executive/ BHEL shall not be responsible for any of the activities relating to submission of offer.

D. <u>PROCESSING OF OFFERS RECEIVED:</u>

1. Any discount/ revised offer submitted by the supplier on its own shall be accepted provided it is received on or before the due date and time of offer submission (i.e. Part-I bid).

   The discount shall be applied on pro-rata basis to all items unless specified otherwise by the bidder.
2. Changes in offers or Revised offers given after Part-I bid opening shall not be considered as a part of the original offer unless such changes/revisions are requested by BHEL.

   In case of withdrawal of any Technical/Commercial deviation(s) by the bidder before opening of price bids/conducting the Reverse Auction, revision of price/impact bid will not be accepted.
3. In case there is no change in the technical scope and/ or specifications and/ or commercial terms & conditions, the supplier will not be allowed to change any of their bids after Technical bids are opened (after the due date and time of tender opening).

4. In case of changes in scope and/ or technical specifications and/ or commercial terms & conditions by BHEL and it accounts for price implications from bidders, all techno-commercially acceptable bidders shall be asked by BHEL (after freezing the scope, technical specifications and commercial terms & conditions) to submit the impact of such changes on their price bid.

   Impact price will be applicable only for changes in technical specification / commercial conditions by BHEL. The impact price must be submitted on or before the cut-off date specified by BHEL and the original price bid and the price impact bid will be opened together at the time of price bid opening.

5. Un-opened bids (including price bids) will be returned to the respective bidders after release of Purchase order.

   Regarding Offers for EPS tenders that get rejected on PQC/ techno-commercial grounds, the bids for the subsequent parts will not be opened i.e., both technical bid and price bid (Parts-II & III)will not be opened in case of rejection on PQC ground and price bid (Part-II/Part-III, as applicable) will not be opened in case of rejection on techno-commercial ground.

6. After receipt of Purchase Order, supplier should submit required documents viz.,specified drawings, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report , O & M Manuals and/or any other relevant documents as per Specification/Purchase Order, as and when required by BHEL/Customer.

7. Any deviation to the terms and conditions not mentioned in the quotation by supplier in response to this enquiry will not be considered, if put forth subsequently or after issue of Purchase Order, unless clarification is sought for by BHEL and agreed upon in the Purchase Order.

8. Evaluation shall be on the basis of delivered cost (i.e. “Total Cost to BHEL").

   “Total Cost to BHEL” shall include total basic cost, packing & forwarding charges, taxes and/or duties(as applicable), freight charges, taxes on Services, customs clearance charges for imported items, any other cost indicated by bidder for execution of the contract and loading factors (for non-compliance to BHEL Standard Commercial Terms & Conditions).

   Benefits arising out of Nil Import Duty on DEEC, EPCG, DFIA Projects, Physical Exports or such 100% exemptions (statutory benefits), project imports, customer reimbursements of statutory duties (like Basic Customs Duty and cess on customs duty), Input tax credits as applicable will also be taken into account for arriving at the Total cost to BHEL (wherever applicable and as indicated in SCC document of tender).

   For EPS tenders, it shall be noted that the prices (including discounts) vis-a-vis currency quoted in EPS portal only will be considered as Final for the purpose of evaluation of the lowest bidder.

   Bidder shall ensure to indicate the applicable taxes against each line item in online portal, failing to which the same will be considered as inclusive/NIL.

   In the course of evaluation, if more than one bidder happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 bidders.

   Incase more than one bidder happens to occupy the L-1 status even after soliciting discounts, the L-1 bidder shall be decided by a toss/draw of lots, in the presence of the respective L-1 bidder(s) or their representative(s).

   Ranking will be done accordingly. BHEL’s decision in such situations shall be final and binding.

9. The evaluation currency for this tender shall be INR. For evaluation of offers in foreign currency, the exchange rate (TT selling rate of SBI) shall be taken as under:

   Single part bids: Date of tender opening

   Two/three part bids: Date of Part-I bid opening

   Reverse Auction: Date of Part-I bid opening

   In case of Performance Bank Guarantee (PBG) also, exchange rate will be considered as mentioned above for converting foreign currency to Indian currency and vice versa.

   If the relevant day happens to be a bank holiday, then the exchange rate as on the previous working day of the bank (SBI) shall be taken.

10. Ranking (L-1, L-2 etc.) shall be done only for the techno-commercially acceptable offers.
11. GeM Seller ID shall be mandatory before placement of order/award of contract for goods and services to the successful bidder(s), for orders exceeding Rs.25 lakhs (including all taxes etc.).

    Department of Expenditure (DoE) OM no.6/9/2020-PPD dated: 24.08.2020 may be referred in this regard.

E. <u>INFORMATION ON PAYMENT TERMS:</u>

1. All payments will be through Electronic Fund transfer (EFT). Vendor has to furnish necessary details as per BHEL standard format **(Refer Annexure IV)** for receiving all payments through NEFT.(Applicable for Indian vendors only).
2. In case of High Sea Sales transaction, customs clearance of the consignment landed on Indian Sea/Air ports will be done by BHEL based on the original HSS documents provided by vendors.

   All warehousing charges due to delay in submission of complete and or correct HSS documents to BHEL will be to supplier's account only. Such recovery will be made out of any of the available bills **(Refer Annexure V)**.
3. Statutory deductions, if any, will be made and the deduction certificate shall be issued.

   A. In case vendor does not provide PAN details, the TDS deduction shall be at the maximum percentage stipulated as per the provisions of Income Tax Act.

   In addition to the above, Foreign vendors shall also submit relevant details of their bankers like Swift Code, Banker's Name &Address etc.

   B. TDS deduction as per section 51 of CGST Act,2017 shall be applicable as per Gazette Notification No. 50/2018-Central Tax, Dated: 13th September 2018. TDS deduction is also applicable on purchase of goods as per the latest notification under section 194Q, and subsequent notification(s) as and when released by Govt. authorities.
4. Procurement of Goods/ Works/ Services/ Consultancy Services [under clause relating to "Income Tax and Corporate Tax" or "TDS" of Model ITBs]

   a) Provision w.r.t. TDS on Purchase of Goods under section 194Q of Income Tax Act applicable from 01.07.2021 is as under:

      i. TDS as applicable will be deducted by BHEL under section 194Q of the Income Tax Act, 1961 on Purchases exceeds, the amount of Rupees. 50 Lakhs or limit defined therein from time to time during the financial year under the Indian Income Tax act 1961.

      ii. Since BHEL is liable to deduct Income Tax TDS under section 194Q, the provision of TCS as per section 206C(1H) of the Income Tax Act, 1961 shall not be applicable.

b) Higher rate of TDS for non-filers of ITR as per Section 206AB of Income Tax Act, 1961, in case of any vendor who does not filed their Income Tax Return for both of the two previous years preceding to current year and aggregate amount of TDS is more than or equal to Rs. 50,000/- in each of those previous two years (or limit defined by Govt. from time to time), then TDS will be deducted at the higher of following rates:

(i) Twice the rate mentioned in relevant TDS section.

(ii) Twice the rate or rates in force

(iii) 5%

5. Incomplete documentation will not be accepted. Delayed submission of invoice / documents may result in corresponding delay in payment. In this connection, request to also refer clause: G about invoicing & payment formalities under GST regime.

   Applicable documents shall be submitted to the purchaser at the time of execution of supplies/services for availing GST input credits.

F. STANDARD PAYMENT TERMS OF BHEL-EDN:

PURCHASE ORDERS FOR:	**SUPPLY WITH SERVICE(S)**	**SUPPLY ONLY**
INDIGENOUS PROCUREMENT	a. 100% of basic value with taxes and freight will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation, whichever is later. Note: In case PBG is not furnished, only 90% payment will be released against 100% claim without the consent of Vendor. This 10% basic amount withheld towards PBG will be paid either against submission of supplementary invoice & Original PBG (or) against supplementary invoice without PBG after expiry of Warranty period.	b. 100% of PO value with taxes and freight will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation, whichever is later.
IMPORT PROCUREMENT	c. 100% of basic value will be paid against usance draft of 45 days from the date of AWB/BOL on submission of complete set of documents. Note: In case PBG is not furnished, only 90% payment will be released against 100% claim without the consent of Vendor. This 10% basic amount withheld towards PBG will be paid either against submission of supplementary invoice & Original PBG (or) against supplementary invoice without PBG after expiry of Warranty period.	d. 100% of PO value will be paid against usance draft of 45 days from the date of AWB/BOL on submission of complete set of documents.

HIGH-SEA SALES PROCUREMENT	e. 100% of basic value will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation, whichever is later Note: In case PBG is not furnished, only 90% payment will be released against 100% claim without the consent of Vendor. This 10% basic amount withheld towards PBG will be paid either against submission of supplementary invoice & Original PBG (or) against supplementary invoice without PBG after expiry of Warranty period.	f. 100% of basic value will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation, whichever is later.

g. Erection and Commissioning:

Evaluation methodology: Unless and otherwise specified in SCC, E&C charges should not be less than 10% of the main supply value. In case the quoted total E&C value is less than 10% of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price proportionally from all items and apportioning towards E&C charges.
Payment term: 100% E&C charges along with tax as applicable, will be paid in 15 days from the date of submission of supplementary invoice/documents against proof of completion of E&C.

h. Erection Supervision and Commissioning:

Evaluation methodology: Unless and otherwise specified in SCC, E&C charges should not be less than 5% of the main supply value. In case the quoted total E&C value is less than 5% of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price proportionally from all items and apportioning towards E&C charges.
Payment term: 100% E&C charges along with tax as applicable, will be paid in 15 days from the date of submission of supplementary invoice/documents against proof of completion of E&C.

i. Comprehensive Annual Maintenance Contract:

Evaluation methodology: Unless and otherwise specified in SCC, CAMC will be applicable for a period of 04 years from the date of expiry of warranty period (or) from the date of completion of commissioning of equipment, whichever is later and the total CAMC value should not be less than 20% of the main supply value. In case the quoted total CAMC value is less than 20% of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price proportionally from all items and apportioning towards CAMC charges.

Payment terms: 100% CAMC charges along with tax as applicable, will be paid in 15 days from the date of submission of supplementary invoice/documents against proof of completion of CAMC on yearly basis.

j. Terms of Payment for Training: 100% payment will be made in 45 days from the date of completion of Training or 15 days from the date of submission of complete set of invoice along with documentary evidence, whichever is later.

LOADING FACTORS FOR DEVIATION IN PAYMENT TERMS (APPLICABLE FOR IMPORT PROCUREMENT ONLY):

1) For offers received with Sight draft payment term in place of Usance draft, loading applicable will be 1.0% of basic value.

2) For offers received with Letter of Credit payment term with Usance of 45 days, loading applicable will be 2.5% of basic value.
Additional loading of 2% will be applicable for payment term as Letter of Credit at Sight.

k. Any payment term with credit period of less than 45 days for indigenous supply/HSS and any other variation of payment terms are liable for rejection.

l. Standard payment terms indicated in Clauses: F (a), (b), (c), (d), (e), (f), (g), (h), (i) & (j) will not attract any loading.

Note 1: Basic value of Purchase Order mentioned above will include all components of the purchase order and will exclude only taxes, duties, freight, training charges, E&C and AMC charges (wherever applicable). Wherever the Purchase Order is split into import portion and indigenous portion of supply, minimum % to be quoted for Services, wherever mentioned, will be of both purchase order values put together.

Note 2: In case of multiple packages/units in a power plant, payment of E&C charges will be processed on pro-rata basis.

Note 3: No deviation will be permitted from the duration of Guarantee/Warranty and/or Comprehensive Annual Maintenance Contract period specified in SCC.

G. Terms & Conditions to be complied under GST regime:

1. All invoices to contain BHEL-EDN (buyer) GSTIN number: 29AAACB4146P1ZB. However for CGST +SGST/UGST billing outside the state of Karnataka, invoice has to be generated with BHEL's Nodal Agency GSTIN number. Address of Nodal Agency along with GSTIN number will be provided by BHEL at the time of issuing dispatch clearance.

2. The Bidder shall mention Bidder's GSTIN number in all quotations and Invoices submitted.

3. The Bidder shall also mention HSN (Harmonized System of Nomenclature) / SAC (Services Accounting Code) mandatorily in all quotations and invoices submitted.

4. Invoice submitted should be in the format as specified under GST Laws viz., all details as mentioned in Invoice Rules like GST registration number(GSTIN), invoice number with date of issue, quantity, rate, value, taxes with nomenclature – CGST, SGST, UGST,IGST mentioned separately, HSN Code / SAC Code etc. Invoice should be submitted in original for buyer plus duplicate for credit availment.

5. Payment of GST to Vendor will be made only if it is matching with data uploaded by the Vendor in GST portal.

6. For invoices paid on Reverse charge basis – "Tax payable on reverse charge basis" to be mentioned on the invoice.

7. In case GST credit is delayed/denied to BHEL due to non/delayed receipt of goods and/or tax invoice or expiry of timeline prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, GST amount will be recoverable from vendor along with interest levied/ leviable on BHEL.

8. In case vendor delays declaring such invoice in his return and GST credit availed by BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law will be recoverable from vendor/contractor along with interest levied/ leviable on BHEL.

9. Vendor should intimate BHEL immediately on the same date of invoicing without any delay.

10. In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the supplies, within the calendar month notified by BHEL.

11. Bidders to note that Rules & Regulations pertaining to E-way bill system are to be strictly adhered to, as and when notified by Govt. authorities.

12. As per Notification 88/2020-Central Tax dated 10th November 2020 (applicable w.e.f. 01 January 2021), the turnover for applicability of E-invoicing provisions has been reduced from 500 crores to 100 crores. In other words, registered person [other than a SEZ unit and those referred in Rule 54(2), 54(3), 54(4) and 54(4A) of the CGST Rules], whose aggregate turnover in any preceding financial year from 2017-18 onwards exceeds 100 crores, is required to comply with the requirement of IRN and QR code in respect of supply of goods or services or both to a registered person or for exports.

H. <u>Performance bank guarantee (PBG):</u>

Performance bank guarantee (PBG) will be applicable as called in the tender documents. Unless otherwise specified in the SCC, the PBG against performance of the contract shall be valid for a period of 24 months from the date of dispatch of goods + claim period of 03 months, for a value equal to 10 % of the basic value of the purchase order which will include all components of the purchase order and will exclude only taxes, duties, freight, training charges, E&C and AMC charges (wherever applicable).

1. The BG issued in Indian Rupees by Banks in India is to be executed on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Bank issuing the guarantee.
2. No deviation for the duration and value of PBG will be permitted.
3. PBG shall be from any of the BHEL consortium of bankers **(refer Annexure VI)**.
4. PBGs from nationalized banks are also acceptable.
5. PBG should be sent directly by the bank to the dealing executive mentioned in the purchase order located at the address mentioned in the purchase order.
6. PBG should be in the format specified **(refer Annexure VII)**. No deviation to this format will be allowed. However in case BHEL changes the PBG format, bidder shall honor the same.
7. Bank Guarantee should be enforceable in Bangalore.
8. In Case of Bank Guarantees submitted by Foreign Vendors-
   a. From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India) can be accepted subject to the condition that the Bank Guarantee should be enforceable in Bangalore.
   b. From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)

   b.1 Please note that Bank Guarantee issued by any of the Consortium Banks only will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter-Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India.

It shall be noted that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor.

b.2 In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at sl.no. b.1 is required to be followed.

b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time).

9. Expired PBGs will be returned only after expiry of the claim period.
10. PBG shall not be applicable for spares.

I. PURCHASE PREFERENCE FOR MSE(MICRO AND SMALL ENTERPRISES) VENDORS:

Purchase preference will be given to MSEs as defined in Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012 dated 23.03.2012 issued by Ministry of Micro, Small and Medium Enterprises and its subsequent Orders/Notifications issued by concerned Ministry. If the bidder wants to avail the Purchase preference, the bidder must be the manufacturer of the offered product in case of bid for supply of goods. Traders are excluded from the purview of Public Procurement Policy for Micro and Small Enterprises. Relevant documentary evidence in this regard shall be uploaded along with the bid in respect of the offered product. Purchase preference to Micro and Small Enterprises clause in the bid, the same will get precedence over this clause.

1. If tendered quantity is Splitable: In tender, participating MSEs quoting price within price band of L1+15 percent shall also be allowed to supply a portion of requirement by bringing down their price to L1 price in a situation where L1 price from someone other than a MSE and such MSE shall be allowed to supply at least 25% of total tendered value. In case of more than one such MSE, the supply shall be shared proportionately (to tendered quantity).

- 3% of the 25% will be earmarked for women owned MSEs.
- 25% of the 25% (i.e., 6.25% of the total enquired quantity) will be earmarked for SC/ST owned MSE firms provided conditions as mentioned in (1) & (2) are fulfilled.
- In case where no SC/ST category firms are meeting the conditions mentioned in (1) and (2) or have not participated in the tender, the 6.25% of earmarked quantity for SC/ST owned MSE firms will be distributed among the other eligible MSE vendors who have participated in the tender.

2. If tendered quantity is Non-Splitable: If L-1 is not an MSE and MSE Seller (s) has/have quoted price within L-1+ 15% of margin of purchase preference /price band defined in relevant policy, such Seller shall be given opportunity to match L-1 price and contract will be awarded for 100% of total value.

J. INTEGRITY COMMITMENT IN THE TENDER PROCESS, AND EXECUTION OF CONTRACTS:

1. Commitment by BHEL: BHEL commits to take all measures necessary to prevent corruption in connection with the Tender process and execution of the Contract. BHEL will, during the tender process, treat all bidder / suppliers in a transparent and fair manner, and with equity.

2. Commitment by Bidder(s)/ Contractor(s):

   a. The Bidder(s)/ Contractor(s) commit(s) to take all measures to prevent corruption and will not directly or indirectly try to influence any decision or benefit which he is not legally entitled to.
   b. The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding or any actions to restrict competition.
   c. The Bidder(s)/ Contractor(s) will not commit any offence under the relevant Acts. The Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain or pass on to others, any information or document provided by BHEL as part of business relationship.

d. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to the relevant guidelines issued from time to time by Government of India/ BHEL.

If the Bidder(s) / Contractor(s), before award or during execution of the Contract commit(s) a transgression of the above or in any other manner such as to put his reliability or credibility in question, BHEL is entitled to disqualify the Bidder(s) / Contractor (s) from the tender process or terminate the contract and/ or take suitable action as deemed fit.

K. Integrity Pact (IP):

a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner.
Following independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

Sl	IEM	Email
1.	Shri Otem Dai, IAS (Retd.)	iem1@bhel.in
2.	Shri Bishwamitra Pandey, IRAS (Retd.)	iem2@bhel.in
3.	Shri Mukesh Mittal, IRS (Retd.)	iem3@bhel.in

b) Please refer Section-8 of the IP for Role and Responsibilities of IEMs (Annexure I). In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEM/s shall be done through email only.

Note: No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are indicated in SCC document of tender.

Annexure I

Guidelines for Indian Agents

- **Definition of Indian Agent**: An Indian Agent of foreign prinicipal is an individual, a partnership, an association of persons, a private or pubile company, that carries our specific obligation(s) towards processing of BHEL tender or finalization or execution of BHEL's contract on behalf of the foreign supplier.

In case of yes, vendor to note the following and reply accordingly:

i. BHEL shall deal directly with foreign vendors, wherever required, for procurement of goods. However, if the foreign principal desires to avail of the services of an Indian agent, then the foreign principal should ensure compliance to regulatory guidelines - which require mandatory submission of an Agency Agreement.

ii. It shall be incumbent on the Indian agent and the foreign principal to adhere to the relevant guidelines of Government of India, issued from time to time.

iii. The Agency Agreement should specify the precise relationship between the foreign OEM / foreign principal and their Indian agent and their mutual interest in the business. All services to be rendered by agent/ associate, whether of general nature or in relation to the particular contract, must be clearly stated by the foreign supplier/ Indian agent. Any payment, which the agent or associate receives in India or abroad from the OEM, whether as commission or as a general retainer fee should be brought on record in the Agreement and be made explicit in order to ensure compliance to laws of the country.

iv. Any agency commission to be paid by BHEL to the Indian agent shall be in Indian currency only.

v. Tax deduction at source is applicable to the agency commission paid to the Indian agent as per the prevailing rules.

vi. In the absence of any agency agreement, BHEL shall not deal with any Indian agent (authorized representatives / associate / consultant, or by whatever name called) and shall deal directly with the foreign principal only for all correspondence and business purposes.

vii. The "Guidelines for Indian Agents of Foreign Suppliers" enclosed at annexure –'A' shall apply in all such cases.

viii. The supply and execution of the Purchase Order (including indigenous supplies/ service) shall be in the scope of the OEM/ foreign principal. The OEM/ foreign principal should submit their offer inclusive of all indigenous supplies/ services and evaluation will be based on 'total cost to BHEL'. In case OEM/ foreign principal recommends placement of order(s) towards indigenous portion of supplies/ services on Indian supplier(s)/ agent on their behalf, the credentials/ capacity/ capability of the Indian supplier(s)/ agent to make the supplies/ services shall be checked by BHEL as per the extant guidelines of Supplier Evaluation, Approval & Review Procedure (SEARP), before opening of price bids. In this regard, details may be checked as per Annexure-B (copy enclosed). It will be the responsibility of the OEM/ foreign principal to get acquainted with the evaluation requirements of Indian supplier/ agent as per SEARP available on www.bhel.com.

The responsibility for successful execution of the contract (including indigenous supplies/ services) lies with the OEM/ foreign principal. All bank guarantees to this effect shall be in the scope of the OEM/ foreign principal.

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Vendor's Signature with Seal

Annexure-A

Guidelines for Indian Agents of Foreign Suppliers

1.0 There shall be compulsory registration of agents for all Global (Open) Tender and Limited Tender. An agent who is not registered with BHEL shall apply for registration in the registration form in line with SEARP.

1.1 Registered agents will file an authenticated Photostat copy duly attested by a Notary Public/Original certificate of the Principal confirming the agency agreement and giving the status being enjoyed by the agent and the commission/ remuneration/ salary/ retainership being paid by the principal to the agent before the placement of order by BHEL.

1.2 Wherever the Indian representatives have communicated on behalf of their principals and the foreign parties have stated that they are not paying any commission to the Indian agents, and the Indian representative is working on the basis of salary or as retainer, a written declaration to this effect should be submitted by the party (i.e. Principal) before finalizing the order.

2.0 Disclosure of particulars of agents/ representatives in India, if any.

2.1 Tenderers of Foreign nationality shall furnish the following details in their offers:

2.1.1 The Bidder(s)/ Contractor(s) of foreign origin shall disclose the name and address of the agents/ representatives in India if any and the extent of authorization and authority given to commit the Principals. In case the agent/ representative be a foreign Company, it shall be confirmed whether it is existing Company and details of the same shall be furnished.

2.1.2 The amount of commission/ remuneration included in the quoted price(s) for such agents/ representatives in India.

2.1.3 Confirmation of the Tenderer that the commission/ remuneration, if any, payable to his agents/ representatives in India, may be paid by BHEL in Indian Rupees only.

2.2 Tenderers of Indian Nationality shall furnish the following details in their offers:

2.2.1 The Bidder(s)/ Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any, indicating their nationality as well as their status, i.e. whether manufacturer or agents of manufacturer holding the Letter of Authority of the Principal specifically authorizing the agent to make an offer in India in response to tender either directly or through the agents/ representatives.

2.2.2 The amount of commission/ remuneration included in the price (s) quoted by the Tenderer for himself.

2.2.3 Confirmation of the foreign principals of the Tenderer that the commission/ remuneration, if any, reserved for the Tenderer in the quoted price(s), may be paid by BHEL in India in equivalent Indian Rupees on satisfactory completion of the Project or supplies of Stores and Spares in case of operation items.

2.3 In either case, in the event of contract materializing, the terms of payment will provide for payment of the commission/ remuneration, if any payable to the agents/ representatives in India in Indian Rupees on expiry of 90 days after the discharge of the obligations under the contract.

2.4 Failure to furnish correct and detailed information as called for in paragraph 2.0 above will render the concerned tender liable to rejection or in the event of a contract materializing, the same liable to termination by BHEL. Besides this there would be a penalty of banning business dealings with BHEL or damage or payment of a named sum.

—x—

ANNEXURE - II
LIST OF INTERNATIONAL GATEWAY AIRPORTS

For air based consignment, terms of delivery will be on FCA basis from following listed airports only. Vendors are requested to verify this list for use before submission of offer.

SCHEDULE NO	COUNTRY	CURRENCY CODE	AIRPORT
D01	UK	GBP	LONDON (HEATHROW)
D02	UK	GBP	NEW CASTLE
D03	UK	GBP	OXFORD. CHETLAM
D04	UK	GBP	BRISTOL. WELLINGBOROUGH
D05	UK	GBP	BIRMINGHAM
DO6	UK	GBP	EAST MIDLANDS
D07	UK	GBP	MANCHESTER
D08	UK	GBP	LEEDS
D09	UK	GBP	GLASGOW
D10	FRANCE	EURO	PARIS (ROISSY) & LYON
D11	SWEDEN	EURO	STOCKHOLM
D12	SWEDEN	EURO	GOTHENBERG & MALMO
D13	ITALY	EURO	ROMA, MILAN
D14	ITALY	EURO	TURIN, BOLOGNA, FLORENCE
D15	NETHERLANDS	EURO	AMSTERDAM, ROTTERDAM
D16	AUSTRIA	EURO	VIENNA, LINZ, GRAZ
D17	BELGIUM	EURO	ANTWERP, BRUSSELS
D18	DENMARK	DKK	COPENHAGEN
D19	JAPAN	JPY	TOKYO, OSAKA
D20	SINGAPORE	SGD	SINGAPORE
D21	CANADA	CAD	TORONTO
D22	CANADA	CAD	MONTREAL
D23	USA	USD	NEW YORK, BOSTON
D24	USA	USD	CHICAGO
D25	USA	USD	SAN FRANCISCO, LOS ANGELES
D26	USA	USD	ALANTA, HOUSTON
D27	GERMANY	EURO	MUNICH, KOLN, DUSSELDORF, HANNOVER, HAMBURG, STUTTGART, DAMSTADT, MANIHIEM, NURUMBERG
D28	GERMANY	EURO	FRANKFURT
D29	GERMANY	EURO	BERLIN
D30	SWITZERLAND	SFR	BASLE, ZURICH, GENEVA
D31	SPAIN	EURO	BARCELONA
D32	AUSTRALIA	AUD	SYDNEY
D33	AUSTRALIA	AUD	MELBOURNE
D34	AUSTRALIA	AUD	PERTH
D35	CZECH	EURO	PRAGUE
D36	HONG KONG	HKD	HONG KONG
D37	NEW ZELAND	NZD	AUCKLAND
D38	RUSSIA	USD	MOSCOW
D39	SOUTH KOREA	USD	KIMPO INTERNATIONAL, INCHEON
D40	FINLAND	EURO	HELSINKI
D41	ROMANIA	EURO	BUCHAREST
D42	NORWAY	EURO	OSLO
D43	IRELAND	EURO	DUBLIN
D44	ISRAEL	USD	TEL AVIV
D45	UAE	USD	DUBAI
D46	OMAN	USD	MUSCAT
D47	EGYPT	USD	CAIRO
D48	TAIWAN	USD	TAIPEI
D49	UKRAINE	USD	KIEV
D50	CHINA	USD	SHANGHAI, SHENZHEN
D51	PHILIPINES	USD	MANILA
D52	MALAYSIA	USD	KUALALUMPUR, PE NANG
D53	CYPRUS	USD	LARNACA
D54	SOUTH AFRICA	USD	JOHANNESBERG, DURBAN
D55	SLOVAKIA	EURO	BARTISLOVA
D56	SAUDI ARABIA	SAR	RIYADH
D57	TURKEY	EURO	ISTANBUL
D58	THAILAND	USD	BANGKOK
D59	BRAZIL	USD	SAO PAULO, RIO DE JANEIRO

ANNEXURE – III

DISCREPANCY IN WORDS & FIGURES – QUOTED IN PRICE BID

Following guidelines will be followed in case of discrepancy in words & figures-quoted in price bid:

(a) If, in the price structure quoted for the required goods/services/works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.

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

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

(d) If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.

ANNEXURE - IV

Electronic Funds Transfer (EFT) OR

Paylink Direct Credit Form

Please Fill up the form in **CAPITAL LETTERS** only.
TYPE OF REQUEST(Tick one): _____ CREATE _____ CHANGE

BHEL Vendor / Supplier Code:
Company Name :
Permanent Account Number(PAN):
Address

City: PINCODE STATE

Contact Person(s)
Telephone No:
Fax No:
e-mail id:

1 Bank Name:
2 Bank Address:

3 Bank Telephone No:
4 Bank Account No:
5 Account Type: Savings/Cash Credit
6 9 Digit Code Number of Bank and branch appearing on MICR cheque issued by Bank
7 Bank IFSC Code(applicable for NEFT)
8 Bank IFSC code(applicable for RTGS) (Indian Financial System Code)

A I hereby certify that the particulars given above are true, correct and complete and that I, as a representative for the above named Company, hereby authorise BHEL, EDN, Bangalore to electronically deposit payments to the designated bank account.

B If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold BHEL / transfering Bank responsible.

C This authority remains in full force until BHEL, EDN,Bangalore receives written notification requesting a change or cancellation.

D I have read the contents of the covering letter and agree to discharge the responsibility expected of me as a participant under ECS / EFT.

Date:

Authorised Signatory:
Designation: Telephone No. with STD Code

Company Seal

Bank Certificate

We certify that_____has an Account No_____ with us and we confirm that the bank details given above are correct as per our records.

Date: (.....)
Place: Signature

Please return completed form **along with a blank cancelled cheque or photocopy** thereof to:
Bharath Heavy Electricals Ltd,
Attn:
Electronics Division, Mysore Road,
BANGALORE - 560 026
In case of any Querry, please call concerned purchase executive.

ANNEXURE - V
PRESENT PROCEDURE FOR SALE IN TRANSIT (HIGH SEA SALES)

In case of High Sea Sales, vendor should submit following documents:

1. **ORIGINAL HIGH SEA SALES AGREEMENT**
   - Sale agreement (on Rs. 200/- non-judicial stamp paper & notarised with 2 witnesses with identity) has to be signed between BHEL and the Party importing material. The date of the sale documents should be in between the date of House Air Way Bill / Bill of Lading and before landing of the goods in Indian origin.
   - Following shall be included in the High Sea Sales Agreement:
     "THE BUYER ALSO UNDERTAKE DISCHARGES, THE OBLIGATION AND FULFILLMENT OF CONDITIONS, IF ANY, ATTACHED TO THE IMPORTATION, ASSESSMENT AND CLEARANCE OF THE GOODS IN TERMS CUSTOMS TARIFF ACT 1975, THE CUSTOMS ACT 1962 & RULES & REGULATIONS MADE THERE UNDER AND OTHER RELEVANT ACTS, ORDERS, NOTIFICATIONS".

2. **ORIGINAL INVOICES: INDIGENOUS RUPEE INVOICE & FOREIGN CURRENCY INVOICE**
   - Prices should be C.I.F., designated airport/seaport basis.
   - I.E.C., C.S.T., K.S.T. Nos. to be mentioned.
   - Description of item (Nomenclature), Unit & Quantity in both the Foreign Currency & the Indigenous Invoice in Rupee shall be exactly as per Purchase Order Description of item, Quantity and Unit. The Indigenous Invoice value shall be exactly as per Purchase Order value.
   - Seller should give Foreign Currency Invoice from the original consignor. The Foreign Currency Invoice value should be at least 2% (two per cent) less than the Indigenous Rupee Invoice value in equivalent foreign currency.

4. **ORIGINAL HOUSE AIR WAY BILL/ BILL OF LADING**
   - The sale agents should duly endorse House Air Way Bill (HAWB) for air shipments or original Bill of Lading (O.B.L.) for sea shipments and Foreign Currency Invoice in favour of BHEL-EDN.

5. **ORIGINAL CARGO ARRIVAL NOTICE FROM FORWARDER.**

6. **ORIGINAL DELIVERY ORDER ISSUED IN NAME OF BHEL-EDN.**

7. **ORIGINAL PACKING LIST.**

8. **A LETTER TO THE COMMISSIONER OF CUSTOMS FOR EFFECTING ABOVE SALE.**

9. **A LETTER TO THE DEPUTY ASSESSOR (OCTROI) FOR EFFECTING ABOVE SALE IN FAVOUR OF BHEL.**

REMARKS: In case vendor needs any clarifications on the above, the same may be sought in writing.

ELECTRONICS DIVISION, BANGALORE

Annexure-VI

BHEL MEMBER BANKS (LIST OF CONSORTIUM BANKS)

Bank Guarantee (BG) shall be issued from the following banks only:

Sl. No.	Nationalised Banks	Sl. No.	Public Sector Banks
1	Allahabad Bank	18	IDBI
2	Andhra Bank		
3	Bank of Baroda	Sl. No.	**Foreign Banks**
4	Canara Bank	19	CITI Bank N.A
5	Corporation Bank	20	Deutsche Bank AG
6	Central Bank	21	The Hongkong and Shanghai Banking Corporation Ltd. (HSBC)
7	Indian Bank	22	Standard Chartered Bank
8	Indian Overseas Bank	23	J P Morgan
9	Oriental Bank of Commerce		
10	Punjab National Bank	**Sl. No.**	**Private Banks**
11	Punjab & Sindh Bank	24	Axis Bank
12	State Bank of India	25	The Federal Bank Limited
13	Syndicate Bank	26	HDFC Bank
14	UCO Bank	27	Kotak Mahindra Bank Ltd
15	Union Bank of India	28	ICICI Bank
16	United Bank of India	29	IndusInd Bank
17	Vijaya Bank	30	Yes Bank

Note:

- All BGs must be issued from BHEL consortium banks listed above.
- This list is subject to changes. Hence vendors are requested to check this list every time before issuing BGs.
- Bank Guarantees issued by Co-operative Banks/Financial Institutions cannot be accepted under any circumstance.

Annexure-VII

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____[1] through its Unit at.....(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) with its registered office at_____[2] hereinafter referred to as the ' Vendor / Contractor / Supplier ', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated .....[3] valued at Rs.....[4] (Rupees ----------)/FC.....(in words.....) for .....[5] (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to .....% (.... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, ..., (hereinafter referred to as the Bank), having registered/Head office at ..... and inter alia a branch at ..... being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs ---------- [6] (Rupees ----------) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

We the .....bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till

all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We .....BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier 's liabilities.

This Guarantee shall remain in force upto and including..... [7] and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the .....[8]we shall be discharged from all liabilities under this guarantee thereafter.

We, ... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

a) The liability of the Bank under this Guarantee shall not exceed..... [6]
b) This Guarantee shall be valid up to .....[7]
c) Unless the Bank is served a written claim or demand on or before _____[8] all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated.....

Place of Issue.....

[1] *NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited*

[2] *NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.*

[3] *DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE*

[4] *CONTRACT VALUE*

[5] *PROJECT/SUPPLY DETAILS*

[6] *BG AMOUNT IN FIGURES AND WORDS*

[7] *VALIDITY DATE*

[8] *DATE OF EXPIRY OF CLAIM PERIOD*

Annexure-VIII

Certificate by Chartered Accountant on letterhead

This is to certify that M/s _____ (hereinafter referred to as 'enterprise') having PAN Number _____and UDYAM Registration Number _____, registered office at _____ _____ is falling under the category _____ (**Micro / Small / Medium**) under MSMED Act 2006. (Copy of UDYAM Registration Certificate to be enclosed).

The said classification of _____ (**Micro / Small / Medium**) is arrived at based on the Notifications / guidelines / clarifications issued under Micro, Small and Medium Enterprises Development Act, 2006 including the notification S.O.2119 (E) dated 26th June 2020.

The Investment of the enterprise in Plant and Machinery or Equipment as at 31st March 2020 as per Clause 4 of the Notification is _____ (Rupees in Lakhs).

The turnover of the Enterprise for the period ending 31st March 2020 as per Clause 5 of the Notification is _____ (Rupees in Lakhs).

Date:

(Signature) Name-
Membership number-

Seal of Chartered Accountant with UDIN reference

Annexure-1

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for _____

_____ (hereinafter referred to as "Contract"). The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint panel of Independent External Monitor(s) (IEMs), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. The Bidder(s)/ Contractor(s) commits himself to observe the following principles during participation in the tender process and during the contract execution.

ಎ. ಸರವಣ ಬಾಬು, ವ್ಯವಸ್ಥಾಪಕರು/ನಿ.ಆ.-ಎಂ.ಎಂ.-ಪಿ.ಆರ್.
ए. सरवण बाबु, प्रबंधक/सी.ई.-एम.एम.-पी.आर.
A. SARAVANA BABU, MANAGER/CE-MM-PR
BHEL-EDN, MYSURU ROAD, BENGALURU-560026

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and shall await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process , terminate the contract, if already awarded, exclude from future business dealings and/ or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

4.1 If the Principal has disqualified the Bidder (s) from the tender process before award / order acceptance according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

4.2 If the Principal is entitled to terminate the Contract according to Section 3, or terminates the Contract in application of Section 3 above , the Bidder(s)/ Cotractor (s) transgression through a violation of Section 2 above shall be construed breach of contract and the Principal shall be-entitled to demand and recover from the Contractor an amount equal to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee , whichever is higher, as damages, in addition to and without prejudice to its right to demand and recover compensation for any other loss or damages specified elsewhere in the contract.

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ए. सरवण बाबु, प्रबंधक/सी.ई.-एम.एम.-पी.आर.
A. SARAVANA BABU, MANAGER/CE-MM-PR
BHEL-EDN, MYSURU ROAD, BENGALURU-560026

Section 5 - Previous Transgression

5.1 The Bidder declares that no previous transgressions occurred in the last 3 (three) years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason or action can be taken as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 6 - Equal treatment of all Bidder (s)/ Contractor (s) / Sub-contractor (s)

6.1 The Principal will enter into Integrity Pacts with identical conditions as this Integrity Pact with all Bidders and Contractors.

6.2 In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor(s) and ensure that all Sub-contractors also sign the Integrity Pact.

6.3 The Principal will disqualify from the tender process all Bidders who do not sign this Integrity Pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 -Independent External Monitor(s)

8.1 The Principal appoints competent and credible panel of Independent External Monitor (s) (IEMs) for this Integrity Pact. The task of the IEMs is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Integrity Pact.

8.2 The IEMs are not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.

8.3 The IEMs shall be provided access to all documents/ records pertaining to the Contract, for which a complaint or issue is raised before them as and when warranted. However, the documents/records/information having National Security implications and those documents which have been classified as Secret/Top Secret are not to be disclosed.

8.4 The Principal will provide to the IEMs sufficient information about all meetings among the parties related to the Contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the IEMs the option to participate in such meetings.

ಎ. ಸರವಣ ಬಾಬು, ವ್ಯವಸ್ಥಾಪಕರು/ನಿ.ಉ.-ಎಂ.ಎಂ.-ಪಿ.ಆರ್.
ए. सरवण बाबु, प्रबंधक/सी.ई.-एम.एम.-पी.आर.
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8.5 The advisory role of IEMs is envisaged as that of a friend, philosopher and guide. The advice of IEMs would not be legally binding and it is restricted to resolving issues raised by a Bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some Bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.

8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process or during execution of Contract, the matter should be examined by the full panel of IEMs jointly, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.

8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to the CMD, BHEL at the earliest. They may also send their report directly to the CVO, in case of suspicion of serious irregularities requiring legal/ administrative action. Only in case of very serious issue having a specific, verifiable Vigilance angle, the matter should be reported directly to the Commission. IEMs will tender their advice on the complaints within 30 days.

8.8 The CMD, BHEL shall decide the compensation to be paid to the IEMs and its terms and conditions.

8.9 IEMs should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the Prinicpal should be looked into by the CVO of the Principal.

8.10 If the IEMs have reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code / Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the IEMs may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.11 After award of work, the IEMs shall look into any issue relating to execution of Contract, if specifically raised before them. As an illustrative example, if a Contractor who has been awarded the Contract, during the execution of Contract, raises issue of delayed payment etc. before the IEMs, the same shall be examined by the panel of IEMs. Issues like warranty/ guarantee etc. shall be outside the purview of IEMs.

8.12 However, the IEMs may suggest systemic improvements to the management of the Principal, if considered necessary, to bring about transparency, equity and fairness in the system of procurement.

8.13 The word `Monitor' would include both singular and plural.

Section 9 - Pact Duration

9.1 This Integrity Pact shall be operative from the date this Integrity Pact is signed by both the parties till the final completion of contract for successful Bidder, and for all other Bidders 6 months after the Contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.

9.2 If any claim is made/ lodged during currency of this Integrity Pact, the same shall be binding and continue to be valid despite the lapse of this Pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

ಎ. ಸರವಣ ಬಾಬು, ವ್ಯವಸ್ಥಾಪಕರು/ನಿ.ಆ.-ಎಂ.ಎಂ.-ಪಿ.ಆರ್.
ए. सरवण बाबु, प्रबंधक/सी.ई.-एम.एम.-पी.आर.
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Section 10 - Other Provisions

10.1 This Integrity Pact is subject to Indian Laws and exclusive jurisdiction shall be of the competent Courts as indicated in the Tender or Contract, as the case may be.

10.2 Changes and supplements as well as termination notices need to be made in writing.

10.3 If the Bidder(s)/ Contractor(s) is a partnership or a consortium or a joint venture, this Integrity Pact shall be signed by all partners of the partnership or joint venture or all consortium members.

10.4 Should one or several provisions of this Integrity Pact turn out to be invalid, the remainder of this Integrity Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders / contractors who have entered into this Integrity Pact with the Principal would be competent to participate in the bidding. In other words, entering into this Integrity Pact would be a preliminary qualification.

10.6 In the event of any dispute between the Principal and Bidder(s)/ Contractor(s) relating to the Contract, in case, both the parties are agreeable, they may try to settle dispute through Mediation before the panel of IEMs in a time bound manner. In case, the dispute remains unresolved even after mediation by the panel of IEMs, either party may take further action as the terms & conditions of the Contract. The fees/expenses on dispute resolution through mediation shall be shared by both the parties. Further, the mediation proceedings shall be confidential in nature and the parties shall keep confidential all matters relating to the mediation proceedings including any settlement agreement arrived at between the parties as outcome of mediation. Any views expressed, suggestions, admissions or proposals etc. made by either party in the course of mediation shall not be relied upon or introduced as evidence in any further arbitral or judicial proceedings, whether or not such proceedings relate to the dispute that is the subject of mediation proceedings. Neither of the parties shall present IEMs as witness in any Alternative Dispute Resolution or judicial proceedings in respect of the dispute that was subject of mediation.

For & On behalf of the Principal
(Office Seal)

ಎ. ಸರವಣ ಬಾಬು, ವ್ಯವಸ್ಥಾಪಕರು/ನಿ ಆ.-ಎಂ.ಎಂ.-ಪಿ.ಆರ್.
ಎ. सरवण बाबु, प्रबंधक/सी.ई.-एम.एम.-पी.आर.
A. SARAVANA BABU, MANAGER/CE-MM-PR
BHEL-EDN, MYSURU ROAD, BENGALURU-560026

Place
Date

Witness:
(Name & Address) MAWISH.G
BHEL - EDN. Bangalore-26.

For & On behalf of the Bidder/ Contractor
(Office Seal)

Witness:
(Name & Address)

Annexure-X

Restrictions under Rule 144(xi) of General Financial Rules, 2017 amendment dt: 23.07.2020

I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.

II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.

III. "Bidder from a country which shares a land border with India" for the purpose of this Order means :-

a. An entity incorporated, established or registered in such a country; or

b. A subsidiary of an entity incorporated, established or registered in such a country; or

c. An entity substantially controlled through entities incorporated, established or registered in such a country; or

d. An entity whose *beneficial owner* is situated in such a country; or

e. An Indian (or other) agent of such an entity; or

f. A natural person who is a citizen of such a country; or

g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

IV. The *beneficial owner* for the purpose of (iii) above will be as under:

1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

Explanation--

a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent of shares or capital or profits of the company;

b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;

2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;

4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;

5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

		A4-10	REF. : CE / 416 /KHURJA/ LIR / OT
			REV. NO. : 00
			PAGE : 01 0F 02

PROJECT : KHURJA 2 X 660MW STPP TG & ASSOCIATED PACKAGES

CUSTOMER : M/s THDC INDIA PVT LTD

CONSULTANT : M/s NTPC

SPECIFICATION
FOR
LOCAL INSTRUMENTS RACKS (LIR)

REVISION : 00	**APPROVED** **DIPTENDU GHOSH**		
	PREPARED **RAJESH LINGUTLA**	**ISSUED** **416**	**DATE** **15-Sep-22**

CONTENTS

GENERAL INSTRUCTIONS TO BIDDERS

REVISION : 00

APPROVED

DIPTENDU GHOSH

PREPARED	ISSUED	DATE
RAJESH LINGUTLA	416	15-Sep-22

SECTION- A

GENERAL INSTRUCTIONS TO BIDDERS:

1.0 All required documents against this Tender/Specification shall be submitted in English only.

2.0 Introduction: Bidders are required to offer Local Instrument Rack (LIR) for a Coal Fired Thermal Power Plant Applications.

3.0 In order to accept the Technical offers / proposals from Bidders for the project mentioned in this Specification (refer Section C), certain Pre-qualification criteria are required to be met by Bidder.

4.0 Pre-qualification requirements are clearly mentioned in Section-B of this Specification. Bidder to read the same carefully and submit the details required for BHEL's acceptance.

5.0 BHEL May visit vendor's work for verification of facilities offered and BHEL decision on suitability of manufacturing facility is final and binding.

6.0 In case Bidder does not include the details or meet the requirements of Pre-qualification requirements, their offer will be summarily rejected and Bidder's Technical offers will not be evaluated.

7.0 Submit duly-filled NTPC Sub Supplier Questionnaire attached as part of Technical specifications ref no: QS-01-QAI-P-04/F2 who are the not approved by NTPC against item Local instrument Enclosure (LIE) & Local instrument Rack (LIR).Bidder to comply the same.

Evaluation methodology:

Evaluation methodology as below
BHEL shall initially open Bidder's PQR documents as per Section-B of this specification for review & acceptance.
If the Bidders who are meeting PQR requirements as per Section-B of this specification, Technical Offers of those bidders only will be considered for evaluation.
If the Bidders who are meeting technical requirements as per Section C of this specification, Those Bidders will be taken up with End user/Customer for approval.
If the Bidders who are approved by End user/Customer, Commercial bids of those bidders will be considered for further evaluation by BHEL.

8.0 Bidders are required to submit offers as detailed below :

aa. Documents pertaining to Pre-Qualification requirement (Section B of this Specification) shall be in a Separate cover /Soft Folder with reference no. "CE/416/LIE-LIR/PQR / Section B" marked on it.

bb. Technical offers/proposals for the Project, whose requirements are mentioned in Sections C will be submitted in a separate cover/Soft Folder with RFQ Reference & Reference marked on it.

Note 1:-Whenever required during evaluation of PQR and Technical offers/bids, vendor is required to be present at BHEL Electronic Division, Bangalore, for discussions. Further in the event of order, during approval of the vendor documents by End users/Customers, if needed vendor shall accompany BHEL representative for discussions.

Note 2:- Changes in Technical Specifications will be discussed with the bidders who Qualified PQR for this tender.

Note 3:- BHEL shall submit vendor credentials to customer and await customer's decision for a maximum of one month from the date of PQ bid opening. If approval is not received within above period, BHEL shall treat the offer as "NOT Meeting PQ" criteria and offer shall be rejected.

PRE-QUALIFICATIONS REQUIREMENTS

APPROVED

DIPTENDU GHOSH

PREPARED	ISSUED	DATE
RAJESH LINGUTLA	416	15-Sep-22

SECTION- B

Pre-Qualification Requirements (PQR) of Bidders for Local Instrument Rack (LIR), as a part of Offer:

1.0 Submit Reference List of Projects, Unpriced Purchase Order Copies, wherein LIE, LIR has been supplied.

2.0 The bidder should have executed/ completed work of Design and supply of complete LIE LIR package at least 2 units in power plant/process Industries. Bidder should have executed Complete LIE/LIR Package to accommodate minimum of 60 Pressure transmitters / switches. Customer approved data sheet or Dispatch documents or inspection report etc shall be provided.

3.0 Bidders shall have experienced welders for welding of materials specified in the Technical specification. Welder's certificate shall be provided for verification.

4.0 Bidders shall have a designated drawing office with AUTOCAD/other drafting software, Submission of drawings shall be in pdf format. Bidders to give compliance to the same.

5.0 Bidders shall have designated machine shop including sheet metal fabrication upto 4mm thick and cutting up to 10 mm thick plates, should have Painting facility for both epoxy based tank process painting and powder coating facility or if outsourced details to be provided.

6.0 Bidder shall have facility for performing hydro test on all individual lines (Hydro test pressure shall be 530Kg/Cm2). Bidders to give compliance to the same.

7.0 Vendor shall have requisite space for physical inspection, loading facility etc for offering minimum of about 80 LIRs at the same time for inspection. Bidders to give compliance to the same.

Important Note: In case Bidder does not submit details mentioned in above Section (B) offers will be summarily rejected and Bidder's Technical offers/proposals will not be evaluated. Please read carefully the GENERAL INSTRUCTIONS in Section A of this specifications.

	A4-10	**SECTION – C**	**REF. : CE / 416 /KHURJA/LIR / TS** **REV. NO. : 00** **PAGE : 01 0F 02**

TECHNICAL SPECIFICATION FOR

LOCAL INSTRUMENT

RACKS (LIR)

APPROVED

DIPTENDU GHOSH

PREPARED	ISSUED	DATE
RAJESH L	416	15-Sep-22

CONTENTS

PROJECT : KHURJA 2 X 660MW STPP TG & ASSOCIATED PACKAGES

CUSTOMER : M/s THDC INDIA PVT LTD

CONSULTANT: M/s NTPC

SCOPE OF SUPPLY
FOR
LOCAL INSTRUMENT RACKS
(LIR)

REVISIONS :

APPROVED BY

DIPTENDU GHOSH

PREPARED BY	ISSUED	DATE
RAJESH LINGUTLA	416	15/09/22

Scope of supply

The Scope of supply is as per Technical requirements attached with this specification. Vendor shall quote for each line item of the Table A. The unit rate shall be valid until the completion of the contracts. For this purpose vendors shall maintain MS Excel file indicating total Bill of materials Table A & B.

TABLE: A

S.NO	HUP Ref CE/416/KHURJA /HUP	Material Code	Description	QTY FOR UNIT#1	QTY FOR UNIT#2	Unit
381		PR0830000054	LIR TYPE A	8	8	NO
2		PR0830000062	LIR TYPE B	16	16	NO
3		PR0830000070	LIR TYPE C	26	26	NO
4	2	PR0830000100	Hook up PT/PS 6000 Steam and Water	20	20	NO
5	4	PR0830000119	HOOK UP DPT/FT/LT STEAM AND WATER A106 6K	14	14	NO
6	6	PR0830000127	Hook up PT/PS 3000 water	67	66	NO
7	8	PR0830000135	Hook up DPT/DPS 3000 water	76	74	NO
8	10	PR0320000206	Hook up PT/PS 3000 bottom entry	54	54	NO
9		PR0450000290	Temp. Transmitter Junction Box - Type A	17	17	NO
10		PR0450000303	Temp. Transmitter Junction Box - Type B	20	20	NO
11		PR0450000311	Temp. Transmitter Junction Box - Type C	12	12	NO
12		PR0830000275	Mandatory Spares for LIE/LIR	1	0	ST

Note:

1. **Colour:, INTERNAL- Glossy White Two coats /RAl 7035 with fire resistant Paint, EXTERNAL-RAL 7032/RAL 7035 (FINAL COLOUR WILL BE DECIDED DURING DETAILED ENGG)**
2. **IP55 Type test to be submitted for TTE and IP-65 for JB of LIR for approval. Report should not be older than March 2019.**

MANDATORY SPARE

TABLE:B

SL. NO.	ITEM DESCRIPTION	Spare QTY (Nos)
1	**VALVE MANIFOLD(10%)**	
1.1	TWO VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2" NPTF/MATL.SS316 PR.TESTING:6000 PSI	4.00
1.2	TWO VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2"NPTF/BODY:SS316 PR.TESTING:3000PSI	14.00
1.3	FIVE VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2"NPTF/BODY:SS316 PR.TESTING:6000PSI	3.00
1.4	FIVE VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2" NPTF/MATL.SS316 PR.TESTING:3000 PSI	15.00
1.5	THREE VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2"NPTF MATL:SS316 PR.TESTING:3000PSI	11.00
2	**VALVE (10%)**	
2.1	FORGED GLOBE VALVE BODY:ASTM A105/STEM:ASTM A182 GR.F6A SIZE:1/2"NB-SW/CL:2500	20.00
2.2	FORGED GLOBE VALVE BODY:ASTM A105/STEM:ASTM A182 GR.F6A SIZE:1/2"NB-SW/CL:800	50.00
3.1	**SS TUBE FITTINGS**	
3.1.1	TUBE FITTING TYPE:DFDC MATL:SS316 SIZE:1/2"NPTM X TO SUIT 1/2"OD SS TUBE	224.00
3.1.2	TEE-TUBE UNION MATL: SS316 SIZE : OD OF 1/2" NB PIPE X TO SUIT 1/2" OD SS TUBE	53.00
3.1.3	TEE-TUBE UNION MATL: SS316 SIZE : OD OF 1/2" NPTM X TO SUIT 1/2" OD SS TUBE	11.00
3.2	**OTHER FITTINGS**	
	FORGED EQUAL TEE (10%)	
3.2.1	FORGED EQUAL TEE / AS PER ANSI B16.11 SIZE:1/2" NB-SW / CL:6000 MATL:ASTM A105	10.00
3.2.2	FORGED EQUAL TEE / AS PER ANSI B16.11 SIZE:1/2" NB-SW / CL:3000 MATL:ASTM A105	44.00

Unit rate of each item for Mandatory Spare to be provided in the offer.

PROJECT : KHURJA 2 X 660MW STPP TG & ASSOCIATED PACKAGES

CUSTOMER : M/s THDC INDIA PVT LTD

CONSULTANT: M/s NTPC

TECHNICAL REQUIREMENT
FOR
LOCAL INSTRUMENT RACKS
(LIR)

REVISIONS :

APPROVED BY

DIPTENDU GHOSH

PREPARED BY	ISSUED	DATE
RAJESH LINGUTLA	416	15/09/22

TECHNICAL REQUIREMENTS FOR TRANSMITTER RACKS:

I. OPEN TYPE TRANSMITTER RACKS:

1. Transmitter racks is provided for mounting transmitters and other accessories, in buildings and closed areas like the power house building / turbine hall.

2. The Transmitter Racks shall be of following sizes (in millimeters).

   Type A- 1650(W) x 800(D) x 2200(H) (To mount 7 to 8 transmitters)
   Type B- 1330(W) x 800(D) x 2200(H) (To mount 5 to 6 transmitters)
   Type C- 1010(W) x 800(D) x 2200(H) (To Mount 1 to 4 transmitters)

3. Racks shall be constructed on structural members of adequate strength and rigidity to ensure proper support to the mounted instruments and equipment. Racks shall be of welded construction. Each rack shall be provided with a canopy thickness not less than **3mm** to protect the instrument from dripping water or falling objects.

4. All Valves & Manifolds shall be securely mounted and the structural design shall be such that no item shall interfere with maintenance and removal of instrument, equipment and their accessories.

5. Construction of same shall be typically as per enclosed drawing **CE/416/LIE/LIR/OGA2**

6. Service Power and Lighting

   a. Each rack shall be provided with one receptacle, one light fixture with wire guard and one lighting switch. Light fixtures shall be installed on the canopy of the rack.

   b. Power supplies for miscellaneous devices shall be provided with fuses located within the rack JB. Fuses shall be mounted in fuse blocks. Fuse ratings will be given on electrical schematic diagrams. Power supply shall be 240 V AC.

7. Equipment Installation

   Vendor shall prepare rack fabrication and piping drawings indicating the layout of each Rack. Transmitter/Instruments shall be installed using custom fabricated supports which are attached to the vertical members provided for this purpose. Drawings shall indicate the arrangement of all equipment, piping, valves and fittings within the rack and shall be subject to approval.

8. Impulse Piping / Tubing

   a. Transmitter racks shall be complete with impulse tubing piping, valves from enclosure bulkhead connection to all instruments and necessary drain / blow down connections. The type, sizes, material and pressure class of pipes/tubes, fittings, valves etc. shall be suitable for the intended applications as per the Schemes / Tagging list of Instrument, provided by BHEL.

b. Bulkhead connection shall be used when instrument piping/ tubing enters the enclosure through Bulkhead plate. Typically, through Bulk heads, Impulse pipe entry shall be through top side of the Enclosure for Steam and Liquid services.

c. All Instrument Blow down lines, except those measuring vacuum shall be connected to a two-inch header, which is extended through one end of the enclosure and turned downward for directing the blow down into drain.

d. Instrument piping and tubing shall be hydrostatically tested at one and one-half times the maximum Design Pressure(As per Instrument schedule ref:**CE/416/ KHURJA /INS**) for that instrument except for low pressure(Design Pressure below 5.34Kg/Cm2) and vacuum measurement the test pressure will be 8 Kg / Cm2.

9. Wiring of the Racks

a. A fully enclosed IP 65 type junction box shall be provided in each rack for housing the terminal blocks, power supply fuses and other electrical accessories, as required.

b. All electrical connections between instrument and the Terminals in Junction box shall be made. In addition all utility wiring for lighting and service power shall be installed.

c. Vendor shall furnish general arrangement and wiring diagrams for each transmitter rack for approval.

d. Junction boxes for the racks shall be mounted on one end of each assembly & should be inside the Rack to accept field wiring through the bottom of the junction box. The junction box shall be Minimum depth 200 mm. A removable bolted door shall give access to the interior of the junction box. All junction boxes shall accept same key. JB to be of FRP with 4mm thick and IP 65 protection class. Door handle shall be of SS. Self locking type with common key. Door gasket shall be of synthetic rubber. M6 earthing stud shall be provided. TB shall be in multiple of 12 nos.

III. General Requirement applicable to Transmitter Enclosures & Racks :

1. Surface preparation And Painting

a. All sheet metal / exterior steel surfaces shall rust free and scale free and all other residue during fabrication operation such as Oil, grease and salts etc. shall be removed by one or more solvent cleaning methods. Epoxy primer surface shall be applied to all exterior and interior surfaces. Epoxy paint shall be applied to all surfaces and the paint thickness shall be 100 to150 microns. The finish colours for exterior and interior surfaces shall conform to the shades mentioned in scope of supply.

1. Grounding

a. Enclosures and Racks shall be provided with a continuous tinned copper ground bus of minimum 25 mm X 6 mm cross section, extended along the entire length. The ground bus shall have two (2) bolts drilling with GI bolts and nuts at each end.

2. Name plate / Label.

a. Service details and Tag no. shall be engraved on a nameplate or label for each of the Transmitter. These Nameplates or Labels shall be of white non-hygroscopic material with engraved black lettering. This shall be fixed on to the Impulse Pipe closer to the Transimitter inside the Enclosure / Rack.

3. Wiring Details

a. Interconnecting wiring shall be provided between all electrical devices mounted in the panels and between the devices and terminal blocks if the devices are to be connected to equipment outside the panels by cabling. All interior wiring shall be installed neatly and carefully and shall be terminated at suitable terminal blocks in the Junction box. Sufficient clearance shall be provided for all control and instrumentation leads.

b. Each wire shall be identified at both ends with wire designations as per approved wiring diagram. Interlocking type ferrules shall be used for identification.

c. All wire termination shall be made with insulated sleeve and cage clamp type terminals.

d. All signal wiring shall be done with 2 pair, 0.5 sq. mm annealed tinned copper ,pair twisted overall & shielded , voltage grade 225 V , unarmored FRLS PVC sheathed cable and 4 pair, 0.5 sq. mm for PS/DPS. Power wiring shall be with 1.5 sq mm, 1100V.

e. Wires shall be dressed and run in trays or troughs with clamp-on type covers. Wiring may be neatly bunched in-groups by non-metallic cleats or bands. Shield wires shall be terminated on separate terminal blocks.

f. Internal wiring shall follow distinct color coding to segregate different voltage levels viz. 24V DC & 230V AC

g. Junction Box of enclosures will be provided with removable, gasketted cable gland for cable entrance.

4. Fuse Blocks

a. Fuse blocks shall be modular type with bakelite frame and reinforced retaining clips.

5. Terminal Blocks

a. Terminal blocks shall be DIN rail mounted and shall have Cage clamp type connection which shall be maintained for all panels uniformly.

b. The rated cross section of the terminal blocks shall be suitable for connecting 0.5-mm^2/2.5 mm^2. Conductor of suitable voltage grade as specified.

c. Terminal blocks shall be mounted vertically with adequate spacing between rows for routing the cable troughs and to allow adequate free workspace for termination and removal of wires.

d. Terminal blocks shall be provided with white marking strips/self adhesive marker cards.

e. For all instruments one set of spare terminals to be provided below the main terminals.

f. Terminal blocks for termination of electrical power supply shall be type WAGO / PHOENIX make of suitable size with marking strips.

g. The last terminal in a rail-mounted assembly shall be closed with an end plate and end bracket.

h. Terminal blocks shall be provided with multiples of 12 for each Enclosure/Rack.

IV. Documents to be Submitted by Vendor for Approval :

1. OGA for Transmitter Enclosure and Racks.

2. Layout of Components in each of Transmitter Enclosure and Rack.

3. Electrical diagrams for each Transmitter Enclosure and Rack.

4. Component datasheets

5. Quality plan including Welding Procedure specification and Welder Procedure qualification Record. This will be approved by BHEL / (END USER)

6. The quality plan shall include Visual inspection, GA BOM/Layout features verification, Dimensions, Paint shade, thickness measurement, Alignment of sections, component ratings, Wiring, IR, HV, review of TC for instruments / Devices, Accessibility of TBs / Devices, Illumination, Tubing and Degree of protection (Review of type test certificate)

V. Specific requirements

1. Where grouping is not provided for instruments, same shall be indicated during detailed engineering.
2. **SS tubing between valve manifold and transmitter for each service shall be done as per Transmitter model Nos with mounting details will be provided by BHEL EDN.In Case If Transmitter model Nos with mounting details are not received before dispatch, Vendor has to supply tube and tube connectors during commissioning time as per BHEL EDN Instruction.**
3. **Packing should be Wooden packing is must for all the LIR/TTE consignment. Delicate items to be bubble wrapped with sufficient care.**

TECHNICAL REQUIREMENTS FOR TEMPERATURE TRANSMITTER ENCLOSURE/JUNCTION BOX:

1. The Junction Box is provided for mounting Pipe Mounted Temperature Transmitters. This shall be constructed of 1.6 mm thick steel sheet material. These shall confirm to IP 55 protection class.

2. The Junction Box/Enclosure shall be of following sizes (in millimeters).

   Type A – 800(W) x 500(D) x 1100(H) (Shall have Four rows of 2" pipe & 180 terminals)
   Type B - 800(W) x 500(D) x 900(H) (Shall have Three rows of 2" pipe & 150 terminals)
   Type C - 800(W) x 500(D) x 600(H) (Shall have Two rows of 2" pipe & 60 terminals)

3. These shall be reinforced as required to ensure true surfaces and to provide adequate support for instruments and other equipment mounted therein. Doors shall be provided and shall be arranged for maximum possible access to from front and back side of enclosures (as applicable) the module interior. Center posts or any member which would reduce access shall not be provided.

4. The doors shall be the three-point locking type constructed of not less than 1.6 mm steel sheet. Doors shall have concealed quick removal type pinned hinges and locking handles. Junction Box door locks shall accept the same / common key all over the plant. Gaskets shall be used between all mating sections to achieve dust proof enclosure rating. All Junction Box shall have access doors on Front side and back side.

5. All the junction boxes shall be suitable for mounting on walls, columns, structures, free standing type etc. The brackets, nuts, bolts, screws, gland and lugs required for erection are in supplier's scope.

6. Vendor shall furnish general arrangement diagrams for each type of transmitter Junction Box for approval.

7. Surface preparation And Painting

   a. All sheet metal / exterior steel surfaces shall rust free and scale free and all other residue during fabrication operation such as Oil, grease and salts etc. shall be removed by one or more solvent cleaning methods. Epoxy primer surface shall be applied to all exterior and interior surfaces. Epoxy paint shall be applied to all surfaces and the paint thickness shall be 100 to150 microns. The finish colours for exterior and interior surfaces shall conform to the shades mentioned in scope of supply.

8. Terminal Blocks

   a. Terminal blocks shall be DIN rail mounted and shall have Cage clamp type connection which shall be maintained for all panels uniformly.

b. The rated cross section of the terminal blocks shall be suitable for connecting 0.5-mm²/2.5 mm². Conductor of suitable voltage grade as specified.

c. Terminal blocks shall be mounted vertically with adequate spacing between rows for routing the cable troughs and to allow adequate free workspace for termination and removal of wires.

d. Terminal blocks shall be provided with white marking strips/self adhesive marker cards.

e. Terminal blocks for termination of electrical power supply shall be type WAGO / PHOENIX make of suitable size with marking strips.

f. The last terminal in a rail-mounted assembly shall be closed with an end plate and end bracket.

9. <u>Documents to be Submitted by Vendor for Approval :</u>

a. OGA for Junction Box.

b. Layout of Transmitter in each Type of Junction Box.

c. Quality plan. This will be approved by BHEL / (END USER)

d. The quality plan shall include Visual inspection, GA BOM/Layout features verification, Dimensions, Paint shade, thickness measurement, IR, HV, Accessibility of TBs / Devices, Degree of protection (Review of type test certificate)

PROJECT : KHURJA 2 X 660MW STPP TG & ASSOCIATED PACKAGES

CUSTOMER : M/s THDC INDIA PVT LTD

CONSULTANT: M/s NTPC

INSTRUMENT SCHEDULE

REVISIONS :

APPROVED BY

DIPTENDU GHOSH

PREPARED BY	ISSUED	DATE
RAJESH LINGUTLA	416	15/09/22

KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HTA01CP001	Unit-1 Flue Gas Duct Absorber Inlet Pressure Transmitter (Before GGH)	PT	Flue Gas	356	400	mmWC	140	300	24	1	FGD-LIE-001
10HTA01CP002	Unit-1 Flue Gas Duct Absorber Inlet Pressure Transmitter (Before GGH)	PT	Flue Gas	356	400	mmWC	140	300	24	1	FGD-LIE-001
10HTA01CP003	Unit-1 Flue Gas Duct Absorber Inlet Pressure Transmitter (After GGH)	PT	Flue Gas	275	400	mmWC	85	300	24	1	FGD-LIE-001
10HTA01CP004	Unit-1 Flue Gas Duct Absorber Outlet Pressure Transmitter (Before GGH)	PT	Flue Gas	150	400	mmWC	57	60	24	1	FGD-LIE-002
10HTA01CP005	Unit-1 Flue Gas Duct Absorber Outlet Pressure Transmitter (After GGH)	PT	Flue Gas	80	400	mmWC	103.9	300	24	1	FGD-LIE-002
10HTA01CP006	Unit-1 Flue Gas Duct Absorber Outlet Pressure Transmitter (After GGH)	PT	Flue Gas	80	400	mmWC	103.9	300	24	1	FGD-LIE-002
10HTD02CF002	Unit-1 Process water to Absorber Flow Transmitter	FT	Process water	4	5	Kg/Cm2	27	50	18		FGD-LIE-003
10HTE02CP001	Unit-1 Process Water Line to Mist Eliminator Pressure Transmitter 1	PT	Process water	4	5	Kg/Cm2	27	50	16		FGD-LIE-004
10HTE02CP002	Unit-1 Process Water Line to Mist Eliminator Pressure Transmitter 2	PT	Process water	4	5	Kg/Cm2	27	50	16		FGD-LIE-004
10HTG02CF002	Unit-1 Process water to JAS System Flow Transmitter 2	FT	Process Water	4	5	Kg/Cm2	27	50	18		FGD-LIE-005
10HTG02CP001	Unit-1 Process water line Pressure Transmitter	PT	Process Water	4	5	Kg/Cm2	27	50	16		FGD-LIE-005
10HTG02CP002	Unit-1 Oxidation Air Blow System Pressure Transmitter	PT	Oxidation Air	1	1.2	Kg/Cm2	100	300	24		FGD-LIE-006
10HTG02CP003	Unit-1 Oxidation Air Blow System Pressure Transmitter	PT	Oxidation Air	1	1.2	Kg/Cm2	100	300	24		FGD-LIE-006
00HTM04CP003	Unit-1 Belt Filter Washing Tank A Pump B Discharge Line Pressure Transmitter	PT	Process water	6.2	7.5	Kg/Cm2	27	50	16		FGD-LIE-007
00HTM04CP004	Unit-1 Belt Filter Washing Tank A Pump Discharge Line Pressure Transmitter	PT	Process water	6.2	7.5	Kg/Cm2	27	50	16		FGD-LIE-007
00HTM04CP005	Unit-1 Cake Washing Tank A Pump A Discharge Line Pressure Transmitter	PT	Process water	5.8	7	Kg/Cm2	27	50	16		FGD-LIE-007
00HTM04CP006	Unit-1 Cake Washing Tank A Pump B Discharge Line Pressure Transmitter	PT	Process water	5.8	7	Kg/Cm2	27	50	16		FGD-LIE-008
00HTM04CP007	Belt filter Washing Tank Pump common discharge Line Pressure Transmitter	PT	Process water	6.2	7.5	Kg/Cm2	27	50	16		FGD-LIE-008
00HTM04CP008	Unit-1 Cake Washing Tank A Pump Line Pressure Transmitter	PT	Process water	5.8	7	Kg/Cm2	27	50	16		FGD-LIE-008
00HTM04CP009	Unit-1 Belt Filter Washing Tank B Pump A Drain Line Pressure Transmitter	PT	Process Water	6.2	7.5	Kg/Cm2	27	50	16		FGD-LIE-009
00HTM04CP010	Unit-1 Belt Filter Washing Tank B Pump B Drain Line Pressure Transmitter	PT	Process Water	6.2	7.5	Kg/Cm2	27	50	16		FGD-LIE-009
00HTM04CP011	Unit-1 Belt Filter Washing Tank B Pump Line Pressure Transmitter	PT	Process Water	6.2	7.5	Kg/Cm2	27	50	16		FGD-LIE-009
00HTM04CP012	Unit-1 Cake Washing Tank B Pump A Drain Line Pressure Transmitter	PT	Process Water	5.8	7	Kg/Cm2	27	50	16		FGD-LIE-010
00HTM04CP013	Unit-1 Cake Washing Tank B Pump B Drain Line Pressure Transmitter	PT	Process Water	5.8	7	Kg/Cm2	27	50	16		FGD-LIE-010
00HTM04CP014	Unit-1 Cake Washing Tank B Pump Line Pressure Transmitter	PT	Process Water	5.8	7	Kg/Cm2	27	50	16		FGD-LIE-010
00HTK05CP001	Unit-1 Limestone Grinding System A Inlet Water Pressure Transmitter	PT	Process water	4	5	Kg/Cm2	27	50	16		FGD-LIE-011
00HTK05CP002	Unit-1 Limestone Grinding System A Inlet Water Pressure Transmitter	PT	Process water	4	5	Kg/Cm2	27	50	16		FGD-LIE-011
00HTK05CP003	Unit-1 Limestone Grinding System A Inlet Water Pressure Transmitter	PT	Process water	4	5	Kg/Cm2	27	50	16		FGD-LIE-011
00HTK05CP004	Unit-1 Limestone Grinding System A Inlet Water Pressure Transmitter	PT	Process water	4	5	Kg/Cm2	27	50	16		FGD-LIE-011
00HTK05CP009	Unit-1 Limestone Grinding System B Inlet Water Pressure Transmitter	PT	Process water	4	5	Kg/Cm2	27	50	16		FGD-LIE-012
00HTK05CP010	Unit-1 Limestone Grinding System B Inlet Water Pressure Transmitter	PT	Process water	4	5	Kg/Cm2	27	50	16		FGD-LIE-012
00HTK05CP011	Unit-1 Limestone Grinding System B Inlet Water Pressure Transmitter	PT	Process water	4	5	Kg/Cm2	27	50	16		FGD-LIE-012
00HTK05CP012	Unit-1 Limestone Grinding System B Inlet Water Pressure Transmitter	PT	Process water	4	5	Kg/Cm2	27	50	16		FGD-LIE-012
10HTA01CP101	Unit-1 Differential Pressure Transmitter across Bypass Damper (From ID Fan A)	DPT	Flue gas	350	650	mmWC	140	300	26	2	FGD-LIE-013
10HTA01CP102	Unit-1 Differential Pressure Transmitter across Bypass Damper (From ID Fan B)	DPT	Flue gas	350	650	mmWC	140	300	26	2	FGD-LIE-013
10HTA01CP103	Unit-1 Differential Pressure Transmitter across Absorber	DPT	Flue gas	350	650	mmWC	140	300	26	2	FGD-LIE-013
10HTA01CP104	Unit-1 Differential Pressure Transmitter across GGH Untreated side	DPT	Flue gas	350	650	mmWC	140	300	26	2	FGD-LIE-013
10HTA01CP105	Unit-1 Differential Pressure Transmitter across GGH treated side	DPT	Flue gas	350	650	mmWC	140	300	26	2	FGD-LIE-013
10HTE2CP001	Unit-1 Mist Eliminator Stage 1 Differential Pressure Transmitter	DPT	Flue gas	70	85	mmWC	27	50	26	2	FGD-LIE-014
10HTE2CP002	Unit-1 Mist Eliminator Stage 2 Differential Pressure Transmitter	DPT	Flue gas	70	85	mmWC	27	50	26	2	FGD-LIE-014
00HTQ08CF001	Unit-1 Process Water Tank Inlet Flow Transmitter	FT	Process water	4	5	Kg/Cm2	27	50	18		FGD-LIE-015
00HTQ08CP001	Unit-1 Process Water Tank Inlet Pressure Transmitter	PT	Process water	5	6	Kg/Cm2	27	50	16		FGD-LIE-015
00HTQ08CP002	Unit-1 Process Water Tank Inlet Pressure Transmitter	PT	Process water	5	6	Kg/Cm2	27	50	16		FGD-LIE-015
00HTQ08CP003	Unit-1 Process Water Pump A Drain Line Pressure Transmitter	PT	Process Water	5	6	Kg/Cm2	27	50	16		FGD-LIE-015
00HTQ08CP004	Unit-1 Process Water Pump B Drain Line Pressure Transmitter	PT	Process Water	5	6	Kg/Cm2	27	50	16		FGD-LIE-015
00HTQ08CP005	Unit-1 ME Wash & Emergency Quench Pump A Drain Line Pressure Transmitter	PT	Process Water	7	8.5	Kg/Cm2	27	50	16		FGD-LIE-016
00HTQ08CP006	Unit-1 ME Wash & Emergency Quench Pump B Drain Line Pressure Transmitter	PT	Process Water	7	8.5	Kg/Cm2	27	50	16		FGD-LIE-016
00HTQ08CP007	Unit-1 Process Water Pumps Pressure Transmitter	PT	Process Water	4	5	Kg/Cm2	27	50	16		FGD-LIE-016
00HTQ08CP008	Unit-1 Process Water Pumps Pressure Transmitter	PT	Process Water	4	5	Kg/Cm2	27	50	16		FGD-LIE-016
10HTQ08CF001	Unit-1 Emergency Quench Tank Inlet Flow Transmitter	FT	Process water	4	5	Kg/Cm2	27	50	18		FGD-LIE-017
10HTQ08CF002	Unit-1 Emergency Quench Tank Outlet Flow Transmitter	FT	Process water	4	5	Kg/Cm2	27	50	18		FGD-LIE-017
10HTQ08CP001	Unit-1 Emergency Quench Tank Inlet Pressure Transmitter	PT	Process water	4	5	Kg/Cm2	27	50	16		FGD-LIE-017
10HTQ08CP002	Unit-1 Emergency Quench Tank Outlet Pressure Transmitter	PT	Process water	4	5	Kg/Cm2	27	50	16		FGD-LIE-017

NOTE:FOR SHCEME NO 16 AND 18 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 OR >=280 Deg C -TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HTA01CT001	Unit-1 Absorber Inlet Temperature Transmitter (Before GGH)	TT-DUAL I/P	Flue Gas								FGD-TTE-001
10HTA01CT002	Unit-1 Absorber Inlet Temperature Transmitter (Before GGH)	TT-DUAL I/P	Flue Gas								FGD-TTE-001
10HTA01CT003	Unit-1 Absorber Inlet Temperature Transmitter (Before GGH)	TT-DUAL I/P	Flue Gas								FGD-TTE-001
10HTA01CT004	Unit-1 Absorber Inlet Temperature Transmitter (After GGH)	TT-DUAL I/P	Flue Gas								FGD-TTE-002
10HTA01CT005	Unit-1 Absorber Inlet Temperature Transmitter (After GGH)	TT-DUAL I/P	Flue Gas								FGD-TTE-002
10HTA01CT006	Unit-1 Absorber Outlet Temperature Transmitter (Before GGH)	TT-DUAL I/P	Flue Gas								FGD-TTE-003
10HTA01CT007	Unit-1 Absorber Outlet Temperature Transmitter (Before GGH)	TT-DUAL I/P	Flue Gas								FGD-TTE-003
10HTA01CT008	Unit-1 Absorber Outlet Temperature Transmitter (Before GGH)	TT-DUAL I/P	Flue Gas								FGD-TTE-003
10HTA01CT009	Unit-1 Absorber Outlet Temperature Transmitter (After GGH)	TT-DUAL I/P	Flue Gas								FGD-TTE-004
10HTA01CT010	Unit-1 Absorber Outlet Temperature Transmitter (After GGH)	TT-DUAL I/P	Flue Gas								FGD-TTE-004
10HTD10CT001	Unit-1 RC Pump-A Motor Winding RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-005
10HTD10CT002	Unit-1 RC Pump-A Motor Winding RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-005
10HTD10CT003	Unit-1 RC Pump-A Motor Winding RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-005
10HTD10CT004	Unit-1 RC Pump-A Motor Winding RTD based Temperature Transmitter 4	TT-DUAL I/P									FGD-TTE-005
10HTD10CT005	Unit-1 RC Pump-A Motor Winding RTD based Temperature Transmitter 5	TT-DUAL I/P									FGD-TTE-005
10HTD10CT006	Unit-1 RC Pump-A Motor Winding RTD based Temperature Transmitter 6	TT-DUAL I/P									FGD-TTE-005
10HTD10CT101	Unit-1 RC Pump-A Motor DE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-006
10HTD10CT102	Unit-1 RC Pump-A Motor DE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-006
10HTD10CT103	Unit-1 RC Pump-A Motor DE Bearing RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-006
10HTD10CT104	Unit-1 RC Pump-A Motor NDE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-006
10HTD10CT105	Unit-1 RC Pump-A Motor NDE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-006
10HTD10CT106	Unit-1 RC Pump-A Motor NDE Bearing RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-006
10HTD10CT201	Unit-1 RC Pump-A DE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-007
10HTD10CT202	Unit-1 RC Pump-A DE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-007
10HTD10CT203	Unit-1 RC Pump-A NDE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-007
10HTD10CT204	Unit-1 RC Pump-A NDE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-007
10HTD20CT001	Unit-1 RC PumP-B Motor Winding RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-008
10HTD20CT002	Unit-1 RC PumP-B Motor Winding RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-008
10HTD20CT003	Unit-1 RC PumP-B Motor Winding RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-008
10HTD20CT004	Unit-1 RC PumP-B Motor Winding RTD based Temperature Transmitter 4	TT-DUAL I/P									FGD-TTE-008
10HTD20CT005	Unit-1 RC PumP-B Motor Winding RTD based Temperature Transmitter 5	TT-DUAL I/P									FGD-TTE-008
10HTD20CT006	Unit-1 RC PumP-B Motor Winding RTD based Temperature Transmitter 6	TT-DUAL I/P									FGD-TTE-008
10HTD20CT101	Unit-1 RC PumP-B Motor DE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-009
10HTD20CT102	Unit-1 RC PumP-B Motor DE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-009
10HTD20CT103	Unit-1 RC PumP-B Motor DE Bearing RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-009
10HTD20CT104	Unit-1 RC PumP-B Motor NDE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-009
10HTD20CT105	Unit-1 RC PumP-B Motor NDE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-009
10HTD20CT106	Unit-1 RC PumP-B Motor NDE Bearing RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-009
10HTD20CT201	Unit-1 RC PumP-B DE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-010
10HTD20CT202	Unit-1 RC PumP-B DE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-010
10HTD20CT203	Unit-1 RC PumP-B NDE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-010
10HTD20CT204	Unit-1 RC PumP-B NDE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-010
10HTD30CT001	Unit-1 RC PumP-C Motor Winding RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-011
10HTD30CT002	Unit-1 RC PumP-C Motor Winding RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-011
10HTD30CT003	Unit-1 RC PumP-C Motor Winding RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-011
10HTD30CT004	Unit-1 RC PumP-C Motor Winding RTD based Temperature Transmitter 4	TT-DUAL I/P									FGD-TTE-011
10HTD30CT005	Unit-1 RC PumP-C Motor Winding RTD based Temperature Transmitter 5	TT-DUAL I/P									FGD-TTE-011
10HTD30CT006	Unit-1 RC PumP-C Motor Winding RTD based Temperature Transmitter 6	TT-DUAL I/P									FGD-TTE-011
10HTD30CT101	Unit-1 RC PumP-C Motor DE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-012
10HTD30CT102	Unit-1 RC PumP-C Motor DE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-012
10HTD30CT103	Unit-1 RC PumP-C Motor DE Bearing RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-012
10HTD30CT104	Unit-1 RC PumP-C Motor NDE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-012
10HTD30CT105	Unit-1 RC PumP-C Motor NDE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-012

NOTE:FOR SHCEME NO 16 AND 18 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 OR >=280 Deg C -TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HTD30CT106	Unit-1 RC PumP-C Motor NDE Bearing RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-012
10HTD30CT201	Unit-1 RC PumP-C DE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-013
10HTD30CT202	Unit-1 RC PumP-C DE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-013
10HTD30CT203	Unit-1 RC PumP-C NDE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-013
10HTD30CT204	Unit-1 RC PumP-C NDE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-013
10HTD40CT001	Unit-1 RC PumP-D Motor Winding RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-014
10HTD40CT002	Unit-1 RC PumP-D Motor Winding RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-014
10HTD40CT003	Unit-1 RC PumP-D Motor Winding RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-014
10HTD40CT004	Unit-1 RC PumP-D Motor Winding RTD based Temperature Transmitter 4	TT-DUAL I/P									FGD-TTE-014
10HTD40CT005	Unit-1 RC PumP-D Motor Winding RTD based Temperature Transmitter 5	TT-DUAL I/P									FGD-TTE-014
10HTD40CT006	Unit-1 RC PumP-D Motor Winding RTD based Temperature Transmitter 6	TT-DUAL I/P									FGD-TTE-014
10HTD40CT101	Unit-1 RC PumP-D Motor DE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-015
10HTD40CT102	Unit-1 RC PumP-D Motor DE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-015
10HTD40CT103	Unit-1 RC PumP-D Motor DE Bearing RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-015
10HTD40CT104	Unit-1 RC PumP-D Motor NDE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-015
10HTD40CT105	Unit-1 RC PumP-D Motor NDE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-015
10HTD40CT106	Unit-1 RC PumP-D Motor NDE Bearing RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-015
10HTD40CT201	Unit-1 RC PumP-D DE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-016
10HTD40CT202	Unit-1 RC PumP-D DE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-016
10HTD40CT203	Unit-1 RC PumP-D NDE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-016
10HTD40CT204	Unit-1 RC PumP-D NDE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-016
10HTG10CT001	Unit-1 Oxidation Blower-A Motor Winding RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-017
10HTG10CT002	Unit-1 Oxidation Blower-A Motor Winding RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-017
10HTG10CT003	Unit-1 Oxidation Blower-A Motor Winding RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-017
10HTG10CT004	Unit-1 Oxidation Blower-A Motor Winding RTD based Temperature Transmitter 4	TT-DUAL I/P									FGD-TTE-017
10HTG10CT005	Unit-1 Oxidation Blower-A Motor Winding RTD based Temperature Transmitter 5	TT-DUAL I/P									FGD-TTE-017
10HTG10CT006	Unit-1 Oxidation Blower-A Motor Winding RTD based Temperature Transmitter 6	TT-DUAL I/P									FGD-TTE-017
10HTG10CT101	Unit-1 Oxidation Blower-A Motor DE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-018
10HTG10CT102	Unit-1 Oxidation Blower-A Motor DE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-018
10HTG10CT103	Unit-1 Oxidation Blower-A Motor DE Bearing RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-018
10HTG10CT104	Unit-1 Oxidation Blower-A Motor NDE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-018
10HTG10CT105	Unit-1 Oxidation Blower-A Motor NDE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-018
10HTG10CT106	Unit-1 Oxidation Blower-A Motor NDE Bearing RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-018
10HTG10CT201	Unit-1 Oxidation Blower-A DE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-019
10HTG10CT202	Unit-1 Oxidation Blower-A DE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-019
10HTG10CT203	Unit-1 Oxidation Blower-A NDE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-019
10HTG10CT204	Unit-1 Oxidation Blower-A NDE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-019
10HTG20CT001	Unit-1 Oxidation Blower-B Motor Winding RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-020
10HTG20CT002	Unit-1 Oxidation Blower-B Motor Winding RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-020
10HTG20CT003	Unit-1 Oxidation Blower-B Motor Winding RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-020
10HTG20CT004	Unit-1 Oxidation Blower-B Motor Winding RTD based Temperature Transmitter 4	TT-DUAL I/P									FGD-TTE-020
10HTG20CT005	Unit-1 Oxidation Blower-B Motor Winding RTD based Temperature Transmitter 5	TT-DUAL I/P									FGD-TTE-020
10HTG20CT006	Unit-1 Oxidation Blower-B Motor Winding RTD based Temperature Transmitter 6	TT-DUAL I/P									FGD-TTE-020
10HTG20CT101	Unit-1 Oxidation Blower-B Motor DE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-021
10HTG20CT102	Unit-1 Oxidation Blower-B Motor DE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-021
10HTG20CT103	Unit-1 Oxidation Blower-B Motor DE Bearing RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-021
10HTG20CT104	Unit-1 Oxidation Blower-B Motor NDE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-021
10HTG20CT105	Unit-1 Oxidation Blower-B Motor NDE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-021
10HTG20CT106	Unit-1 Oxidation Blower-B Motor NDE Bearing RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-021
10HTG20CT201	Unit-1 Oxidation Blower-B DE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-022
10HTG20CT202	Unit-1 Oxidation Blower-B DE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-022
10HTG20CT203	Unit-1 Oxidation Blower-B NDE Bearing RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-022
10HTG20CT204	Unit-1 Oxidation Blower-B NDE Bearing RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-022

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KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
00HTK10CT001	Unit-1 Ball Mill Motor-A Winding RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-023
00HTK10CT002	Unit-1 Ball Mill Motor-A Winding RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-023
00HTK10CT003	Unit-1 Ball Mill Motor-A Winding RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-023
00HTK10CT004	Unit-1 Ball Mill Motor-A Winding RTD based Temperature Transmitter 4	TT-DUAL I/P									FGD-TTE-023
00HTK10CT005	Unit-1 Ball Mill Motor-A Winding RTD based Temperature Transmitter 5	TT-DUAL I/P									FGD-TTE-023
00HTK10CT006	Unit-1 Ball Mill Motor-A Winding RTD based Temperature Transmitter 6	TT-DUAL I/P									FGD-TTE-023
00HTK10CT101	Unit-1 Ball Mill Motor-A Bearing DE RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-024
00HTK10CT102	Unit-1 Ball Mill Motor-A Bearing DE RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-024
00HTK10CT103	Unit-1 Ball Mill Motor-A Bearing DE RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-024
00HTK10CT104	Unit-1 Ball Mill Motor-A Bearing NDE RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-024
00HTK10CT105	Unit-1 Ball Mill Motor-A Bearing NDE RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-024
00HTK10CT106	Unit-1 Ball Mill Motor-A Bearing NDE RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-024
00HTK10CT201	Unit-1 Ball Mill -A Bearing DE RTD based Temperature Element 1	TT-DUAL I/P									FGD-TTE-025
00HTK10CT202	Unit-1 Ball Mill -A Bearing DE RTD based Temperature Element 2	TT-DUAL I/P									FGD-TTE-025
00HTK10CT203	Unit-1 Ball Mill-A Bearing NDE RTD based Temperature Element 1	TT-DUAL I/P									FGD-TTE-025
00HTK10CT204	Unit-1 Ball Mill -A Bearing NDE RTD based Temperature Element 2	TT-DUAL I/P									FGD-TTE-025
00HTK20CT001	Unit-1 Ball Mill Motor-B Winding RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-026
00HTK20CT002	Unit-1 Ball Mill Motor-B Winding RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-026
00HTK20CT003	Unit-1 Ball Mill Motor-B Winding RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-026
00HTK20CT004	Unit-1 Ball Mill Motor-B Winding RTD based Temperature Transmitter 4	TT-DUAL I/P									FGD-TTE-026
00HTK20CT005	Unit-1 Ball Mill Motor-B Winding RTD based Temperature Transmitter 5	TT-DUAL I/P									FGD-TTE-026
00HTK20CT006	Unit-1 Ball Mill Motor-B Winding RTD based Temperature Transmitter 6	TT-DUAL I/P									FGD-TTE-026
00HTK20CT101	Unit-1 Ball Mill Motor-B Bearing DE RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-027
00HTK20CT102	Unit-1 Ball Mill Motor-B Bearing DE RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-027
00HTK20CT103	Unit-1 Ball Mill Motor-B Bearing DE RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-027
00HTK20CT104	Unit-1 Ball Mill Motor-B Bearing NDE RTD based Temperature Transmitter 1	TT-DUAL I/P									FGD-TTE-027
00HTK20CT105	Unit-1 Ball Mill Motor-B Bearing NDE RTD based Temperature Transmitter 2	TT-DUAL I/P									FGD-TTE-027
00HTK20CT106	Unit-1 Ball Mill Motor-B Bearing NDE RTD based Temperature Transmitter 3	TT-DUAL I/P									FGD-TTE-027
00HTK20CT201	Unit-1 Ball Mill -B Bearing DE RTD based Temperature Element 1	TT-DUAL I/P									FGD-TTE-028
00HTK20CT202	Unit-1 Ball Mill -B Bearing DE RTD based Temperature Element 2	TT-DUAL I/P									FGD-TTE-028
00HTK20CT203	Unit-1 Ball Mill-B Bearing NDE RTD based Temperature Element 1	TT-DUAL I/P									FGD-TTE-028
00HTK20CT204	Unit-1 Ball Mill -B Bearing NDE RTD based Temperature Element 2	TT-DUAL I/P									FGD-TTE-028
10HFW20CP001	SEAL AIR FAN DISCHARGE TO COLD PA DIFF. PRESS	DPT	SEAL AIR/ COLD PA	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-01
10HFW20CP002	SEAL AIR FAN DISCHARGE TO COLD PA DIFF. PRESS	DPT	SEAL AIR/ COLD PA	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-01
10HBK15CP001	FURNACE PRESSURE-RIGHT	PT	FLUE GAS	-5	-10	mmWC	1206	1300	30	1	FSSS-LIE-02
10HFE70CP004	HOT PA TO FURNACE DIFF. PRESSURE-RIGHT	DPT	HOT PA/ FLUE GAS	880 / -5	1245 / -10	mmWC	318 / 1206	400 / 1300	32	2	FSSS-LIE-02
10HHL25CP002	WINDBOX TO FURNACE DIFF. PRESSURE-RIGHT	DPT	HOT PA/ FLUE GAS	100 / -5	120/-10	mmWC	316 / 1206	400 / 1300	32	2	FSSS-LIE-02
10HHL25CP003	WINDBOX TO FURNACE DIFF. PRESSURE-RIGHT	DPT	HOT PA/ FLUE GAS	100 / -5	120/-10	mmWC	316 / 1206	400 / 1300	32	2	FSSS-LIE-02
10HBK10CP003	FURNACE PRESSURE-LEFT	PT	FLUE GAS	-5	-10	mmWC	1206	1300	30	1	FSSS-LIE-03
10HFE70CP001	HOT PA TO FURNACE DIFF. PRESSURE-LEFT	DPT	HOT PA/ FLUE GAS	880 / -5	1245 / -10	mmWC	318 / 1206	400 / 1300	32	2	FSSS-LIE-03
10HFE70CP002	HOT PA TO FURNACE DIFF. PRESSURE-LEFT	DPT	HOT PA/ FLUE GAS	880 / -5	1245 / -10	mmWC	318 / 1206	400 / 1300	32	2	FSSS-LIE-03
10HFK10CP002	FURNACE PRESSURE-LEFT	PT	FLUE GAS	-5	-10	mmWC	1206	1300	30	1	FSSS-LIE-03
10HHL20CP002	WINDBOX TO FURNACE DIFF. PRESSURE-LEFT	DPT	HOT PA/ FLUE GAS	100 / -5	120/-10	mmWC	316 / 1206	400 / 1300	32	2	FSSS-LIE-03
10HHQ20CP002	SCANNER AIR FAN OUTLET TO FURNACE DIFF. PRESSURE	DPT	COLD SA/ FLUE GAS	502 / -5	650/-10	mmWC	30 / 1206	53 / 1300	32	2	FSSS-LIE-04
10HHQ20CP003	SCANNER AIR FAN OUTLET TO FURNACE DIFF. PRESSURE	DPT	COLD SA/ FLUE GAS	502 / -5	650/-10	mmWC	30 / 1206	53 / 1300	32	2	FSSS-LIE-04
10HFC01CP001	PULV "A" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-05
10HFC01CP002	PULV "A" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-05
10HFW21CP001	PULV "A" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-05
10HFW21CP002	PULV "A" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-05
10HFW21CP003	PULV "A" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-05
10HFC02CP001	PULV "B" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-06
10HFC02CP002	PULV "B" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-06
10HFW22CP001	PULV "B" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-06

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KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HFW22CP002	PULV "B" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-06
10HFW22CP003	PULV "B" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-06
10HFC03CP001	PULV "C" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-07
10HFC03CP002	PULV "C" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-07
10HFW23CP001	PULV "C" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-07
10HFW23CP002	PULV "C" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-07
10HFW23CP003	PULV "C" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-07
10HFC04CP001	PULV "D" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-08
10HFC04CP002	PULV "D" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-08
10HFW24CP001	PULV "D" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-08
10HFW24CP002	PULV "D" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-08
10HFW24CP003	PULV "D" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-08
10HFC05CP001	PULV "E" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-09
10HFC05CP002	PULV "E" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-09
10HFW25CP001	PULV "E" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-09
10HFW25CP002	PULV "E" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-09
10HFW25CP003	PULV "E" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-09
10HFC06CP001	PULV "F" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-10
10HFC06CP002	PULV "F" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-10
10HFW26CP001	PULV "F" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-10
10HFW26CP002	PULV "F" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-10
10HFW26CP003	PULV "F" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-10
10HFC07CP001	PULV "G" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-11
10HFC07CP002	PULV "G" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-11
10HFW27CP001	PULV "G" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-11
10HFW27CP002	PULV "G" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-11
10HFW27CP003	PULV "G" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-11
10HFC08CP001	PULV "H" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-12
10HFC08CP002	PULV "H" UNDER BOWL/OVER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-12
10HFW28CP001	PULV "H" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-12
10HFW28CP002	PULV "H" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-12
10HFW28CP003	PULV "H" SEAL AIR/UNDER BOWL DIFF. PRESS	DPT	SEAL AIR	989/917	1152/1285	mmWC	35	58	26	2	FSSS-LIE-12
10LBA11CP001	MAIN STEAM PRESSURE-LEFT SIDE LEAD	PT	STEAM	278	294.8	Kg/Cm2	596	613	2		FSSS-LIE-13
10LBA11CP002	MAIN STEAM PRESSURE-LEFT SIDE LEAD	PT	STEAM	278	294.8	Kg/Cm2	596	613	2		FSSS-LIE-13
10LBA11CP003	MAIN STEAM PRESSURE-LEFT SIDE LEAD	PT	STEAM	278	294.8	Kg/Cm2	596	613	2		FSSS-LIE-13
10LBA12CP001	MAIN STEAM PRESSURE-RIGHT SIDE LEAD	PT	STEAM	278	294.8	Kg/Cm2	596	613	2		FSSS-LIE-14
10LBA12CP002	MAIN STEAM PRESSURE-RIGHT SIDE LEAD	PT	STEAM	278	294.8	Kg/Cm2	596	613	2		FSSS-LIE-14
10LBA12CP003	MAIN STEAM PRESSURE-RIGHT SIDE LEAD	PT	STEAM	278	294.8	Kg/Cm2	596	613	2		FSSS-LIE-14
10HFW11CT001	SEAL AIR FAN "A" DE TEMP	TT-DUAL I/P	METAL								FSSS-TT-JB-01
10HFW11CT002	SEAL AIR FAN "A" NDE TEMP	TT-DUAL I/P	METAL								FSSS-TT-JB-01
10HFW12CT001	SEAL AIR FAN "B" DE TEMP	TT-DUAL I/P	METAL								FSSS-TT-JB-01
10HFW12CT002	SEAL AIR FAN "B" NDE TEMP	TT-DUAL I/P	METAL								FSSS-TT-JB-01
10HAD10CT001	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-01
10HAD10CT002	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-01
10HAD10CT003	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-01
10HAD10CT004	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-01
10HAD10CT005	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-01
10HAD10CT006	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-01
10HAD10CT007	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-01
10HAD10CT008	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-01
10HAD10CT009	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-01
10HAD10CT010	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-02
10HAD10CT011	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-02

NOTE:FOR SHCEME NO 16 AND 18 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 OR >=280 Deg C -TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HAD10CT012	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-02
10HAD10CT013	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-02
10HAD10CT014	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-02
10HAD10CT015	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-02
10HAD10CT016	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-02
10HAD10CT017	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-02
10HAD10CT018	LEFT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-02
10HAD40CT001	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-03
10HAD40CT002	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-03
10HAD40CT003	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-03
10HAD40CT004	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-03
10HAD40CT005	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-03
10HAD40CT006	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-03
10HAD40CT007	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-03
10HAD40CT008	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-03
10HAD40CT009	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-03
10HAD40CT010	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-04
10HAD40CT011	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-04
10HAD40CT012	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-04
10HAD40CT013	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-04
10HAD40CT014	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-04
10HAD40CT015	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-04
10HAD40CT016	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-04
10HAD40CT017	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-04
10HAD40CT018	RIGHT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-04
10HAD20CT001	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-05
10HAD20CT002	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-05
10HAD20CT003	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-05
10HAD20CT004	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-05
10HAD20CT005	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-05
10HAD20CT006	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-05
10HAD20CT007	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-05
10HAD20CT008	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-05
10HAD20CT009	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-05
10HAD20CT010	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-06
10HAD20CT011	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-06
10HAD20CT012	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-06
10HAD20CT013	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-06
10HAD20CT014	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-06
10HAD20CT015	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-06
10HAD20CT016	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-06
10HAD20CT017	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-06
10HAD20CT018	FRONT SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-06
10HAD30CT001	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-07
10HAD30CT002	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-07
10HAD30CT003	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-07
10HAD30CT004	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-07
10HAD30CT005	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-07
10HAD30CT006	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-07
10HAD30CT007	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-07
10HAD30CT008	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-07
10HAD30CT009	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-07
10HAD30CT010	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-08

NOTE:FOR SHCEME NO 16 AND 18 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 OR >=280 Deg C -TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HAD30CT011	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-08
10HAD30CT012	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-08
10HAD30CT013	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-08
10HAD30CT014	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-08
10HAD30CT015	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-08
10HAD30CT016	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-08
10HAD30CT017	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-08
10HAD30CT018	REAR SPIRAL WALL TUBE TEMPERATURE	TT-DUAL I/P	METAL								FSSS-TT-JB-MTM-08
10HFE71CF001	PULV "A" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-001
10HFE71CF002	PULV "A" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-001
10HFE71CF003	PULV "A" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-001
10HFE71CP001	PULV "A" PRIMARY AIR INLET PRESS	PT	HOT PA	676	1045	mmWC	231	300	24	1	LIE-001
10HFE72CF001	PULV "B" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-002
10HFE72CF002	PULV "B" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-002
10HFE72CF003	PULV "B" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-002
10HFE72CP001	PULV "B" PRIMARY AIR INLET PRESS	PT	HOT PA	676	1045	mmWC	231	300	24	1	LIE-002
10HFE73CF001	PULV "C" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-003
10HFE73CF002	PULV "C" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-003
10HFE73CF003	PULV "C" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-003
10HFE73CP001	PULV "C" PRIMARY AIR INLET PRESS	PT	HOT PA	676	1045	mmWC	231	300	24	1	LIE-003
10HFE74CF001	PULV "D" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-004
10HFE74CF002	PULV "D" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-004
10HFE74CF003	PULV "D" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-004
10HFE74CP001	PULV "D" PRIMARY AIR INLET PRESS	PT	HOT PA	676	1045	mmWC	231	300	24	1	LIE-004
10HFE75CF001	PULV "E" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-005
10HFE75CF002	PULV "E" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-005
10HFE75CF003	PULV "E" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-005
10HFE75CP001	PULV "E" PRIMARY AIR INLET PRESS	PT	HOT PA	676	1045	mmWC	231	300	24	1	LIE-005
10HFE76CF001	PULV "F" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-006
10HFE76CF002	PULV "F" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-006
10HFE76CF003	PULV "F" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-006
10HFE76CP001	PULV "F" PRIMARY AIR INLET PRESS	PT	HOT PA	676	1045	mmWC	231	300	24	1	LIE-006
10HFE77CF001	PULV "G" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-007
10HFE77CF002	PULV "G" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-007
10HFE77CF003	PULV "G" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-007
10HFE77CP001	PULV "G" PRIMARY AIR INLET PRESS	PT	HOT PA	676	1045	mmWC	231	300	24	1	LIE-007
10HFE78CF001	PULV "H" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-008
10HFE78CF002	PULV "H" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-008
10HFE78CF003	PULV "H" PRIMARY AIR INLET FLOW	FT	HOT PA	676	1045	mmWC	231	300	26	2	LIE-008
10HFE78CP001	PULV "H" PRIMARY AIR INLET PRESS	PT	HOT PA	676	1045	mmWC	231	300	24	1	LIE-008
10HFW01CP001	DYNAVANE FILTER-A DIFF. PRESS	DPT	COLD PA	917/ 727	1285	mmWC	35	58	26		LIE-009
10HFW02CP001	DYNAVANE FILTER-B DIFF. PRESS	DPT	COLD PA	917/ 727	1285	mmWC	35	58	26		LIE-009
10HFW20CP003	SEAL AIR FAN DISCHARGE PRESS	PT	SEAL AIR	989	1152	mmWC	35	50	24	1	LIE-009
00QEB01CP001	SERVICE AIR HDR PRESS	PT	SERVICE AIR	6	8	Kg/Cm2	40	50	16		LIE-010
00QFB01CP001	INSTRUMENT AIR HDR PRESS	PT	INST. AIR	6	8	Kg/Cm2	40	50	16		LIE-010
01QFA10CP001	INSTRUMENT AIR HDR PRESS	PT	SERV AIR	6	8	Kg/Cm2	40	50	16		LIE-010
01QFB11CP001	SERVICE AIR PRESSURE AT T.P	PT	SERV AIR	6	8	Kg/Cm2	40	50	16		LIE-010
01QFB11CP002	SERVICE AIR PRESSURE AT HEADERS	PT	SERV AIR	6	8	Kg/Cm2	40	50	16		LIE-010
10HBK10CP001	FURNACE PRESSURE-LEFT	PT	FLUE GAS	-5	-10	mmWC	1206	1300	30	1	LIE-011
10HBK10CP004	FURNACE PRESSURE-LEFT	PT	FLUE GAS	-5	-10	mmWC	1206	1300	30	1	LIE-011
10HBK20CP001	FRONT PLATEN SH OUTLET PRESSURE-LEFT	PT	FLUE GAS	-6	-15	mmWC	1097	1200	30	1	LIE-011
10HFE70CP003	HOT PA TO FURNACE DIFF. PRESSURE-LEFT	DPT	HOT PA/ FLUE GAS	880 / -5	1245 / -10	mmWC	318 / 1206	400 / 1300	32	2	LIE-011
10HBK15CP002	FURNACE PRESSURE-RIGHT (WIDE RANGE)	PT	FLUE GAS	-5	-10	mmWC	1206	1300	30	1	LIE-012

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KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HBK15CP003	FURNACE PRESSURE-RIGHT	PT	FLUE GAS	-5	-10	mmWC	1206	1300	30	1	LIE-012
10HBK15CP004	FURNACE PRESSURE-RIGHT	PT	FLUE GAS	-5	-10	mmWC	1206	1300	30	1	LIE-012
10HBK30CP001	REAR PLATEN SH OUTLET PRESSURE-LEFT	PT	FLUE GAS	-7	-15	mmWC	997	1200	30	1	LIE-013
10HBK30CQ001	REAR PLATEN SH OUTLET O2 ANALYSER-LEFT (HIGH TEMPERATURE OXYGEN ANALYSER)	AT	FLUE GAS	-7	-15	mmWC	997	1200			LIE-013
10HBK35CP001	REAR PLATEN SH OUTLET PRESSURE-RIGHT	PT	FLUE GAS	-7	-15	mmWC	997	1200	30	1	LIE-014
10HBK35CQ001	REAR PLATEN SH OUTLET O2 ANALYSER-RIGHT (HIGH TEMPERATURE OXYGEN ANALYSER)	AT	FLUE GAS	-7	-15	mmWC	997	1200			LIE-014
10HBK40CP001	FINISH RH OUTLET PRESSURE-LEFT	PT	FLUE GAS	-8	-16	mmWC	908	1100	30	1	LIE-014
10HBK50CP001	FINISH SH OUTLET PRESSURE-LEFT	PT	FLUE GAS	-13	-30	mmWC	673	900	24	1	LIE-014
10HBK60CP001	LTRH OUTLET PRESSURE-LEFT	PT	FLUE GAS	-55	-70	mmWC	462	700	24	1	LIE-014
10HAH03CP001	WATER SEPARATOR "C" OUTLET PRESS	PT	STEAM	304.6	324.7	Kg/Cm2	435	477	6		LIE-015
10HAH03CP002	WATER SEPARATOR "C" OUTLET PRESS	PT	STEAM	304.6	324.7	Kg/Cm2	435	477	6		LIE-015
10HAH04CP001	WATER SEPARATOR "D" OUTLET PRESS	PT	STEAM	304.6	324.7	Kg/Cm2	435	477	6		LIE-015
10HAH04CP002	WATER SEPARATOR "D" OUTLET PRESS	PT	STEAM	304.6	324.7	Kg/Cm2	435	477	6		LIE-015
10HBK45CP001	FINISH RH OUTLET PRESSURE-RIGHT	PT	FLUE GAS	-8	-16	mmWC	908	1100	30	1	LIE-016
10HBK55CP001	FINISH SH OUTLET PRESSURE-RIGHT	PT	FLUE GAS	-13	-30	mmWC	673	900	24	1	LIE-016
10HBK65CP001	LTRH OUTLET PRESSURE-RIGHT	PT	FLUE GAS	-55	-70	mmWC	462	700	24	1	LIE-016
10HFE10CP011	PA FAN-A INLET PRESSURE AT SUCTION CHAMBER	PT	COLD PA	-16	-25	mmWC	27	50	24		LIE-017
10HFE10CP012	PA FAN-A DIFF. PRESSURE BETWEEN SUCTION CHAMBER & UPSTREAM OF IMPELLER	DPT	COLD PA	-16	-25	mmWC	27	50	26		LIE-017
10HFE10CP013	PA FAN-A OUTLET PRESSURE AT DIFFUSER	PT	COLD PA	929	1295	mmWC	35	58	24		LIE-017
10HFE15CP011	PA FAN-B INLET PRESSURE AT SUCTION CHAMBER	PT	COLD PA	-16	-25	mmWC	27	50	24		LIE-018
10HFE15CP012	PA FAN-B DIFF. PRESSURE BETWEEN SUCTION CHAMBER & UPSTREAM OF IMPELLER	DPT	COLD PA	-16	-25	mmWC	27	50	26		LIE-018
10HFE15CP013	PA FAN-B OUTLET PRESSURE AT DIFFUSER	PT	COLD PA	929	1295	mmWC	35	58	24		LIE-018
10HFE30CP001	AH-A PA INLET PRESSURE	PT	COLD PA	917	1285	mmWC	35	58	24		LIE-019
10HFE35CP001	AH-B PA INLET PRESSURE	PT	COLD PA	917	1285	mmWC	35	58	24		LIE-019
10HFE40CP001	AH-A PA OUTLET PRESSURE	PT	HOT PA	880	1245	mmWC	318	400	24	1	LIE-020
10HFE45CP001	AH-B PA OUTLET PRESSURE	PT	HOT PA	880	1245	mmWC	318	400	24	1	LIE-020
10HAJ22CP001	LINK FROM RH DESH-B PRESS	PT	STEAM	58.8	71	Kg/Cm2	544	555	6		LIE-021
10LAE22CF001	RH / DSH "B" SPRAY WATER FLOW	FT	WATER		210	Kg/Cm2		546	14		LIE-021
10LAE22CF002	RH / DSH "B" SPRAY WATER FLOW	FT	WATER		210	Kg/Cm2		546	14		LIE-021
10HAH71CP001	LINK FROM SH DESH-1A PRESS	PT	STEAM	291.9	309.7	Kg/Cm2	485	508	6		LIE-022
10HAH72CP001	LINK FROM SH DESH-1B PRESS	PT	STEAM	291.9	309.7	Kg/Cm2	485	508	6		LIE-022
10HHL10CF001	SA TO WINDBOX FLOW-LEFT	FT	HOT SA	112	260	mmWC	316	400	26	2	LIE-023
10HHL10CF002	SA TO WINDBOX FLOW-LEFT	FT	HOT SA	112	260	mmWC	316	400	26	2	LIE-023
10HHL10CF003	SA TO WINDBOX FLOW-LEFT	FT	HOT SA	112	260	mmWC	316	400	26	2	LIE-023
10HHL15CF001	SA TO WINDBOX FLOW-RIGHT	FT	HOT SA	112	260	mmWC	316	400	26	2	LIE-024
10HHL15CF002	SA TO WINDBOX FLOW-RIGHT	FT	HOT SA	112	260	mmWC	316	400	26	2	LIE-024
10HHL15CF003	SA TO WINDBOX FLOW-RIGHT	FT	HOT SA	112	260	mmWC	316	400	26	2	LIE-024
10HHQ10CP001	SCANNER AIR FILTER DIFF. PRESSURE	DPT	COLD SA	252	400	mmWC	30	53	26		LIE-025
10HHQ20CP001	SCANNER AIR FAN OUTLET PRESSURE	PT	COLD SA	502	650	mmWC	30	53	24		LIE-025
10HLB10CP011	FD FAN-A INLET PRESSURE AT SUCTION CHAMBER	PT	COLD SA	-13	-30	mmWC	27	50	24		LIE-026
10HLB10CP012	FD FAN-A DIFF. PRESSURE BETWEEN SUCTION CHAMBER & UPSTREAM OF IMPELLER	DPT	COLD SA	-13	-30	mmWC	27	50	26		LIE-026
10HLB10CP013	FD FAN-A OUTLET PRESSURE AT DIFFUSER	PT	COLD SA	252	400	mmWC	30	53	24		LIE-026
10HLB15CP011	FD FAN-B INLET PRESSURE AT SUCTION CHAMBER	PT	COLD SA	-13	-30	mmWC	27	50	24		LIE-027
10HLB15CP012	FD FAN-B DIFF. PRESSURE BETWEEN SUCTION CHAMBER & UPSTREAM OF IMPELLER	DPT	COLD SA	-13	-30	mmWC	27	50	26		LIE-027
10HLB15CP013	FD FAN-B OUTLET PRESSURE AT DIFFUSER	PT	COLD SA	252	400	mmWC	30	53	24		LIE-027
10HNA21CP001	ECONOMISER OUTLET PRESSURE-LEFT	PT	FLUE GAS	-87	-140	mmWC	346	400	24	1	LIE-028
10HNA21CQ001	ECONOMISER OUTLET O2 ANALYSER-LEFT	AT	FLUE GAS	-87	-140	mmWC	346	400			LIE-028
10HNA21CQ002	ECONOMISER OUTLET O2 ANALYSER-LEFT	AT	FLUE GAS	-87	-140	mmWC	346	400			LIE-028
10HNA21CT001	ECONOMISER OUTLET TEMP-LEFT	Cr-Al	FLUE GAS	-87	-140	mmWC	346	400			LIE-028
10HNA22CP001	ECONOMISER OUTLET PRESSURE-RIGHT	PT	FLUE GAS	-87	-140	mmWC	346	400	24	1	LIE-029
10HNA22CQ001	ECONOMISER OUTLET O2 ANALYSER-RIGHT	AT	FLUE GAS	-87	-140	mmWC	346	400			LIE-029
10HNA22CQ002	ECONOMISER OUTLET O2 ANALYSER-RIGHT	AT	FLUE GAS	-87	-140	mmWC	346	400			LIE-029
10HNA30CP001	AH-A FLUE GAS OUTLET PRESSURE	PT	FLUE GAS	-403	-738	mmWC	129	150	24	1	LIE-030

NOTE:FOR SHCEME NO 16 AND 18 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 OR >=280 Deg C -TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HNA30CQ001	AH-A FLUE GAS OUTLET O2 ANALYSER	AT	FLUE GAS	-403	-738	mmWC	129	150			LIE-030
10HNA30CQ002	AH-A FLUE GAS OUTLET O2 ANALYSER	AT	FLUE GAS	-403	-738	mmWC	129	150			LIE-030
10HNA35CP001	AH-B FLUE GAS OUTLET PRESSURE	PT	FLUE GAS	-403	-738	mmWC	129	150	24	1	LIE-031
10HNA35CQ001	AH-B FLUE GAS OUTLET O2 ANALYSER	AT	FLUE GAS	-403	-738	mmWC	129	150			LIE-031
10HNA35CQ002	AH-B FLUE GAS OUTLET O2 ANALYSER	AT	FLUE GAS	-403	-738	mmWC	129	150			LIE-031
10HAD82CL001	SEPARATOR STRG TANK "B" LEVEL	LT	WATER	305.5	326.9	Kg/Cm2	435	477	8		LIE-032
10HAD82CL002	SEPARATOR STRG TANK "B" LEVEL	LT	WATER	305.5	326.9	Kg/Cm2	435	477	8		LIE-032
10HAD82CL003	SEPARATOR STRG TANK "B" LEVEL	LT	WATER	305.5	326.9	Kg/Cm2	435	477	8		LIE-032
10HAD82CP001	SEPARATOR STRG TANK "B" PRESS	PT	WATER	305.5	326.9	Kg/Cm2	435	477	6		LIE-032
10HAD82CP002	SEPARATOR STRG TANK "B" PRESS	PT	WATER	305.5	326.9	Kg/Cm2	435	477	6		LIE-032
10HBK25CP001	FRONT PLATEN SH OUTLET PRESSURE-RIGHT	PT	FLUE GAS	-6	-15	mmWC	1097	1200	30	1	LIE-033
10HFE70CP005	HOT PA TO FURNACE DIFF. PRESSURE-RIGHT	DPT	HOT PA/ FLUE GAS	880 / -5	1245 / -10	mmWC	318 / 1206	400 / 1300	32	2	LIE-033
10HFE70CP006	HOT PA TO FURNACE DIFF. PRESSURE-RIGHT	DPT	HOT PA/ FLUE GAS	880 / -5	1245 / -10	mmWC	318 / 1206	400 / 1300	32	2	LIE-033
10HAC10CF001	ECON INLET FW FLOW ACROSS FLOW ELEMENT	FT	WATER	328	344.2	Kg/Cm2	307	348	14		LIE-034
10HAC10CF002	ECON INLET FW FLOW ACROSS FLOW ELEMENT	FT	WATER	328	344.2	Kg/Cm2	307	348	14		LIE-034
10HAC10CF003	ECON INLET FW FLOW ACROSS FLOW ELEMENT	FT	WATER	328	344.2	Kg/Cm2	307	348	14		LIE-034
10HAC10CP001	ECON INLET FW PRESS AFTER FLOW ELEMENT	PT	WATER	328	344.2	Kg/Cm2	307	348	12		LIE-034
10HAC20CP001	ECON OUTLET PRESS	PT	WATER	321.9	343.4	Kg/Cm2	345	385	12		LIE-034
10HAG15CP002	DIFF. PRESS ACROSS STARTUP SYSTEM MIXING PIECE	DPT	WATER	328.4	350.1	Kg/Cm2	307	348	14		LIE-035
10HAG25CP001	DIFF. PRESS ACROSS BOILER WATER CIRCULATION PUMP (BWCP)	DPT	WATER	163.9	350.1	Kg/Cm2	307	348	14		LIE-035
10HAG25CP002	DIFF. PRESS ACROSS BOILER WATER CIRCULATION PUMP (BWCP)	DPT	WATER	163.9	350.1	Kg/Cm2	307	348	14		LIE-035
10HAG25CP003	DIFF. PRESS ACROSS BOILER WATER CIRCULATION PUMP (BWCP)	DPT	WATER	163.9	350.1	Kg/Cm2	307	348	14		LIE-035
10HAH26CP001	LINK TO SH FRONT PLATEN INLET HDR- PRESS	PT	STEAM	300.5	316.2	Kg/Cm2	447	471	6		LIE-036
10HAH26CP002	LINK TO SH FRONT PLATEN INLET HDR- PRESS	PT	STEAM	300.5	316.2	Kg/Cm2	447	471	6		LIE-036
10HAH91CP001	LINK FROM SH DESH-2A PRESS	PT	STEAM	284.2	302	Kg/Cm2	528	538	6		LIE-036
10HAH92CP001	LINK FROM SH DESH-2B PRESS	PT	STEAM	284.2	302	Kg/Cm2	528	538	6		LIE-036
10LAE91CF001	STAGE II SH / DSH "A" SPRAY WATER FLOW	FT	WATER		302	Kg/Cm2		536	14		LIE-037
10LAE91CF002	STAGE II SH / DSH "A" SPRAY WATER FLOW	FT	WATER		302	Kg/Cm2		536	14		LIE-037
10LAE92CF001	STAGE II SH / DSH "B" SPRAY WATER FLOW	FT	WATER		302	Kg/Cm2		536	14		LIE-037
10LAE92CF002	STAGE II SH / DSH "B" SPRAY WATER FLOW	FT	WATER		302	Kg/Cm2		536	14		LIE-037
10HAH01CP001	WATER SEPARATOR "A" OUTLET PRESS	PT	STEAM	304.6	324.7	Kg/Cm2	435	477	6		LIE-038
10HAH01CP002	WATER SEPARATOR "A" OUTLET PRESS	PT	STEAM	304.6	324.7	Kg/Cm2	435	477	6		LIE-038
10HAH02CP001	WATER SEPARATOR "B" OUTLET PRESS	PT	STEAM	304.6	324.7	Kg/Cm2	435	477	6		LIE-038
10HAH02CP002	WATER SEPARATOR "B" OUTLET PRESS	PT	STEAM	304.6	324.7	Kg/Cm2	435	477	6		LIE-038
10LAE71CF001	STAGE I SH / DSH "A" SPRAY WATER FLOW	FT	WATER		309.7	Kg/Cm2		493	14		LIE-039
10LAE71CF002	STAGE I SH / DSH "A" SPRAY WATER FLOW	FT	WATER		309.7	Kg/Cm2		493	14		LIE-039
10LAE72CF001	STAGE I SH / DSH "B" SPRAY WATER FLOW	FT	WATER		309.7	Kg/Cm2		493	14		LIE-039
10LAE72CF002	STAGE I SH / DSH "B" SPRAY WATER FLOW	FT	WATER		309.7	Kg/Cm2		493	14		LIE-039
10HAJ21CP001	LINK FROM RH DESH-A PRESS	PT	STEAM	58.8	71	Kg/Cm2	544	555	6		LIE-040
10LAE21CF001	RH / DSH "A" SPRAY WATER FLOW	FT	WATER		210	Kg/Cm2		546	14		LIE-040
10LAE21CF002	RH / DSH "A" SPRAY WATER FLOW	FT	WATER		210	Kg/Cm2		546	14		LIE-040
10HAD81CL001	SEPARATOR STRG TANK "A" LEVEL	LT	WATER	305.5	326.9	Kg/Cm2	435	477	8		LIE-041
10HAD81CL002	SEPARATOR STRG TANK "A" LEVEL	LT	WATER	305.5	326.9	Kg/Cm2	435	477	8		LIE-041
10HAD81CL003	SEPARATOR STRG TANK "A" LEVEL	LT	WATER	305.5	326.9	Kg/Cm2	435	477	8		LIE-041
10HAD81CP001	SEPARATOR STRG TANK "A" PRESS	PT	WATER	305.5	326.9	Kg/Cm2	435	477	6		LIE-041
10HAD81CP002	SEPARATOR STRG TANK "A" PRESS	PT	WATER	305.5	326.9	Kg/Cm2	435	477	6		LIE-041
10HAG11CL001	SEPARATOR STRG TANK DNCOMER "A" LEVEL	LT	WATER	305.5	326.9	Kg/Cm2	435	477	8		LIE-042
10HAG12CL001	SEPARATOR STRG TANK DNCOMER "B" LEVEL	LT	WATER	305.5	326.9	Kg/Cm2	435	477	8		LIE-042
10HAG15CP001	WTR STORAGE TANK DOWNCOMER PRESS	PT	WATER	305.5	326.9	Kg/Cm2	435	477	6		LIE-042
10HAG15CT001	WTR STORAGE TANK DOWNCOMER TEMP	Cr-Al	WATER	305.5	326.9	Kg/Cm2	435	477			LIE-042
10HJF50CP002	LIGHT OIL SUPPLY STRAINER DIFF. PRESS	DPT	LDO	19.5	25	Kg/Cm2	40	40	18		LIR-001
10HJF50CP006	LIGHT OIL HDR SUPPLY PRESS	PT	LDO	15	15	Kg/Cm2	40	40	16		LIR-001
10HJF50CP007	LIGHT OIL HDR SUPPLY PRESS	PT	LDO	15	15	Kg/Cm2	40	40	16		LIR-001

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KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10PAB50BP001	ACW DISCH HDR FLOW	UFT	ACW	3.6	7.5	Kg/Cm2	36	60			LIR-002
10PAB50CP011	ACW DISCH HDR PRESS	PT	ACW	3.6	7.5	Kg/Cm2	36	60	16		LIR-002
10PAB50CP012	ACW DISCH HDR PRESS	PT	ACW	3.6	7.5	Kg/Cm2	36	60	16		LIR-002
10PAB50CP013	ACW DISCH HDR PRESS	PT	ACW	3.6	7.5	Kg/Cm2	36	60	16		LIR-002
10GBK00CL011	DMCW O/H TANK LVL	LT	DMCW		10	Kg/Cm2		60	18		LIR-003
10GBK00CL012	DMCW O/H TANK LVL	LT	DMCW		10	Kg/Cm2		60	18		LIR-003
10PGC00CP011	TG DMCW PUMP SUC HDR PRESS	PT	DMCW	2.6	10	Kg/Cm2	44.4	60	16		LIR-004
10PGC00CP012	TG DMCW PUMP SUC HDR PRESS	PT	DMCW	2.6	10	Kg/Cm2	44.4	60	16		LIR-004
10PGC00CP013	TG DMCW PUMP SUC HDR PRESS	PT	DMCW	2.6	10	Kg/Cm2	44.4	60	16		LIR-004
10PGC01CP011	TG DMCW PUMP-A DISCH PRESS	PT	DMCW	6.3	10	Kg/Cm2	44.4	60	16		LIR-005
10PGC01CP012	TG DMCW PUMP-A DISCH PRESS	PT	DMCW	6.3	10	Kg/Cm2	44.4	60	16		LIR-005
10PGC10CP011	TG DMCW PUMP DISCH HDR PRESS	PT	DMCW	6.3	10	Kg/Cm2	44.4	60	16		LIR-006
10PGC10CP012	TG DMCW PUMP DISCH HDR PRESS	PT	DMCW	6.3	10	Kg/Cm2	44.4	60	16		LIR-006
10PGC10CP013	TG DMCW PUMP DISCH HDR PRESS	PT	DMCW	6.3	10	Kg/Cm2	44.4	60	16		LIR-006
10PGC10CQ011	pH AT TG DMCW PUMP DISCH HDR	PHT	DM								LIR-006
10LBC01CP011	CRH STM PRESS AT RH I/L-LEFT	PT	Steam	62.13	73.1	Kg/Cm2	359	375	16		LIR-007
10PGC20CF011	TG PHE DISCH HDR FLOW TO OIL COOLERS	FT	DMCW	5.2	10	Kg/Cm2	39	60	18		LIR-008
10PGC20CP011	TG PHE DISCH HDR PRESS TO OIL COOLERS	PT	DMCW	5.2	10	Kg/Cm2	39	60	16		LIR-008
10PGC30CP011	SG DMCW SUC HDR PRESS	PT	DMCW	2.6	12	Kg/Cm2	44.5	60	16		LIR-009
10PGC30CP012	SG DMCW SUC HDR PRESS	PT	DMCW	2.6	12	Kg/Cm2	44.5	60	16		LIR-009
10PGC41CP011	DMCW DP ACROSS PHE-A(SG)	DPT	DMCW	8.5	12	Kg/Cm2	44.5	60	18		LIR-009
10PGC42CP011	DMCW DP ACROSS PHE-B (SG)	DPT	DMCW	8.5	12	Kg/Cm2	44.5	60	18		LIR-009
10PGC40CF011	SG DMCW PUMPS DISCH HDR FLOW AFTER PHE	FT	DMCW	7.4	12	Kg/Cm2	39	60	18		LIR-010
10PGC40CP011	SG DMCW PUMPS DISCH HDR PRESS	PT	DMCW	8.5	12	Kg/Cm2	44.5	60	16		LIR-010
10PGC40CP012	SG DMCW PUMPS DISCH HDR PRESS	PT	DMCW	8.5	12	Kg/Cm2	44.5	60	16		LIR-010
10PGC40CP013	SG DMCW PUMPS DISCH HDR PRESS AFTER PHE	PT	DMCW	7.4	12	Kg/Cm2	39	60	16		LIR-010
10LBA10CP011	MS EQUALISING LINE PRESS	PT	Steam	270	294.8	Kg/Cm2	593	601	2		LIR-011
10LBA10CP012	MS EQUALISING LINE PRESS	PT	Steam	270	294.8	Kg/Cm2	593	601	2		LIR-011
10LBA10CP013	MS EQUALISING LINE PRESS	PT	Steam	270	294.8	Kg/Cm2	593	601	2		LIR-011
10LBS41CP011	EXT STM PRESS AT LPH-5 I/L	PT	Steam	5.82	7	Kg/Cm2	264	270	10		LIR-012
10LBB02CP011	HRH STM PRESS AT RH O/L - RIGHT	PT	Steam	57.46	67.3	Kg/Cm2	593	601	6		LIR-013
10GBK61CP001	FGD MAKE UP PMP-A DISCH PR	PT	Water	3.2	10	Kg/Cm2	36	60	16		LIR-014
10GBK62CP001	FGD MAKE UP PMP-B DISCH PR	PT	Water	3.2	10	Kg/Cm2	36	60	16		LIR-014
10GBK71CP001	FGD PMPS DISCH HDR PR	PT	Water	3.2	10	Kg/Cm2	36	60	16		LIR-014
10GHD01CP001	AHP/CHP PMP-A DISCH PRESS	PT	Water	4	10	Kg/Cm2	36	60	16		LIR-015
10GHD02CP002	AHP/CHP PMP-B DISCH PRESS	PT	Water	4	10	Kg/Cm2	36	60	16		LIR-015
10GHD21CP001	SERVICE WTR PMP-A DISCH PR	PT	Water	6.2	10	Kg/Cm2	36	60	16		LIR-016
10GHD22CP001	SERVICE WTR PMP-B DISCH PR	PT	Water	6.2	10	Kg/Cm2	36	60	16		LIR-016
10GAD01CP001	RAW WTR INTAKE PMP-B DISCH PR	PT	Water	1.8	10	Kg/Cm2	36	60	16		LIR-017
10GAD02CP001	RAW WTR INTAKE PMP-A DISCH PR	PT	Water	1.8	10	Kg/Cm2	36	60	16		LIR-017
10GAD10CF011	RAW WATER INTAKE PUMPS DISCH HDR FLOW	UFT	Raw Water	1.8	10	Kg/Cm2	36	60			LIR-017
10GAD10CP001	RAW WATER INTAKE PUMPS DISCH header PRESS	PT	Water	1.8	10	Kg/Cm2	36	60	16		LIR-017
10GAD21CP001	AHP PMP-B DISCH PR	PT	Water	3.3	10	Kg/Cm2	36	60	16		LIR-018
10GAD22CP001	AHP PMP-A DISCH PR	PT	Water	3.3	10	Kg/Cm2	36	60	16		LIR-018
10GAD24CF011	AHP PMP DISCH HDR FLOW	UFT	Raw Water	3.3	10	Kg/Cm2	36	60			LIR-018
10GAD24CP001	AHP PMPS DISCH HDR PR	PT	Water	3.3	10	Kg/Cm2	36	60	16		LIR-018
10GAD25CP001	RAW WATER PMP-B DISCH PRESS	PT	Water	3.3	10	Kg/Cm2	36	60	16		LIR-019
10GAD26CP001	RAW WATER PMP-A DISCH PRESS	PT	Water	3.3	10	Kg/Cm2	36	60	16		LIR-019
10GAD28CF011	RAW WTR PMP DISCH HDR FLOW	UFT	Raw Water	3.3	10	Kg/Cm2	36	60			LIR-019
10GAD28CP001	RAW WTR PMP DISCH HDR PR	PT	Water	3.3	10	Kg/Cm2	36	60	16		LIR-019
10GBK01CP001	APH/ESP PMP-A DISCH PR	PT	Water	8	12	Kg/Cm2	36	60	16		LIR-020
10GBK02CP001	APH/ESP PMP-B DISCH PR	PT	Water	8	12	Kg/Cm2	36	60	16		LIR-020
10GBK11CP001	APH/ESP PMPS DISCH HDR PR	PT	Water	8	12	Kg/Cm2	36	60	16		LIR-020

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KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10GBK61CP001	FGD MAKE UP PMP-A DISCH PR	PT	Water	3.2	10	Kg/Cm2	36	60	16		LIR-021
10GBK62CP001	FGD MAKE UP PMP-B DISCH PR	PT	Water	3.2	10	Kg/Cm2	36	60	16		LIR-021
10GBK71CP001	FGD PMPS DISCH HDR PR	PT	Water	3.2	10	Kg/Cm2	36	60	16		LIR-021
10GHD01CP001	AHP/CHP PMP-A DISCH PRESS	PT	Water	4	10	Kg/Cm2	36	60	16		LIR-022
10GHD02CP002	AHP/CHP PMP-B DISCH PRESS	PT	Water	4	10	Kg/Cm2	36	60	16		LIR-022
10GHD11CP001	AHP/CHP PMPS DISCH HDR PR	PT	Water	4	10	Kg/Cm2	36	60	16		LIR-022
10GHD21CP001	SERVICE WTR PMP-A DISCH PR	PT	Water	6.2	10	Kg/Cm2	36	60	16		LIR-023
10GHD22CP001	SERVICE WTR PMP-B DISCH PR	PT	Water	6.2	10	Kg/Cm2	36	60	16		LIR-023
10GHD31CP001	SERVICE WTR PMPS DISCH HDR PR	PT	Water	6.2	10	Kg/Cm2	36	60	16		LIR-023
10PAB01CP001	CW MAKE UP PUMP-A DISCH PRESS	PT	Water	0.45	10	Kg/Cm2	36	60	16		LIR-024
10PAB02CP001	CW MAKE UP PUMP-B DISCH PRESS	PT	Water	0.45	10	Kg/Cm2	36	60	16		LIR-024
10PAB03CP001	CW MAKE UP PUMP-C DISCH PRESS	PT	Water	0.45	10	Kg/Cm2	36	60	16		LIR-024
10PAB11CP001	CW MAKE UP PUMPS DISCH HDR PRESS	PT	Water	0.45	10	Kg/Cm2	36	60	16		LIR-024
10LBB10CP012	HRH EQUALISING LINE PRESS	PT	Steam	57.46	67.3	Kg/Cm2	593	601	6		LIR-025
10PCB04CP011	ACW PMP-A DISCH PRESS	PT	ACW	3.7	7.5	Kg/Cm2	36	60	16		LIR-026
10PCB04CP012	ACW PMP-A DISCH PRESS	PT	ACW	3.7	7.5	Kg/Cm2	36	60	16		LIR-026
10PCB05CP011	ACW PMP-B DISCH PRESS	PT	ACW	3.7	7.5	Kg/Cm2	36	60	16		LIR-026
10PCB05CP012	ACW PMP-B DISCH PRESS	PT	ACW	3.7	7.5	Kg/Cm2	36	60	16		LIR-026
10MAA50CP003	1ST STAGE TURBINE PRESS	PT	Steam	270	294.8	Kg/Cm2	593	601	2		LIR-027
10MAA50CP004	1ST STAGE TURBINE PRESS	PT	Steam	270	294.8	Kg/Cm2	593	601	2		LIR-027
10MAA50CP005	1ST STAGE TURBINE PRESS	PT	Steam	270	294.8	Kg/Cm2	593	601	2		LIR-027
10LCA01CF011	CEP-A DISCH FLOW	FT	COND	33.5	50	Kg/Cm2	44.5	60	18		LIR-028
10LCA01CF012	CEP-A DISCH FLOW	FT	COND	33.5	50	Kg/Cm2	44.5	60	18		LIR-028
10LCA02CF011	CEP-B DISCH FLOW	FT	COND	33.5	50	Kg/Cm2	44.5	60	18		LIR-028
10LCA02CF012	CEP-B DISCH FLOW	FT	COND	33.5	50	Kg/Cm2	44.5	60	18		LIR-028
10LCA03CF011	CEP-C DISCH FLOW	FT	COND	33.5	50	Kg/Cm2	44.5	60	18		LIR-028
10LCA03CF012	CEP-C DISCH FLOW	FT	COND	33.5	50	Kg/Cm2	44.5	60	18		LIR-028
10LCA20CF011	CONDENSATE FLOW AT GSC O/L	FT	COND	33.5	50	Kg/Cm2	44.5	60	18		LIR-029
10LCA20CF012	CONDENSATE FLOW AT GSC O/L	FT	COND	33.5	50	Kg/Cm2	44.5	60	18		LIR-029
10LCA20CP011	PRESS AT GLAND STEAM COND I/L	PT	COND	33.5	50	Kg/Cm2	44.5	60	16		LIR-030
10LCA20CP012	PRESS AT GLAND STEAM COND I/L	PT	COND	33.5	50	Kg/Cm2	44.5	60	16		LIR-030
10LCA20CP013	PRESS AT GLAND STEAM COND I/L	PT	COND	33.5	50	Kg/Cm2	44.5	60	16		LIR-030
10LCA33CP011	VAC GLAND SEAL COND PRESS	PT	COND		3.5	Kg/Cm2		60	16		LIR-031
10LCA33CP012	VAC GLAND SEAL COND PRESS	PT	COND		3.5	Kg/Cm2		60	16		LIR-031
10LCA61CP011	PRESS AT LPH-1 O/L	PT	COND	33.5	50	Kg/Cm2	57.2	90	16		LIR-032
10LCA83CP011	DRIP PUMPS DISCH HDR PRESS	PT	COND	24.71	50	Kg/Cm2	111.3	115	16		LIR-033
10LCA90CF011	COND FLOW TO DEA	FT	COND	33.5	50	Kg/Cm2	153.7	160	18		LIR-034
10LCA90CF012	COND FLOW TO DEA	FT	COND	33.5	50	Kg/Cm2	153.7	160	18		LIR-034
10LCA90CP012	PRESS AT LPH-5 O/L	PT	COND	33.5	50	Kg/Cm2	153.7	160	16		LIR-034
10LCR31CP011	HOTWELL M/U PMP-A DISCH PRESS	PT	DM WTR	8	10	Kg/Cm2	40	50	20		LIR-035
10LCR32CP011	HOTWELL M/U PMP-B DISCH PRESS	PT	DM WTR	8	10	Kg/Cm2	40	50	20		LIR-035
10LCR40CP011	HOTWELL M/U PUMPs DISCH HDR PRESS	PT	DM WTR	8	10	Kg/Cm2	40	50	20		LIR-035
10LCR40CP012	HOTWELL M/U PUMPs DISCH HDR PRESS	PT	DM WTR	8	10	Kg/Cm2	40	50	20		LIR-035
10LCR42CF011	DM WATER TRANSFER PMP HDR FLOW	FT	DM WTR	8	10	Kg/Cm2	40	50	22		LIR-036
10LCR61CP011	DM WATER TRANSFER PMP-B DISCH PRESS	PT	DM WTR	4.5	10	Kg/Cm2	40	50	20		LIR-036
10LCR62CP011	DM WATER TRANSFER PMP-A DISCH PRESS	PT	DM WTR	4.5	10	Kg/Cm2	40	50	20		LIR-036
10LBF10CF011	HPBP-1 STM FLOW	FT	Steam	270	294.8	Kg/Cm2	593	601	4		LIR-037
10LBF10CF012	HPBP-1 STM FLOW	FT	Steam	270	294.8	Kg/Cm2	593	601	4		LIR-037
10LAB43CP011	FW PRESS AT HPH-8 O/L	PT	FW	337.3	390	Kg/Cm2	276.8	290	12		LIR-038
10LBS62CP001	CRH STEAM HEADER PRESS TO BFP TURBINE	PT	Steam	12.2	15	Kg/Cm2	336.1	375	16		LIR-039
10LBS62CP002	CRH STEAM HEADER PRESS TO BFP TURBINE	PT	Steam	12.2	15	Kg/Cm2	336.1	375	16		LIR-039
10LAA01CP011	DEA PRESS	PT	Steam		15	Kg/Cm2	362.5	375	16		LIR-040
10LAA01CP012	DEA PRESS	PT	Steam		15	Kg/Cm2	362.5	375	16		LIR-040

NOTE:FOR SHCEME NO 16 AND 18 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 OR >=280 Deg C -TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10LBQ62CP011	EXT STM PRESS TO HPH-7 DESH	PT	Steam	27.41	32	Kg/Cm2	473.4	475	10		LIR-041
10LBS21CP011	EXT STM PRESS AT LPH-3 I/L	PT	Steam	1.4	3.5	Kg/Cm2	126	130	10		LIR-042
10LBS51CF001	EXT STM FLOW TO DEA	FT	Steam	12.89	15	Kg/Cm2	367.1	375	18		LIR-043
10LBS51CF002	EXT STM FLOW TO DEA	FT	Steam	12.89	15	Kg/Cm2	367.1	375	18		LIR-043
10LBS51CP001	EXT STM PRESS TO DEA	PT	Steam	12.89	15	Kg/Cm2	367.1	375	10		LIR-043
10LBS60CP002	EXT STM PRESS FRM IPT TO DEA	PT	Steam	13.32	15	Kg/Cm2	367.4	375	10		LIR-043
10LAB10CF011	TDBFP-A SUC FLOW	FT	FW	25	40	Kg/Cm2	190	200	18		LIR-044
10LAB10CF012	TDBFP-A SUC FLOW	FT	FW	25	40	Kg/Cm2	190	200	18		LIR-044
10LAB10CP011	TDBFP-A BP SUC PRESS	PT	FW	12.87	20	Kg/Cm2	190	200	16		LIR-044
10LAB20CF011	TDBFP-B SUC FLOW	FT	FW	25	40	Kg/Cm2	190	200	18		LIR-045
10LAB20CF012	TDBFP-B SUC FLOW	FT	FW	25	40	Kg/Cm2	190	200	18		LIR-045
10LAB20CP011	TDBFP-B BP SUC PRESS	PT	FW	12.87	20	Kg/Cm2	190	200	16		LIR-045
10LAB30CF011	MDBFP-C SUC FLOW	FT	FW	25	40	Kg/Cm2	190	200	18		LIR-046
10LAB30CF012	MDBFP-C SUC FLOW	FT	FW	25	40	Kg/Cm2	190	200	18		LIR-046
10LAB30CP011	MDBFP BP SUC PRESS	PT	FW	12.87	20	Kg/Cm2	190	200	16		LIR-046
10LAB40CP014	BFP DISCH HDR PRESS	PT	FW	337.3	390	Kg/Cm2	196	200	12		LIR-047
10LAB42CP011	FW PRESS AT HPH-7 O/L	PT	FW	337.3	390	Kg/Cm2	224.1	230	12		LIR-047
10LAB44CP011	FW PRESS BEF HPH-7 DES HTR	PT	FW	337.3	390	Kg/Cm2	305	315	12		LIR-047
10LAB45CP011	FW PRESS AFT HPH-7 DES HTR	PT	FW	337.3	390	Kg/Cm2	308	320	12		LIR-047
10LAB60CF011	FW FLOW TO ECO	FT	FW	337.3	390	Kg/Cm2	308	320	14		LIR-048
10LAB60CF012	FW FLOW TO ECO	FT	FW	337.3	390	Kg/Cm2	308	320	14		LIR-048
10LAB60CF013	FW FLOW TO ECO	FT	FW	337.3	390	Kg/Cm2	308	320	14		LIR-048
10LBQ72CP001	EXT STM PRESS AT HPH-8 I/L	PT	Steam	62.13	73.1	Kg/Cm2	359	375	10		LIR-049
10LBQ82CP011	EXT STM PRESS AT HPH-9 I/L	PT	Steam	92.34	100	Kg/Cm2	417.9	425	10		LIR-049
10PGC21CF011	TG PHE DISCH HDR PRESS TO BFP AUX	FT	DMCW	5.2	10	Kg/Cm2	39	60	18		LIR-050
10PGC21CP011	TG PHE DISCH HDR PRESS TO BFP AUX	PT	DMCW	5.2	10	Kg/Cm2	39	60	16		LIR-050
10LBS63CF011	EXT STM FLOW TO BFPT-A	FT	Steam	12.87	15	Kg/Cm2	367.1	375	18		LIR-051
10LBS64CF011	EXT STM FLOW TO BFPT-B	FT	Steam	12.87	15	Kg/Cm2	367.1	375	18		LIR-051
10LBB01CP011	HRH STM PRESS AT RH O/L - LEFT	PT	Steam	57.46	67.3	Kg/Cm2	593	601	6		LIR-052
10LBG70CP001	AUX STEAM TO SCAPH INLET PRESS	PT	STEAM	16	20	Kg/Cm2	290	350	16		LIR-053
10LBG80CP001	AUX STEAM PRESSURE FOR MILL INERTING TO MILLS (MILLS : E,F,G & H)	PT	STEAM	16	20	Kg/Cm2	290	350	16		LIR-053
10LBG80CP002	AUX STEAM PRESSURE FOR MILL INERTING TO MILLS (MILLS : A,B,C & D)	PT	STEAM	16	20	Kg/Cm2	290	350	16		LIR-053
10QHX20CL001	EMERGENCY COOLING WATER TANK LEVEL	LT	WATER	6	12	Kg/Cm2	38	60	18		LIR-054
10QHX20CL002	EMERGENCY COOLING WATER TANK LEVEL	LT	WATER	6	12	Kg/Cm2	38	60	18		LIR-054
10LAD21CL011	HPH-7 LVL	LT	COND	58	67	Kg/Cm2		235	18		LIR-055
10LAD21CL012	HPH-7 LVL	LT	COND	58	67	Kg/Cm2		235	18		LIR-055
10LAD22CL013	HPH-7 LVL	LT	COND	58	67	Kg/Cm2		235	18		LIR-055
10LAD42CL011	HPH-8 LVL	LT	COND	58	67	Kg/Cm2		290	18		LIR-056
10LAD42CL012	HPH-8 LVL	LT	COND	58	67	Kg/Cm2		290	18		LIR-056
10LAD42CL013	HPH-8 LVL	LT	COND	58	67	Kg/Cm2		290	18		LIR-056
10LAD62CL011	HPH- 9 LVL	LT	COND	58	67	Kg/Cm2		313	18		LIR-057
10LAD62CL012	HPH- 9 LVL	LT	COND	58	67	Kg/Cm2		313	18		LIR-057
10LAD62CL013	HPH- 9 LVL	LT	COND	58	67	Kg/Cm2		313	18		LIR-057
10LBS31CP011	EXT STM PRESS AT LPH-4 I/L	PT	Steam	3.18	3.5	Kg/Cm2	201.4	205	10		LIR-058
10LCL20CL001	FLASH TANK DRAIN TANK LEVEL	LT	COND	1.1	7.03	Kg/Cm2	110	177	18		LIR-059
10LCL20CL002	FLASH TANK DRAIN TANK LEVEL	LT	COND	1.1	7.03	Kg/Cm2	110	177	18		LIR-059
10LCL20CL003	FLASH TANK DRAIN TANK LEVEL	LT	COND	1.1	7.03	Kg/Cm2	110	177	18		LIR-059
10LCL20CT001	FLASH TANK DRAIN TANK TEMP	PRT-100	COND	1.1	7.03	Kg/Cm2	110	177			LIR-059
10LCL30CF101	CONDENSATE PUMP-A OUTLET FLOW	FT	COND	1.1	7.03	Kg/Cm2	110	177	18		LIR-060
10LCL30CF102	CONDENSATE PUMP-B OUTLET FLOW	FT	COND	1.1	7.03	Kg/Cm2	110	177	18		LIR-060
10LCL30CF103	CONDENSATE PUMP-C OUTLET FLOW	FT	COND	1.1	7.03	Kg/Cm2	110	177	18		LIR-060
10SGA51CP001	FIRE WATER FOR MILL FIRE FIGHTING TO MILLS (MILLS: A,B,C & D)	PT	WATER	8	10	Kg/Cm2	38	60	16		LIR-061
10SGA51CP002	FIRE WATER FOR MILL FIRE FIGHTING TO MILLS (MILLS: E,F,G & H)	PT	WATER	8	10	Kg/Cm2	38	60	16		LIR-061

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KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10QHX20CP003	ECW TANK FILL PUMP DISCHARGE PRESSURE	PT	WATER	6	12	Kg/Cm2	38	60	16		LIR-062
10QHX20CP004	ECW TANK FILL PUMP DISCHARGE PRESSURE	PT	WATER	6	12	Kg/Cm2	38	60	16		LIR-062
10SDA10CP001	PRESSURE AT AIR HEATER WATER WASH LINE	PT	WATER	8	12	Kg/Cm2	38	60	16		LIR-063
10SGA10CP001	PRESSURE AT AIR HEATER FIRE FIGHTING LINE	PT	WATER	8	12	Kg/Cm2	38	60	16		LIR-063
10LCH10CF011	HPH-7 DRAIN FLOW TO DEAERATOR	FT	COND	26.5	32	Kg/Cm2	200	200	18		LIR-064
10LCH10CF012	HPH-7 DRAIN FLOW TO DEAERATOR	FT	COND	26.5	32	Kg/Cm2	200	200	18		LIR-064
10LCA62CP012	PRESS AT DRAIN COOLER I/L	PT	COND	33.5	50	Kg/Cm2	44.5	60	16		LIR-065
10LCA64CP011	PRESS AT LPH-2 I/L	PT	COND	33.5	50	Kg/Cm2	57.2	90	16		LIR-065
10LBF20CF011	HPBP-2 STM FLOW	FT	Steam	270	294.8	Kg/Cm2	593	601	4		LIR-066
10LBF20CF012	HPBP-2 STM FLOW	FT	Steam	270	294.8	Kg/Cm2	593	601	4		LIR-066
10LBG10CF011	MAIN STM FLOW TO APRDS	FT	STEAM	270	294.8	Kg/Cm2	593	601	4		LIR-067
10LBG10CF012	MAIN STM FLOW TO APRDS	FT	STEAM	270	294.8	Kg/Cm2	593	601	4		LIR-067
10LBG10CP011	MAIN STM PRESS TO APRDS	PT	STEAM	270	294.8	Kg/Cm2	593	601	2		LIR-067
10LBG20CF011	CRH STM FLOW TO APRDS	FT	STEAM	64.84	73.1	Kg/Cm2	365.7	375	18		LIR-068
10LBG20CF012	CRH STM FLOW TO APRDS	FT	STEAM	64.84	73.1	Kg/Cm2	365.7	375	18		LIR-068
10LBG20CP011	CRH STM PRESS TO APRDS	PT	AUX. STM	64.84	73.1	Kg/Cm2	365.7	375	16		LIR-068
10LBG30CP011	AUX STM HDR PRESS	PT	AUX. STM	16	20	Kg/Cm2	290	350	16		LIR-069
10LBG30CP012	AUX STM HDR PRESS	PT	AUX. STM	16	20	Kg/Cm2	290	350	16		LIR-069
10LBG30CP013	AUX STM HDR PRESS	PT	AUX. STM	16	20	Kg/Cm2	290	350	16		LIR-069
10GHD30CL011	LEVEL OF POTABLE WATER TANK (AT EL. 25m)	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		LIR-070
10PGC02CP011	TG DMCW PUMP-B DISCH PRESS	PT	DMCW	6.3	10	Kg/Cm2	44.4	60	16		LIR-071
10PGC02CP012	TG DMCW PUMP-B DISCH PRESS	PT	DMCW	6.3	10	Kg/Cm2	44.4	60	16		LIR-071
10PGC03CP011	TG DMCW PUMP-C DISCH PRESS	PT	DMCW	6.3	10	Kg/Cm2	44.4	60	16		LIR-072
10PGC03CP012	TG DMCW PUMP-C DISCH PRESS	PT	DMCW	6.3	10	Kg/Cm2	44.4	60	16		LIR-072
10LBC02CP011	CRH STM PRESS AT RH I/L-RIGHT	PT	Steam	62.13	73.1	Kg/Cm2	359	375	16		LIR-073
10LBC10CP004	HP TURB O/L PRESS AFT CRH NRV	PT	Steam	62.13	73.1	Kg/Cm2	359	375	16		LIR-074
10PGC14CP011	DP ACROSS DMCW FLOW RECIRC LINE FOR TG AUX	DPT	DMCW	5.2	10	Kg/Cm2	39	60	18		LIR-075
10LBQ64CP001	EXT STM PRESS AT HPH-7 I/L	PT	Steam	26.94	32	Kg/Cm2	314.9	320	10		LIR-076
10LCA82CP012	PRESS AT LPH-4 O/L	PT	COND	33.5	50	Kg/Cm2	131.7	160	16		LIR-077
10HHL41CF001	L-SOFA CORNER-1 FLOW TRANSMITTER	FT	HOT SA	112	260	mmWC	316	400	26	2	SADC-LIE-1
10HHL42CF001	L-SOFA CORNER-2 FLOW TRANSMITTER	FT	HOT SA	112	260	mmWC	316	400	26	2	SADC-LIE-1
10HHL43CF001	L-SOFA CORNER-3 FLOW TRANSMITTER	FT	HOT SA	112	260	mmWC	316	400	26	2	SADC-LIE-2
10HHL44CF001	L-SOFA CORNER-4 FLOW TRANSMITTER	FT	HOT SA	112	260	mmWC	316	400	26	2	SADC-LIE-2
10HHL41CF002	H-SOFA LEFT WALL FLOW TRANSMITTER	FT	HOT SA	112	260	mmWC	316	400	26	2	SADC-LIE-3
10HHL44CF002	H-SOFA FRONT WALL FLOW TRANSMITTER	FT	HOT SA	112	260	mmWC	316	400	26	2	SADC-LIE-3
10HHL42CF002	H-SOFA REAR WALL FLOW TRANSMITTER	FT	HOT SA	112	260	mmWC	316	400	26	2	SADC-LIE-4
10HHL43CF002	H-SOFA RIGHT WALL FLOW TRANSMITTER	FT	HOT SA	112	260	mmWC	316	400	26	2	SADC-LIE-4
10HCB03CP001	RAPH "A" SB STEAM PRESS (COLD END)	PT	STEAM	40	50	Kg/Cm2	435	500	12		SB-LIE-01
10HCB03CP002	RAPH "B" SB STEAM PRESS (COLD END)	PT	STEAM	40	50	Kg/Cm2	435	500	12		SB-LIE-01
10HCB03CP003	RAPH "A" SB STEAM PRESS (HOT END)	PT	STEAM	40	50	Kg/Cm2	435	500	12		SB-LIE-01
10HCB03CP004	RAPH "B" SB STEAM PRESS (HOT END)	PT	STEAM	40	50	Kg/Cm2	435	500	12		SB-LIE-01
10HCB01CF001	SB HEADER FLOW	FT	STEAM	40	50	Kg/Cm2	435	500	14		SB-LIE-02
10HCB01CP001	SB HEADER PRESSURE	PT	STEAM	40	50	Kg/Cm2	435	500	12		SB-LIE-02
10HCB01CP002	SB HEADER PRESSURE	PT	STEAM	40	50	Kg/Cm2	435	500	12		SB-LIE-02
10HCB02CF001	SB STEAM TO LRSB RIGHT-FLOW	FT	STEAM	40	50	Kg/Cm2	435	500	14		SB-LIE-03
10HCB04CF001	SB STEAM TO WB RIGHT & REAR-FLOW	FT	STEAM	40	50	Kg/Cm2	435	500	14		SB-LIE-03
10HCB05CF001	SB STEAM TO LRSB LEFT-FLOW	FT	STEAM	40	50	Kg/Cm2	435	500	14		SB-LIE-03
10HCB06CF001	SB STEAM TO WB LEFT & FRONT-FLOW	FT	STEAM	40	50	Kg/Cm2	435	500	14		SB-LIE-03
10HAG25CT001	BWCP CASING TEMP	TT-DUAL I/P	METAL								SG-CWP-TTJBDU-001
10HAG25CT002	BWCP MOTOR CAVITY TEMP	TT-DUAL I/P	WATER								SG-CWP-TTJBDU-001
10HAG25CT003	BWCP MOTOR CAVITY TEMP	TT-DUAL I/P	WATER								SG-CWP-TTJBDU-001
10HAG25CT004	BWCP MOTOR CAVITY TEMP	TT-DUAL I/P	WATER								SG-CWP-TTJBDU-001
10HAG25CT005	BWCP CASING TEMP	TT-DUAL I/P	METAL								SG-CWP-TTJBDU-001

NOTE:FOR SHCEME NO 16 AND 18 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 OR >=280 Deg C -TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HLB10CT002	FD FAN-A MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDA-TTJBDU-001
10HLB10CT005	FD FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDA-TTJBDU-001
10HLB10CT007	FD FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDA-TTJBDU-001
10HLB10CT009	FD FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDA-TTJBDU-001
10HLB10CT018	FD FAN-A BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDA-TTJBDU-001
10HLB10CT021	FD FAN-A BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDA-TTJBDU-001
10HLB10CT024	FD FAN-A BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDA-TTJBDU-001
10HLB10CT034	FD FAN-A MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDA-TTJBDU-001
10HLB15CT002	FD FAN-B MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDB-TTJBDU-001
10HLB15CT005	FD FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDB-TTJBDU-001
10HLB15CT007	FD FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDB-TTJBDU-001
10HLB15CT009	FD FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDB-TTJBDU-001
10HLB15CT018	FD FAN-B BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDB-TTJBDU-001
10HLB15CT021	FD FAN-B BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDB-TTJBDU-001
10HLB15CT024	FD FAN-B BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDB-TTJBDU-001
10HLB15CT034	FD FAN-B MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-FDB-TTJBDU-001
10HNC10CT002	ID FAN-A MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDA-TTJBDU-001
10HNC10CT005	ID FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDA-TTJBDU-001
10HNC10CT007	ID FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDA-TTJBDU-001
10HNC10CT009	ID FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDA-TTJBDU-001
10HNC10CT018	ID FAN-A BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDA-TTJBDU-001
10HNC10CT021	ID FAN-A BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDA-TTJBDU-001
10HNC10CT024	ID FAN-A BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDA-TTJBDU-001
10HNC10CT027	ID FAN-A BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDA-TTJBDU-001
10HNC10CT034	ID FAN-A MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDA-TTJBDU-001
10HNC15CT002	ID FAN-B MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDB-TTJBDU-001
10HNC15CT005	ID FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDB-TTJBDU-001
10HNC15CT007	ID FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDB-TTJBDU-001
10HNC15CT009	ID FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDB-TTJBDU-001
10HNC15CT018	ID FAN-B BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDB-TTJBDU-001
10HNC15CT021	ID FAN-B BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDB-TTJBDU-001
10HNC15CT024	ID FAN-B BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDB-TTJBDU-001
10HNC15CT027	ID FAN-B BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDB-TTJBDU-001
10HNC15CT034	ID FAN-B MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-IDB-TTJBDU-001
10HFC01CT001	PULV "A" MOTOR NDE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-A-TTJBDI-001
10HFC01CT004	PULV "A" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-A-TTJBDI-001
10HFC01CT006	PULV "A" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-A-TTJBDI-001
10HFC01CT008	PULV "A" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-A-TTJBDI-001
10HFC01CT010	PULV "A" MOTOR DE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-A-TTJBDI-001
10HFC02CT001	PULV "B" MOTOR NDE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-B-TTJBDI-001
10HFC02CT004	PULV "B" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-B-TTJBDI-001
10HFC02CT006	PULV "B" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-B-TTJBDI-001
10HFC02CT008	PULV "B" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-B-TTJBDI-001
10HFC02CT010	PULV "B" MOTOR DE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-B-TTJBDI-001
10HFC03CT001	PULV "C" MOTOR NDE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-C-TTJBDI-001
10HFC03CT004	PULV "C" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-C-TTJBDI-001
10HFC03CT006	PULV "C" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-C-TTJBDI-001
10HFC03CT008	PULV "C" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-C-TTJBDI-001
10HFC03CT010	PULV "C" MOTOR DE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-C-TTJBDI-001
10HFC04CT001	PULV "D" MOTOR NDE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-D-TTJBDI-001
10HFC04CT004	PULV "D" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-D-TTJBDI-001
10HFC04CT006	PULV "D" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-D-TTJBDI-001
10HFC04CT008	PULV "D" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-D-TTJBDI-001

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KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HFC04CT010	PULV "D" MOTOR DE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-D-TTJBDI-001
10HFC05CT001	PULV "E" MOTOR NDE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-E-TTJBDI-001
10HFC05CT004	PULV "E" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-E-TTJBDI-001
10HFC05CT006	PULV "E" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-E-TTJBDI-001
10HFC05CT008	PULV "E" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-E-TTJBDI-001
10HFC05CT010	PULV "E" MOTOR DE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-E-TTJBDI-001
10HFC06CT001	PULV "F" MOTOR NDE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-F-TTJBDI-001
10HFC06CT004	PULV "F" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-F-TTJBDI-001
10HFC06CT006	PULV "F" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-F-TTJBDI-001
10HFC06CT008	PULV "F" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-F-TTJBDI-001
10HFC06CT010	PULV "F" MOTOR DE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-F-TTJBDI-001
10HFC07CT001	PULV "G" MOTOR NDE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-G-TTJBDI-001
10HFC07CT004	PULV "G" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-G-TTJBDI-001
10HFC07CT006	PULV "G" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-G-TTJBDI-001
10HFC07CT008	PULV "G" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-G-TTJBDI-001
10HFC07CT010	PULV "G" MOTOR DE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-G-TTJBDI-001
10HFC08CT001	PULV "H" MOTOR NDE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-H-TTJBDI-001
10HFC08CT004	PULV "H" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-H-TTJBDI-001
10HFC08CT006	PULV "H" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-H-TTJBDI-001
10HFC08CT008	PULV "H" MOTOR WINDING TEMP	TT-DUAL I/P	METAL								SG-MILL-H-TTJBDI-001
10HFC08CT010	PULV "H" MOTOR DE BEARING TEMP	TT-DUAL I/P	METAL								SG-MILL-H-TTJBDI-001
10HFE10CT002	PA FAN-A MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAA-TTJBDU-001
10HFE10CT005	PA FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAA-TTJBDU-001
10HFE10CT007	PA FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAA-TTJBDU-001
10HFE10CT009	PA FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAA-TTJBDU-001
10HFE10CT018	PA FAN-A BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAA-TTJBDU-001
10HFE10CT021	PA FAN-A BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAA-TTJBDU-001
10HFE10CT024	PA FAN-A BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAA-TTJBDU-001
10HFE10CT027	PA FAN-A BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAA-TTJBDU-001
10HFE10CT034	PA FAN-A MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAA-TTJBDU-001
10HFE15CT002	PA FAN-B MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAB-TTJBDU-001
10HFE15CT005	PA FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAB-TTJBDU-001
10HFE15CT007	PA FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAB-TTJBDU-001
10HFE15CT009	PA FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAB-TTJBDU-001
10HFE15CT018	PA FAN-B BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAB-TTJBDU-001
10HFE15CT021	PA FAN-B BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAB-TTJBDU-001
10HFE15CT024	PA FAN-B BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAB-TTJBDU-001
10HFE15CT027	PA FAN-B BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAB-TTJBDU-001
10HFE15CT034	PA FAN-B MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P	METAL								SG-PAB-TTJBDU-001
00HTM04CP001	Vacuum Belt Filter A Vacuum receiver Pressure Transmitter	PT	Filtrate Water	1	1	Kg/Cm2	50	60	PT-Capillary		STAND ALONE
00HTM04CP002	Vacuum Belt Filter A Vacuum receiver Pressure Transmitter	PT	Filtrate Water	1	1	Kg/Cm2	50	60	PT-Capillary		STAND ALONE
00QFA10 CP001	INSTRUMENT AIR PRESSURE AT TERMINAL POINT	PT	AIR	6	7	Kg/Cm2	40	50	16		STAND ALONE
00QFB10 CP001	SERVICE AIR PRESSURE AT TERMINAL POINT	PT	AIR	6	8	Kg/Cm2	40	50	16		STAND ALONE
00QHB10CP001	FURNACE PRESSURE	PT	FLUE GAS	178	237	mmWC	1289	1300	30		STAND ALONE
00QHB10CP002	FURNACE PRESSURE	PT	FLUE GAS	178	237	mmWC	1289	1300	30		STAND ALONE
00QHC10CP001	SB MAIN LINE PRESSURE	PT	STEAM	19	25	Kg/Cm2	212	355	16		STAND ALONE
00QHH01CP001	PRESSURE AT STRAINER INLET	PT	LDO	0.0	1	Kg/Cm2	at	at	16		STAND ALONE
00QHH11CP001	DP ACROSS STRAINER A	DPT	LDO	0.0	1	Kg/Cm2	at	at	18		STAND ALONE
00QHH12CP001	DP ACROSS STRAINER B	DPT	LDO	0.0	1	Kg/Cm2	at	at	18		STAND ALONE
00QHH20CP001	PRESSURE AT LDO PUMP OUTLET	PT	LDO	17	17	Kg/Cm2	at	at	16		STAND ALONE
00QHH20CP002	PRESSURE AT LDO PUMP OUTLET	PT	LDO	17	17	Kg/Cm2	at	at	16		STAND ALONE
00QHH40CF001	FLOW BEFORE LOTV	FT	LDO	15.9	16	Kg/Cm2	at	at	18		STAND ALONE
00QHH40CP001	PRESSURE BEFORE LOTV	PT	LDO	15.9	16	Kg/Cm2	at	at	16		STAND ALONE

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KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
00QHH40CP002	PRESSURE AFTER LOTV	PT	LDO	15.9	16	Kg/Cm2	at	at	16		STAND ALONE
00QHH40CP003	PRESSURE AFTER LOTV	PT	LDO	15.9	16	Kg/Cm2	at	at	16		STAND ALONE
00QHH50CP001	ATOMISING AIR HEADER PRESSURE	PT	AIR	6	8	Kg/Cm2	at	at	16		STAND ALONE
00QHH50CP002	ATOMISING AIR HEADER PRESSURE	PT	AIR	6	8	Kg/Cm2	at	at	16		STAND ALONE
00QHL30CF001	AIR FLOW	FT	SEC AIR	389	517	mmWC	30	53	26		STAND ALONE
00QHL30CF002	AIR FLOW	FT	SEC AIR	389	517	mmWC	30	53	26		STAND ALONE
00QHL30CP001	FD FAN OUTLET PRESSURE	PT	SEC AIR	419	561	mmWC	30	53	24		STAND ALONE
00QHL40CP001	DP ACROSS WINDBOX & FURNACE	DPT	SEC AIR/FLUE GAS	200	517/ 237	mmWC	30/ 1289	53/ 1300	26		STAND ALONE
00QHN10CP001	BOILER BANK OUTLET PRESSURE	PT	FLUE GAS	65	84	mmWC	360	370	24		STAND ALONE
00QHX10 CP001	COOLING WATER SYSTEM INLET PRESSURE	PT	WATER	6	8	Kg/Cm2	40	50	16		STAND ALONE
00QLA01 CL001	FEED WATER STORAGE TANK LEVEL	LT	WATER	1.23	3	Kg/Cm2	105	135	18		STAND ALONE
00QLA01 CL002	FEED WATER STORAGE TANK LEVEL	LT	WATER	1.23	3	Kg/Cm2	105	135	18		STAND ALONE
00QLA01 CP001	FEED STORAGE TANK PR.	PT	WATER	1.23	3	Kg/Cm2	105	135	16		STAND ALONE
00QLA20 CF001	BFP DISCHARGE FLOW - COMMON	FT	WATER	38	45	Kg/Cm2	105	140	18		STAND ALONE
00QLA20 CP001	BFP DISCHARGE PRESSURE	PT	WATER	38	45	Kg/Cm2	105	140	16		STAND ALONE
00QLA20 CP002	BFP DISCHARGE PRESSURE BEFORE FCV.	PT	WATER	38	45	Kg/Cm2	105	140	16		STAND ALONE
00QLA20 CP003	BFP DISCHARGE PRESSURE AFT. FCV.	PT	WATER	38	45	Kg/Cm2	105	140	16		STAND ALONE
00QLA30 CP001	DM WATER PUMP DISCHARGE PRESSURE	PT	WATER	5	20	Kg/Cm2	40	50	16		STAND ALONE
00QLB10CL001	DRUM LEVEL	LT	WATER/ STEAM	22.4	25	Kg/Cm2	220	253	8		STAND ALONE
00QLB10CL002	DRUM LEVEL	LT	WATER/ STEAM	22.4	25	Kg/Cm2	220	253	8		STAND ALONE
00QLB10CP001	DRUM PRESSURE	PT	WATER/ STEAM	22.4	25	Kg/Cm2	220	253	16		STAND ALONE
00QLB30 CF001	MAIN STEAM FLOW	FT	STEAM	19	22	Kg/Cm2	290	310	18		STAND ALONE
00QLB30 CP001	MAIN STEAM PRESSURE	PT	STEAM	19	22	Kg/Cm2	290	310	16		STAND ALONE
00QLB30 CP002	STEAM TO DEAERATOR PRESSURE	PT	STEAM	2	3	Kg/Cm2	220	290	16		STAND ALONE
10GBK11CF001	APH/ESP DISCH HDR FLOW	FT	Raw Water	8	12	Kg/Cm2	36	60	18		STAND ALONE
10GBK71CF001	FGD MAKE UP PUMP DISCH HDR FLOW	FT	Raw Water	3.2	10	Kg/Cm2	36	60	18		STAND ALONE
10GHD10CL011	LEVEL OF SERVICE WATER TANK (AT EL. 25m)	LT	WATER	Atmospheric	10	Kg/Cm2	80	100	18		STAND ALONE
10GHD11CF001	AHP/CHP PUMPS DISCH HDR FLOW	FT	Raw Water	4	10	Kg/Cm2	36	60	18		STAND ALONE
10GHD20CL011	LEVEL OF SERVICE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD20CL012	LEVEL OF SERVICE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD20CL013	LEVEL OF SERVICE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD20CL014	LEVEL OF SERVICE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD20CL015	LEVEL OF SERVICE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD20CL016	LEVEL OF SERVICE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD20CL017	LEVEL OF SERVICE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD20CL018	LEVEL OF SERVICE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD20CL019	LEVEL OF SERVICE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD20CL020	LEVEL OF SERVICE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD20CL021	LEVEL OF SERVICE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD20CL022	LEVEL OF SERVICE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD31CF001	SERVICE WATER PUMPS DISCH HDR FLOW	FT	Raw Water	6.2	10	Kg/Cm2	36	60	18		STAND ALONE
10GHD40CL011	LEVEL OF POTABLE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD40CL012	LEVEL OF POTABLE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD40CL013	LEVEL OF POTABLE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD40CL014	LEVEL OF POTABLE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD40CL015	LEVEL OF POTABLE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD40CL016	LEVEL OF POTABLE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD40CL017	LEVEL OF POTABLE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD40CL018	LEVEL OF POTABLE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD40CL019	LEVEL OF POTABLE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD40CL020	LEVEL OF POTABLE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD40CL021	LEVEL OF POTABLE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE
10GHD40CL022	LEVEL OF POTABLE WATER TANK OF 2m3	LT	WATER	Atmospheric	10	Kg/Cm2	Ambient	60	18		STAND ALONE

NOTE:FOR SHCEME NO 16 AND 18 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 OR >=280 Deg C -TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HAD81CL003A	SEPARATOR STRG TANK "A" LEVEL	LT	WATER	305.5	326.9	Kg/Cm2	435	477	8		STAND ALONE
10HAD82CL003A	SEPARATOR STRG TANK "B" LEVEL	LT	WATER	305.5	326.9	Kg/Cm2	435	477	8		STAND ALONE
10HHL20CP001	WINDBOX PRESSURE-LEFT	PT	HOT SA	100	120	mmWC	316	400	24	1	STAND ALONE
10HHL25CP001	WINDBOX PRESSURE-RIGHT	PT	HOT SA	100	120	mmWC	316	400	24	1	STAND ALONE
10HJF10CP001	PRESS AT LDO SUCTION STRAINER INLET COMMON LINE	PT	LDO	0	0	Kg/Cm2	40	40	16		STAND ALONE
10HJF10CP002	PRESS AT LDO SUCTION STRAINER INLET COMMON LINE	PT	LDO	0	0	Kg/Cm2	40	40	16		STAND ALONE
10HJF11CP001	DP ACROSS LDO SUCTION STRAINER-A	DPT	LDO	0	6	Kg/Cm2	40	40	18		STAND ALONE
10HJF11CP001	PRESS AT LDO PUMP-A INLET	PT	LDO	(-)0.35	0	Kg/Cm2	40	40	16		STAND ALONE
10HJF12CP001	DP ACROSS LDO SUCTION STRAINER-B	DPT	LDO	0	6	Kg/Cm2	40	40	18		STAND ALONE
10HJF12CP001	PRESS AT LDO PUMP-B INLET	PT	LDO	(-)0.35	0	Kg/Cm2	40	40	16		STAND ALONE
10HJF13CP001	PRESS AT LDO PUMP OUTLET COMMON LINE	PT	LDO	25	30	Kg/Cm2	40	40	16		STAND ALONE
10HJF13CP002	PRESS AT LDO PUMP OUTLET COMMON LINE	PT	LDO	25	30	Kg/Cm2	40	40	16		STAND ALONE
10HJF28CP001	DIFF. PRESS ACROSS PH DO STRAINER	DPT	DRAIN OIL	0	6	Kg/Cm2	40	40	18		STAND ALONE
10HJF50CP001	LIGHT OIL SUPPLY PRESS	PT	LDO	19.5	25	Kg/Cm2	40	40	16		STAND ALONE
10HJF50CP003	LIGHT OIL HDR SUPPLY PRESS	PT	LDO	15	15	Kg/Cm2	40	40	16		STAND ALONE
10HJF50CP004	LIGHT OIL HDR SUPPLY PRESS	PT	LDO	15	15	Kg/Cm2	40	40	16		STAND ALONE
10HJF50CP005	LIGHT OIL HDR SUPPLY PRESS	PT	LDO	15	15	Kg/Cm2	40	40	16		STAND ALONE
10HJF50CP008	LIGHT OIL SUPPLY PRESS	PT	LDO	19.5	19.5	Kg/Cm2	40	40	16		STAND ALONE
10HJF73CP001	DIFF. PRESS ACROSS BF DO STRAINER	DPT	DRAIN OIL	0	6	Kg/Cm2	40	40	18		STAND ALONE
10HJN10CP001	ATOM. AIR HDR PRESS	PT	ATOM. AIR	6	8	Kg/Cm2	40	50	16		STAND ALONE
10HJN10CP002	ATOM. AIR HDR PRESS	PT	ATOM. AIR	6	8	Kg/Cm2	40	50	16		STAND ALONE
10HJN10CP003	ATOM. AIR HDR PRESS	PT	ATOM. AIR	6	8	Kg/Cm2	40	50	16		STAND ALONE
10HJP95CP001	SUMP PUMP DISCHARGE COMMON LINE PRESS	PT	OIL+ WATER	5	5	Kg/Cm2	40	40	16		STAND ALONE
10HLA20CP001	AH-A SA INLET PRESSURE	PT	COLD SA	232	380	mmWC	30	53	24		STAND ALONE
10HLA25CP001	AH-B SA INLET PRESSURE	PT	COLD SA	232	380	mmWC	30	53	24		STAND ALONE
10HLA30CP001	AH-A SA OUTLET PRESSURE	PT	HOT SA	160	310	mmWC	316	400	24	1	STAND ALONE
10HLA35CP001	AH-B SA OUTLET PRESSURE	PT	HOT SA	160	310	mmWC	316	400	24	1	STAND ALONE
10HNA27CP001	AH-A FLUE GAS INLET PRESSURE	PT	FLUE GAS	-300	-677	mmWC	346	400	24	1	STAND ALONE
10HNA28CP001	AH-B FLUE GAS INLET PRESSURE	PT	FLUE GAS	-300	-677	mmWC	346	400	24	1	STAND ALONE
10HNC10CP011	ID FAN-A INLET PRESSURE AT SUCTION CHAMBER	PT	FLUE GAS	-469	-745	mmWC	129	150	24	1	STAND ALONE
10HNC10CP012	ID FAN-A DIFF. PRESSURE BETWEEN SUCTION CHAMBER & UPSTREAM OF IMPELLER	DPT	FLUE GAS	-469	-745	mmWC	129	150	26	2	STAND ALONE
10HNC10CP013	ID FAN-A OUTLET PRESSURE AT DIFFUSER	PT	FLUE GAS	378	620	mmWC	129	150	24	1	STAND ALONE
10HNC12CP001	ID FAN-A SEAL AIR OUTLET PRESS	PT	FLUE GAS						24	1	STAND ALONE
10HNC15CP011	ID FAN-B INLET PRESSURE AT SUCTION CHAMBER	PT	FLUE GAS	-469	-745	mmWC	129	150	24	1	STAND ALONE
10HNC15CP012	ID FAN-B DIFF. PRESSURE BETWEEN SUCTION CHAMBER & UPSTREAM OF IMPELLER	DPT	FLUE GAS	-469	-745	mmWC	129	150	26	2	STAND ALONE
10HNC15CP013	ID FAN-B OUTLET PRESSURE AT DIFFUSER	PT	FLUE GAS	378	620	mmWC	129	150	24	1	STAND ALONE
10LAA01CL011	DEA TANK LVL	LT	COND		15	Kg/Cm2		260	18		STAND ALONE
10LAA01CL012	DEA TANK LVL	LT	COND		15	Kg/Cm2		260	18		STAND ALONE
10LAA02CL011	DEA TANK LVL	LT	COND		15	Kg/Cm2		260	18		STAND ALONE
10LAB41CP011	FW TEMP AT HPH-7 I/L	PT	FW	337.3	390	Kg/Cm2	196.2	200	12		STAND ALONE
10LCA72CP012	PRESS AT LPH-3 O/L	PT	COND	33.5	50	Kg/Cm2	106	130	16		STAND ALONE
10LCR11CP011	BLR FILL PMP-A DISCH PRESS	PT	DM WTR	18	25	Kg/Cm2	40	50	20		STAND ALONE
10LCR12CP011	BLR FILL PMP-B DISCH PRESS	PT	DM WTR	18	25	Kg/Cm2	40	50	20		STAND ALONE
10LCR41CF011	EMER M/U TO HW FLOW	FT	WATER	8	10	Kg/Cm2	40	50	18		STAND ALONE
10PAB01CP011	CW PMP-A DISCH PRESS	PT	WATER	2.6	6	Kg/Cm2	33	60	16		STAND ALONE
10PAB01CP012	CW PMP-A DISCH PRESS	PT	WATER	2.6	6	Kg/Cm2	33	60	16		STAND ALONE
10PAB02CP011	CW PMP-B DISCH PRESS	PT	WATER	2.6	6	Kg/Cm2	33	60	16		STAND ALONE
10PAB02CP012	CW PMP-B DISCH PRESS	PT	WATER	2.6	6	Kg/Cm2	33	60	16		STAND ALONE
10PAB03CP011	CW PUMP-C DISCH PRESS	PT	WATER	2.6	6	Kg/Cm2	33	60	16		STAND ALONE
10PAB03CP012	CW PUMP-C DISCH PRESS	PT	WATER	2.6	6	Kg/Cm2	33	60	16		STAND ALONE
10PAB10CP011	CW PUMPs DISCH HDR PRESS	PT	WATER	2.6	6	Kg/Cm2	33	60	16		STAND ALONE
10PAB10CP012	CW PUMPs DISCH HDR PRESS	PT	WATER	2.6	6	Kg/Cm2	33	60	16		STAND ALONE
10PAB10CP013	CW PUMPs DISCH HDR PRESS	PT	WATER	2.6	6	Kg/Cm2	33	60	16		STAND ALONE

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KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10PAB11CF001	CW MAKE UP PUMPS FLOW	FT	Raw Water	0.45	10	Kg/Cm2	36	60	18		STAND ALONE
10PAB20CP011	DP ACROSS COND-1 R	DPT	WATER	2.45	6	Kg/Cm2	33	60	18		STAND ALONE
10PAB20CP012	DP ACROSS COND-2 R	DPT	WATER	2.25	6	Kg/Cm2	36.68	60	18		STAND ALONE
10PAB25CP011	DP ACROSS COND-1 L	DPT	WATER	2.45	6	Kg/Cm2	33	60	18		STAND ALONE
10PAB25CP012	DP ACROSS COND-2 L	DPT	WATER	2.21	6	Kg/Cm2	36.68	60	18		STAND ALONE
10PAB30CP001	STORM WATER PUMPS I/L HDR PRESS	PT	WATER		10	Kg/Cm2		60	16		STAND ALONE
10PAB31CF011	CW BLOWDOWN FLOW TO ASH WATER TANK	FT	WATER	2	6	Kg/Cm2	70.5	60	18		STAND ALONE
10PCB61CP011	ACW DP ACROSS PHE A FOR SG AUX	DPT	ACW	3.15	7.5	Kg/Cm2	36	60	18		STAND ALONE
10PCB62CP011	ACW DP ACROSS PHE B FOR SG AUX	DPT	ACW	3.15	7.5	Kg/Cm2	36	60	18		STAND ALONE
10PCB63CP011	ACW DP ACROSS PHE A FOR TG AUX	DPT	ACW	3.2	7.5	Kg/Cm2	36	60	18		STAND ALONE
10PCB64CP011	ACW DP ACROSS PHE B FOR TG AUX	DPT	ACW	3.2	7.5	Kg/Cm2	36	60	18		STAND ALONE
10PCB65CP011	ACW DP ACROSS PHE C FOR TG AUX	DPT	ACW	3.2	7.5	Kg/Cm2	36	60	18		STAND ALONE
10PCB71CP011	ACW DP ACRS VAC PMP-1 HE	DPT	ACW	3	7.5	Kg/Cm2	36	60	18		STAND ALONE
10PCB72CP011	ACW DP ACRS VAC PMP-2 HE	DPT	ACW	3	7.5	Kg/Cm2	36	60	18		STAND ALONE
10PCB73CP011	ACW DP ACRS VAC PMP-3 HE	DPT	ACW	3	7.5	Kg/Cm2	36	60	18		STAND ALONE
10PCB74CP011	ACW DP ACRS VAC PMP-4 HE	DPT	ACW	3	7.5	Kg/Cm2	36	60	18		STAND ALONE
10PGC11CP011	DMCW DP ACROSS PHE-A (TG)	DPT	DMCW	6.3	10	Kg/Cm2	44.4	60	18		STAND ALONE
10PGC12CP011	DMCW DP ACROSS PHE-B(TG)	DPT	DMCW	6.3	10	Kg/Cm2	44.4	60	18		STAND ALONE
10PGC13CP011	DMCW DP ACROSS PHE-C (TG)	DPT	DMCW	6.3	10	Kg/Cm2	44.4	60	18		STAND ALONE
10QCL22CP001	OXYGEN BOTTLE-2 O/L PRESS AT DEA O/L	PT	WATER		15	Kg/Cm2	362.5	375	16		STAND ALONE
10QEB01CP001	SERVICE AIR HDR PRESS	PT	SERVICE AIR	8	8.5	Kg/Cm2		50	16		STAND ALONE
10QFA10CP001	INSTRUMENT AIR HDR PRESS	PT	SERV AIR	7	10	Kg/Cm2	38	50	16		STAND ALONE
10QFB01CP001	INSTRUMENT AIR HDR PRESS	PT	INST. AIR	8	8.5	Kg/Cm2		50	16		STAND ALONE
10QFB11CP001	SERVICE AIR PRESSURE AT T.P	PT	SERV AIR	8	10	Kg/Cm2	38	60	16		STAND ALONE
10QFB11CP002	SERVICE AIR PRESSURE AT HEADERS	PT	SERV AIR	8	10	Kg/Cm2	38	60	16		STAND ALONE
10QHX10CP001	CW SUPPLY PRESSURE	PT	WATER	6	12	Kg/Cm2	38	60	16		STAND ALONE
10QHX11CP001	CW RETURN PRESSURE	PT	WATER	5.5	12	Kg/Cm2	40	60	16		STAND ALONE
10HLB10FT027	LUBE OIL TANK TEMP FOR FD FAN-A	TT-DUAL I/P									TT JB-007
10HLB10FT028	FD FAN-A LUBE OIL TEMP	TT-DUAL I/P									TT JB-007
10LCB01FT001	CEP-A THRUST BRG TH PAD TEMP	TT-DUAL I/P									TTE-001
10LCB01FT002	CEP-A THRUST BRG TH PAD TEMP	TT-DUAL I/P									TTE-001
10LCB01FT003	CEP-A THRUST BRG JRNL PAD TEMP	TT-DUAL I/P									TTE-001
10LCB01FT004	CEP-A THRUST BRG OIL TEMP	TT-DUAL I/P									TTE-001
10LCB01FT010	CEP-A MOTOR BEARING METAL TEMP - DE	TT-DUAL I/P									TTE-001
10LCB01FT011	CEP-A MOTOR BEARING METAL TEMP - NDE	TT-DUAL I/P									TTE-001
10LCB01FT012	CEP-A MTR WDG TEMP-R PHASE	TT-DUAL I/P									TTE-001
10LCB01FT014	CEP-A MTR WDG TEMP-Y PHASE	TT-DUAL I/P									TTE-001
10LCB01FT016	CEP-A MTR WDG TEMP-B PHASE	TT-DUAL I/P									TTE-001
10LCB02FT001	CEP-B THRUST BRG TH PAD TEMP	TT-DUAL I/P									TTE-002
10LCB02FT002	CEP-B THRUST BRG TH PAD TEMP	TT-DUAL I/P									TTE-002
10LCB02FT003	CEP-B THRUST BRG JRNL PAD TEMP	TT-DUAL I/P									TTE-002
10LCB02FT004	CEP-B THRUST BRG OIL TEMP	TT-DUAL I/P									TTE-002
10LCB02FT010	CEP-B MOTOR BEARING METAL TEMP - DE	TT-DUAL I/P									TTE-002
10LCB02FT011	CEP-B MOTOR BEARING METAL TEMP - NDE	TT-DUAL I/P									TTE-002
10LCB02FT012	CEP-B MTR WDG TEMP-R PHASE	TT-DUAL I/P									TTE-002
10LCB02FT014	CEP-B MTR WDG TEMP-Y PHASE	TT-DUAL I/P									TTE-002
10LCB02FT016	CEP-B MTR WDG TEMP-B PHASE	TT-DUAL I/P									TTE-002
10LCB03FT001	CEP-C THRUST BRG TH PAD TEMP	TT-DUAL I/P									TTE-003
10LCB03FT002	CEP-C THRUST BRG TH PAD TEMP	TT-DUAL I/P									TTE-003
10LCB03FT003	CEP-C THRUST BRG JRNL PAD TEMP	TT-DUAL I/P									TTE-003
10LCB03FT004	CEP-C THRUST BRG OIL TEMP	TT-DUAL I/P									TTE-003
10LCB03FT010	CEP-C MOTOR BEARING METAL TEMP - DE	TT-DUAL I/P									TTE-003
10LCB03FT011	CEP-C MOTOR BEARING METAL TEMP - NDE	TT-DUAL I/P									TTE-003

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10LCB03FT012	CEP-C MTR WDG TEMP-R PHASE	TT-DUAL I/P									TTE-003
10LCB03FT014	CEP-C MTR WDG TEMP-Y PHASE	TT-DUAL I/P									TTE-003
10LCB03FT016	CEP-C MTR WDG TEMP-B PHASE	TT-DUAL I/P									TTE-003
10LCB10FT001	DRIP PUMP-A JRNL BRG METAL TEMP	TT-DUAL I/P									TTE-004
10LCB10FT002	DRIP PUMP-A THRUST BRG METAL TEMP	TT-DUAL I/P									TTE-004
10LCB10FT003	DRIP PUMP-A THRUST BRG METAL TEMP	TT-DUAL I/P									TTE-004
10LCB10FT004	DRIP PUMP-A THRUST BRG OIL TEMP	TT-DUAL I/P									TTE-004
10LCB10FT010	DRIP PUMP-A MOTOR BEARING METAL TEMP - DE	TT-DUAL I/P									TTE-004
10LCB10FT011	DRIP PUMP-A MOTOR BEARING METAL TEMP - NDE	TT-DUAL I/P									TTE-004
10LCB10FT012	DRIP PUMP-A MTR WDG TEMP-R PHASE	TT-DUAL I/P									TTE-004
10LCB10FT014	DRIP PUMP-A MTR WDG TEMP-Y PHASE	TT-DUAL I/P									TTE-004
10LCB10FT016	DRIP PUMP-A MTR WDG TEMP-B PHASE	TT-DUAL I/P									TTE-004
10LCB20FT001	DRIP PUMP-B JRNL BRG METAL TEMP	TT-DUAL I/P									TTE-005
10LCB20FT002	DRIP PUMP-B THRUST BRG METAL TEMP	TT-DUAL I/P									TTE-005
10LCB20FT003	DRIP PUMP-B THRUST BRG METAL TEMP	TT-DUAL I/P									TTE-005
10LCB20FT004	DRIP PUMP-B THRUST BRG OIL TEMP	TT-DUAL I/P									TTE-005
10LCB20FT010	DRIP PUMP-B MOTOR BEARING METAL TEMP - DE	TT-DUAL I/P									TTE-005
10LCB20FT011	DRIP PUMP-B MOTOR BEARING METAL TEMP - NDE	TT-DUAL I/P									TTE-005
10LCB20FT012	DRIP PUMP-B MTR WDG TEMP-R PHASE	TT-DUAL I/P									TTE-005
10LCB20FT014	DRIP PUMP-B MTR WDG TEMP-Y PHASE	TT-DUAL I/P									TTE-005
10LCB20FT016	DRIP PUMP-B MTR WDG TEMP-B PHASE	TT-DUAL I/P									TTE-005
10LAV32FT001	MTR BRG TEMP BP END	TT-DUAL I/P									TTE-006
10LAV32FT002	MTR BRG TEMP HYD COUPLING END	TT-DUAL I/P									TTE-006
10LAV32FT005	MDBFP-C STATOR WINDING TEMP. (R-PHASE)	TT-DUAL I/P									TTE-006
10LAV32FT008	MDBFP-C STATOR WINDING TEMP. (Y-PHASE)	TT-DUAL I/P									TTE-006
10LAV32FT011	MDBFP-C STATOR WINDING TEMP. (B-PHASE)	TT-DUAL I/P									TTE-006
10PAB01FT101A	CW PUMP-A MTR WINDING TEMP - R	TT-DUAL I/P									TTE-008
10PAB01FT103A	CW PUMP-A MTR WINDING TEMP - Y	TT-DUAL I/P									TTE-008
10PAB01FT105A	CW PUMP-A MTR WINDING TEMP - B	TT-DUAL I/P									TTE-008
10PAB01FT113	CW PUMP-A THRST BRG TEMP	TT-DUAL I/P									TTE-008
10PAB01FT119	CW PUMP-A MTR BRG TEMP - DE	TT-DUAL I/P									TTE-008
10PAB01FT122	CW PUMP-A MTR BRG TEMP - NDE	TT-DUAL I/P									TTE-008
10PAB02FT101A	CW PUMP-B MTR WINDING TEMP - R	TT-DUAL I/P									TTE-009
10PAB02FT103A	CW PUMP-B MTR WINDING TEMP - Y	TT-DUAL I/P									TTE-009
10PAB02FT105A	CW PUMP-B MTR WINDING TEMP - B	TT-DUAL I/P									TTE-009
10PAB02FT113	CW PUMP-B THRST BRG TEMP	TT-DUAL I/P									TTE-009
10PAB02FT119	CW PUMP- B MTR BRG TEMP - DE	TT-DUAL I/P									TTE-009
10PAB02FT122	CW PUMP- B MTR BRG TEMP - NDE	TT-DUAL I/P									TTE-009
10PAB03FT101A	CW PUMP-C MTR WINDING TEMP - R	TT-DUAL I/P									TTE-010
10PAB03FT103A	CW PUMP-C MTR WINDING TEMP - Y	TT-DUAL I/P									TTE-010
10PAB03FT105A	CW PUMP-C MTR WINDING TEMP - B	TT-DUAL I/P									TTE-010
10PAB03FT113	CW PUMP-C THRST BRG TEMP	TT-DUAL I/P									TTE-010
10PAB03FT119	CW PUMP- C MTR BRG TEMP - DE	TT-DUAL I/P									TTE-010
10PAB03FT122	CW PUMP- C MTR BRG TEMP - NDE	TT-DUAL I/P									TTE-010
10PCB04FT101A	ACW PUMP-A MTR WINDING TEMP - R	TT-DUAL I/P									TTE-011
10PCB04FT103A	ACW PUMP-A MTR WINDING TEMP - Y	TT-DUAL I/P									TTE-011
10PCB04FT105A	ACW PUMP-A MTR WINDING TEMP - B	TT-DUAL I/P									TTE-011
10PCB04FT113	ACW PUMP-A THRST BRG TEMP	TT-DUAL I/P									TTE-011
10PCB04FT119	ACW PUMP- A MTR BRG TEMP - DE	TT-DUAL I/P									TTE-011
10PCB04FT122	ACW PUMP- A MTR BRG TEMP - NDE	TT-DUAL I/P									TTE-011
10PCB05FT101A	ACW PUMP-B MTR WINDING TEMP - R	TT-DUAL I/P									TTE-012
10PCB05FT103A	ACW PUMP-B MTR WINDING TEMP - Y	TT-DUAL I/P									TTE-012
10PCB05FT105A	ACW PUMP-B MTR WINDING TEMP - B	TT-DUAL I/P									TTE-012

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10PCB05FT113	ACW PUMP-B THRST BRG TEMP	TT-DUAL I/P									TTE-012
10PCB05FT119	ACW PUMP- B MTR BRG TEMP - DE	TT-DUAL I/P									TTE-012
10PCB05FT122	ACW PUMP- B MTR BRG TEMP - NDE	TT-DUAL I/P									TTE-012
10PGC01FT101A	TG DMCWP-A MTR WNDG TEMP R-PHASE	TT-DUAL I/P									TTE-013
10PGC01FT103A	TG DMCWP-A MTR WNDG TEMP Y-PHASE	TT-DUAL I/P									TTE-013
10PGC01FT105A	TG DMCWP-A MTR WNDG TEMP B-PHASE	TT-DUAL I/P									TTE-013
10PGC01FT119	TG DMCWP-A MTR BRG TEMP -DE	TT-DUAL I/P									TTE-013
10PGC01FT122	TG DMCWP-A MTR BRG TEMP -NDE	TT-DUAL I/P									TTE-013
10PGC02FT101A	TG DMCWP-B MTR WNDG TEMP R-PHASE	TT-DUAL I/P									TTE-014
10PGC02FT103A	TG DMCWP-B MTR WNDG TEMP Y-PHASE	TT-DUAL I/P									TTE-014
10PGC02FT105A	TG DMCWP-B MTR WNDG TEMP B-PHASE	TT-DUAL I/P									TTE-014
10PGC02FT119	TG DMCWP-B MTR BRG TEMP -DE	TT-DUAL I/P									TTE-014
10PGC02FT122	TG DMCWP-B MTR BRG TEMP -NDE	TT-DUAL I/P									TTE-014
10PGC03FT101A	TG DMCWP-C MTR WNDG TEMP R-PHASE	TT-DUAL I/P									TTE-015
10PGC03FT103A	TG DMCWP-C MTR WNDG TEMP Y-PHASE	TT-DUAL I/P									TTE-015
10PGC03FT105A	TG DMCWP-C MTR WNDG TEMP B-PHASE	TT-DUAL I/P									TTE-015
10PGC03FT119	TG DMCWP-C MTR BRG TEMP -DE	TT-DUAL I/P									TTE-015
10PGC03FT122	TG DMCWP-C MTR BRG TEMP -NDE	TT-DUAL I/P									TTE-015
10PGC31FT101A	SG DMCWP-B MTR WNDG TEMP R-PHASE	TT-DUAL I/P									TTE-016
10PGC31FT103A	SG DMCWP-B MTR WNDG TEMP Y-PHASE	TT-DUAL I/P									TTE-016
10PGC31FT105A	SG DMCWP-B MTR WNDG TEMP B-PHASE	TT-DUAL I/P									TTE-016
10PGC31FT119	SG DMCWP-B MTR BRG TEMP -DE	TT-DUAL I/P									TTE-016
10PGC31FT122	SG DMCWP-B MTR BRG TEMP -NDE	TT-DUAL I/P									TTE-016
10PGC32FT119	SG DMCWP-A MTR BRG TEMP -DE	TT-DUAL I/P									TTE-017
10PGC32FT122	SG DMCWP-A MTR BRG TEMP -NDE	TT-DUAL I/P									TTE-017
10GAD01FT101A	RW INTAKE PUMP-B MTR WNDG TEMP R-PHASE	TT-DUAL I/P									TTE-018
10GAD01FT103A	RW INTAKE PUMP-B MTR WNDG TEMP Y-PHASE	TT-DUAL I/P									TTE-018
10GAD01FT105A	RW INTAKE PUMP-B MTR WNDG TEMP B-PHASE	TT-DUAL I/P									TTE-018
10GAD01FT122	RW INTAKE PUMP-B MTR BRG TEMP -NDE	TT-DUAL I/P									TTE-018
10GAD02FT101A	RW INTAKE PUMP-A MTR WNDG TEMP R-PHASE	TT-DUAL I/P									TTE-019
10GAD02FT103A	RW INTAKE PUMP-A MTR WNDG TEMP Y-PHASE	TT-DUAL I/P									TTE-019
10GAD02FT105A	RW INTAKE PUMP-A MTR WNDG TEMP B-PHASE	TT-DUAL I/P									TTE-019
10GAD02FT122	RW INTAKE PUMP-A MTR BRG TEMP -NDE	TT-DUAL I/P									TTE-019
10GAD21FT101A	AHP-B MTR WNDG TEMP R-PHASE	TT-DUAL I/P									TTE-020
10GAD21FT103A	AHP-B MTR WNDG TEMP Y-PHASE	TT-DUAL I/P									TTE-020
10GAD21FT105A	AHP-B MTR WNDG TEMP B-PHASE	TT-DUAL I/P									TTE-020
10GAD21FT122	AHP-B MTR BRG TEMP -NDE	TT-DUAL I/P									TTE-020
10GAD22FT101A	AHP-A MTR WNDG TEMP R-PHASE	TT-DUAL I/P									TTE-021
10GAD22FT103A	AHP-A MTR WNDG TEMP Y-PHASE	TT-DUAL I/P									TTE-021
10GAD22FT105A	AHP-A MTR WNDG TEMP B-PHASE	TT-DUAL I/P									TTE-021
10GAD22FT122	AHP-A MTR BRG TEMP -NDE	TT-DUAL I/P									TTE-021
10GAD25FT101A	RW PUMP-B MTR WNDG TEMP R-PHASE	TT-DUAL I/P									TTE-022
10GAD25FT103A	RW PUMP-B MTR WNDG TEMP Y-PHASE	TT-DUAL I/P									TTE-022
10GAD25FT105A	RW PUMP-B MTR WNDG TEMP B-PHASE	TT-DUAL I/P									TTE-022
10GAD25FT122	RW PUMP-B MTR BRG TEMP -NDE	TT-DUAL I/P									TTE-022
10GAD25FT101A	RW PUMP-A MTR WNDG TEMP R-PHASE	TT-DUAL I/P									TTE-023
10GAD25FT103A	RW PUMP-A MTR WNDG TEMP Y-PHASE	TT-DUAL I/P									TTE-023
10GAD25FT105A	RW PUMP-A MTR WNDG TEMP B-PHASE	TT-DUAL I/P									TTE-023
10GAD26FT122	RW PUMP-A MTR BRG TEMP -NDE	TT-DUAL I/P									TTE-023
10HFE01FT031	PA FAN-A LUBE OIL TEMP	TT-DUAL I/P									TTE-024
10HFE10FT030	LUBE OIL TANK TEMP FOR PA FAN-A	TT-DUAL I/P									TTE-024
10HNC10FT031	LUBE OIL TANK TEMP FOR ID FAN-A	TT-DUAL I/P									TTE-025
10HNC10FT032	ID FAN-A LUBE OIL TEMP	TT-DUAL I/P									TTE-025

NOTE:FOR SHCEME NO 16 AND 18 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 OR >=280 Deg C -TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HNC12FT001	ID FAN-A BRG ROOM TEMP	TT-DUAL I/P									TTE-025
10HNC12FT002	ID FAN-A HYDRAULIC ROOM TEMP	TT-DUAL I/P									TTE-025
10HFE10FT002	PA FAN-A MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-026
10HFE10FT003	PA FAN-A MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-026
10HFE10FT004	PA FAN-A MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-026
10HFE10FT005	PA FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-026
10HFE10FT018	PA FAN-A BEARING TEMPERATURE	TT-DUAL I/P									TTE-026
10HFE10FT034	PA FAN-A MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-026
10HFE10FT035	PA FAN-A MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-026
10HFE10FT036	PA FAN-A MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-026
10HFE10FT007	PA FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-027
10HFE10FT009	PA FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-027
10HFE15FT002	PA FAN-B MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-028
10HFE15FT003	PA FAN-B MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-028
10HFE15FT004	PA FAN-B MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-028
10HFE15FT005	PA FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-028
10HFE15FT018	PA FAN-B BEARING TEMPERATURE	TT-DUAL I/P									TTE-028
10HFE15FT034	PA FAN-B MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-028
10HFE15FT035	PA FAN-B MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-028
10HFE15FT036	PA FAN-B MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-028
10HFE15FT007	PA FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-029
10HFE15FT009	PA FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-029
10HLB10FT002	FD FAN-A MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-030
10HLB10FT003	FD FAN-A MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-030
10HLB10FT004	FD FAN-A MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-030
10HLB10FT005	FD FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-030
10HLB10FT018	FD FAN-A BEARING TEMPERATURE	TT-DUAL I/P									TTE-030
10HLB10FT034	FD FAN-A MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-030
10HLB10FT035	FD FAN-A MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-030
10HLB10FT036	FD FAN-A MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-030
10HLB10FT007	FD FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-031
10HLB10FT009	FD FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-031
10HLB15FT002	FD FAN-B MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-032
10HLB15FT003	FD FAN-B MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-032
10HLB15FT004	FD FAN-B MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-032
10HLB15FT005	FD FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-032
10HLB15FT018	FD FAN-B BEARING TEMPERATURE	TT-DUAL I/P									TTE-032
10HLB15FT034	FD FAN-B MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-032
10HLB15FT035	FD FAN-B MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-032
10HLB15FT036	FD FAN-B MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-032
10HLB15FT007	FD FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-033
10HLB15FT009	FD FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-033
10HNA30FT001	AH-A FLUE GAS OUTLET TEMPERATURE	TT-DUAL I/P									TTE-034
10HNA30FT002	AH-A FLUE GAS OUTLET TEMPERATURE	TT-DUAL I/P									TTE-034
10HNA30FT003	AH-A FLUE GAS OUTLET TEMPERATURE	TT-DUAL I/P									TTE-034
10HNA30FT004	AH-A FLUE GAS OUTLET TEMPERATURE	TT-DUAL I/P									TTE-034
10HNA35FT001	AH-B FLUE GAS OUTLET TEMPERATURE	TT-DUAL I/P									TTE-035
10HNA35FT002	AH-B FLUE GAS OUTLET TEMPERATURE	TT-DUAL I/P									TTE-035
10HNA35FT003	AH-B FLUE GAS OUTLET TEMPERATURE	TT-DUAL I/P									TTE-035
10HNA35FT004	AH-B FLUE GAS OUTLET TEMPERATURE	TT-DUAL I/P									TTE-035
10HNC10FT002	ID FAN-A MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-036
10HNC10FT003	ID FAN-A MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-036
10HNC10FT004	ID FAN-A MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-036

NOTE:FOR SHCEME NO 16 AND 18 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 OR >=280 Deg C -TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10HNC10FT005	ID FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-036
10HNC10FT018	ID FAN-A BEARING TEMPERATURE	TT-DUAL I/P									TTE-036
10HNC10FT034	ID FAN-A MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-036
10HNC10FT035	ID FAN-A MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-036
10HNC10FT036	ID FAN-A MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-036
10HNC10FT007	ID FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-037
10HNC10FT009	ID FAN-A MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-037
10HNC15FT002	ID FAN-B MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-038
10HNC15FT003	ID FAN-B MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-038
10HNC15FT004	ID FAN-B MOTOR NDE BEARING TEMPERATURE	TT-DUAL I/P									TTE-038
10HNC15FT005	ID FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-038
10HNC15FT018	ID FAN-B BEARING TEMPERATURE	TT-DUAL I/P									TTE-038
10HNC15FT034	ID FAN-B MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-038
10HNC15FT035	ID FAN-B MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-038
10HNC15FT036	ID FAN-B MOTOR DE BEARING TEMPERATURE	TT-DUAL I/P									TTE-038
10HNC15FT007	ID FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-039
10HNC15FT009	ID FAN-B MOTOR WINDING TEMPERATURE	TT-DUAL I/P									TTE-039
10HBK10FT001	FURNACE TEMPERATURE PROBE-LEFT	TT-DUAL I/P									TTE-040
10HBK15FT001	FURNACE TEMPERATURE PROBE-RIGHT	TT-DUAL I/P									TTE-041
10PGC32FT101A	SG DMCWP-A MTR WNDG TEMP R-PHASE	TT-DUAL I/P									TTE-042
10PGC32FT103A	SG DMCWP-A MTR WNDG TEMP Y-PHASE	TT-DUAL I/P									TTE-042
10PGC32FT105A	SG DMCWP-A MTR WNDG TEMP B-PHASE	TT-DUAL I/P									TTE-042
10GAD01CT119	RW INTAKE PUMP-B MTR BRG TEMP -DE	TT-DUAL I/P									TTE-043
10GAD02CT119	RW INTAKE PUMP-A MTR BRG TEMP -DE	TT-DUAL I/P									TTE-043
10GAD21CT119	AHP-B MTR BRG TEMP -DE	TT-DUAL I/P									TTE-044
10GAD22CT119	AHP-A MTR BRG TEMP -DE	TT-DUAL I/P									TTE-044
10GAD25CT119	RW PUMP-B MTR BRG TEMP -DE	TT-DUAL I/P									TTE-045
10GAD26CT119	RW PUMP-A MTR BRG TEMP -DE	TT-DUAL I/P									TTE-045
10GBK01CT119	APH/ESP-A MTR BRG MTL TEMP -DE	TT-DUAL I/P									TTE-046
10GBK02CT119	APH/ESP-B MTR BRG MTL TEMP -DE	TT-DUAL I/P									TTE-046
10LCA20FT011	TEMP AT GLAND STM COND I/L	TT-DUAL I/P									TTE-047
10LCA20FT013	TEMP AT GLAND STM COND O/L	TT-DUAL I/P									TTE-047
10LCA61FT011	TEMP AT LPH-1 O/L	TT-DUAL I/P									TTE-048
10LCA62FT015	TEMP AT DRAIN COOLER O/L	TT-DUAL I/P									TTE-049
10LCA64FT011	TEMP AT LPH-2 I/L	TT-DUAL I/P									TTE-050
10LCA64FT012	TEMP AT LPH-2 O/L	TT-DUAL I/P									TTE-050
10LCA72FT011	TEMP AT LPH-3 I/L	TT-DUAL I/P									TTE-051
10LCA72FT012	TEMP AT LPH-3 O/L	TT-DUAL I/P									TTE-051
10LCA82FT011	TEMP AT LPH-4 I/L	TT-DUAL I/P									TTE-052
10LCA82FT012	TEMP AT LPH-4 O/L	TT-DUAL I/P									TTE-052
10LBQ64FT011	EXT STM TEMP AT HPH-7 I/L	TT-DUAL I/P									TTE-053
10LBQ72FT011	EXT STM TEMP AT HPH-8 I/L	TT-DUAL I/P									TTE-053
10LBQ82FT011	EXT STM TEMP AT HPH-9 I/L	TT-DUAL I/P									TTE-053
10LBQ70FT001	EXT STM TEMP FRM IPT TO HPH-7 DESH	TT-DUAL I/P									TTE-054
10LBQ90FT001	EXT STM TEMP FRM HPT	TT-DUAL I/P									TTE-054
10LBS21FT011	EXT STM TEMP AT LPH-3 I/L	TT-DUAL I/P									TTE-055
10LBS30FT001	LP TURB O/L EXT STM TEMP TO LPH-3	TT-DUAL I/P									TTE-055
10LBS31FT011	EXT STM TEMP AT LPH-4 I/L	TT-DUAL I/P									TTE-055
10LBS40FT001	LP TURB O/L EXT STM TEMP TO LPH-4	TT-DUAL I/P									TTE-055
10LBS41FT011	EXT STM TEMP AT LPH-5 I/L	TT-DUAL I/P									TTE-055
10LBS50FT001	EXT STM TEMP FRM IPT TO LPH-5	TT-DUAL I/P									TTE-055
10LBS51FT001	EXT STM TEMP TO DEA	TT-DUAL I/P									TTE-056
10LBS60FT001	EXT STM TEMP FRM IPT TO DEA	TT-DUAL I/P									TTE-056

NOTE:FOR SHCEME NO 16 AND 18 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 OR >=280 Deg C -TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS NO	DESCRIPTION	INST TYPE	MEDIUM	OPER PRESS	DESIGN PRESS	UNIT PRESS	OPER TEMP (Deg C)	DESIGN TEMP (Deg C)	SCHEME NO	PURG	JB/LIE/LIR NO.
10LAB41FT011	FW TEMP AT HPH-7 I/L	TT-DUAL I/P									TTE-057
10LAB44FT011	FW TEMP BEF HPH-7 DES HTR	TT-DUAL I/P									TTE-057
10LAB45FT011	FW TEMP AFT HPH-7 DES HTR	TT-DUAL I/P									TTE-057
10LAB42FT011	FW TEMP AT HPH-8 I/L	TT-DUAL I/P									TTE-058
10LAB43FT011	FW TEMP AT HPH-9 I/L	TT-DUAL I/P									TTE-058
10LCH40FT011	HPH 8 NORMAL DRN TEMP TO HPH 7	TT-DUAL I/P									TTE-059
10LCH60FT011	HPH 9 NORMAL DRN TEMP TO HPH 8	TT-DUAL I/P									TTE-059
10LCJ10FT011	LPH-3 DRN TO DRIP PUMPS TEMP	TT-DUAL I/P									TTE-060
10LCJ20FT011	LPH 2 DRN TEMP TO LPH 1 (U/S OF CV)	TT-DUAL I/P									TTE-060
10LCJ30FT011	LPH 4 DRN TEMP TO LPH-3 (U/S OF CV)	TT-DUAL I/P									TTE-060
10LCJ40FT011	LPH 5 DRN TEMP TO LPH 4 (U/S OF CV)	TT-DUAL I/P									TTE-060
10LCH20FT011	HPH 7 NORMAL DRN TEMP TO DEA	TT-DUAL I/P									TTE-061
10HNC15FT031	LUBE OIL TANK TEMP FOR ID FAN-B	TT-DUAL I/P									TTE-062
10HNC15FT032	ID FAN-B LUBE OIL TEMP	TT-DUAL I/P									TTE-062
10HNC22FT001	ID FAN-B BRG ROOM TEMP	TT-DUAL I/P									TTE-062
10HNC22FT002	ID FAN-B HYDRAULIC ROOM TEMP	TT-DUAL I/P									TTE-062
10HLB15FT027	LUBE OIL TANK TEMP FOR FD FAN-B	TT-DUAL I/P									TTE-063
10HLB15FT028	FD FAN-B LUBE OIL TEMP	TT-DUAL I/P									TTE-063
10HFE15FT030	LUBE OIL TANK TEMP FOR PA FAN-B	TT-DUAL I/P									TTE-064
10HFE15FT031	PA FAN-B LUBE OIL TEMP	TT-DUAL I/P									TTE-064
10LBQ64FT012	HPH 7 DESH TEMP TO FLASH TANK-B	TT-DUAL I/P									TTE-065
10LAV31FT001	MDBFP-C HC BRG - 1 TEMP	TT-DUAL I/P									TTE-066
10LAV31FT002	MDBFP-C HC BRG - 2 TEMP	TT-DUAL I/P									TTE-066
10LAV31FT003	MDBFP-C HC BRG - 3 TEMP	TT-DUAL I/P									TTE-066
10LAV31FT004	MDBFP-C HC BRG - 4 TEMP	TT-DUAL I/P									TTE-066
10LAV31FT005	MDBFP-C HC BRG - 5 TEMP	TT-DUAL I/P									TTE-066
10LAV31FT006	MDBFP-C HC BRG - 6 TEMP	TT-DUAL I/P									TTE-066
10LAV31FT007	MDBFP-C HC BRG - 7 TEMP	TT-DUAL I/P									TTE-066
10LAV31FT008	MDBFP-C HC BRG - 8 TEMP	TT-DUAL I/P									TTE-066
10LAV31FT009	MDBFP-C HC BRG - 9 TEMP	TT-DUAL I/P									TTE-066
10LAV31FT010	MDBFP-C HC BRG - 10 TEMP	TT-DUAL I/P									TTE-066
10LAV31FT011	MDBFP-C HC BRG - 11 TEMP	TT-DUAL I/P									TTE-066
10LAV31FT012	MDBFP-C HC BRG - 12 TEMP	TT-DUAL I/P									TTE-066
10LAV31FT013	MDBFP-C WORKING OIL TEMP UP STREAM OF COOLER	TT-DUAL I/P									TTE-067
10LAV31FT014	MDBFP-C WORKING OIL TEMP UP STREAM OF COOLER	TT-DUAL I/P									TTE-067
10LAV31FT015	MDBFP-C WORKING OIL TEMP UP STREAM OF COOLER	TT-DUAL I/P									TTE-067
10LAV31FT018	MDBFP-C LUB OIL TEMP. DOWN STREAM OF COOLER	TT-DUAL I/P									TTE-067
10LAV31FT019	MDBFP-C LUB OIL TEMP. DOWN STREAM OF COOLER	TT-DUAL I/P									TTE-067
10LAV31FT020	MDBFP-C LUB OIL TEMP. DOWN STREAM OF COOLER	TT-DUAL I/P									TTE-067
10LAV30FT001	MDBFP BRG METAL TEMP - BP THRUST BRG	TT-DUAL I/P									TTE-068
10LAV30FT002	MDBFP BRG METAL TEMP - BP THRUST BRG	TT-DUAL I/P									TTE-068
10LAV30FT003	MDBFP BRG METAL TEMP - BP NDE JRNL BRG	TT-DUAL I/P									TTE-068
10LAV30FT004	MDBFP BRG METAL TEMP - BP DE JRNL BRG	TT-DUAL I/P									TTE-068
10LAV30FT011	MDBFP BRG METAL TEMP - BFP THRST BRG	TT-DUAL I/P									TTE-069
10LAV30FT012	MDBFP BRG METAL TEMP - BFP THRST BRG	TT-DUAL I/P									TTE-069
10LAV30FT013	MDBFP BRG METAL TEMP - BFP DE JRNL BRG	TT-DUAL I/P									TTE-069
10LAV30FT014	MDBFP BRG METAL TEMP - BFP NDE JRNL BRG	TT-DUAL I/P									TTE-069
10LAB60FT011	FW TO ECO TEMP	TT-DUAL I/P									TTE-070
10LAB60FT012	FW TO ECO TEMP	TT-DUAL I/P									TTE-070

NOTE:FOR SHCEME NO 16 AND 18 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 OR >=280 Deg C -TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

PROJECT : KHURJA 2 X 660MW STPP TG & ASSOCIATED PACKAGES

CUSTOMER : M/s THDC INDIA PVT LTD

CONSULTANT: M/s NTPC

HOOK UP SCHEMES

REVISIONS :

APPROVED BY

DIPTENDU GHOSH

PREPARED BY	ISSUED	DATE
RAJESH LINGUTLA	416	15/09/22

PROJECT : KHURJA TG PACKAGE 2 X 660MW STPP

CONSULTANT : M/s NTPC

LOCAL INSTRUMENT ENCLOSURE AND LOCAL INSTRUMENT RACK (LIE/LIR)

REVISION NO	DATE		APPROVED		
			DG		
			PREPARED	ISSUED	DATE
			RKL	416	22.08.22

REVISION NO	DATE	COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.		

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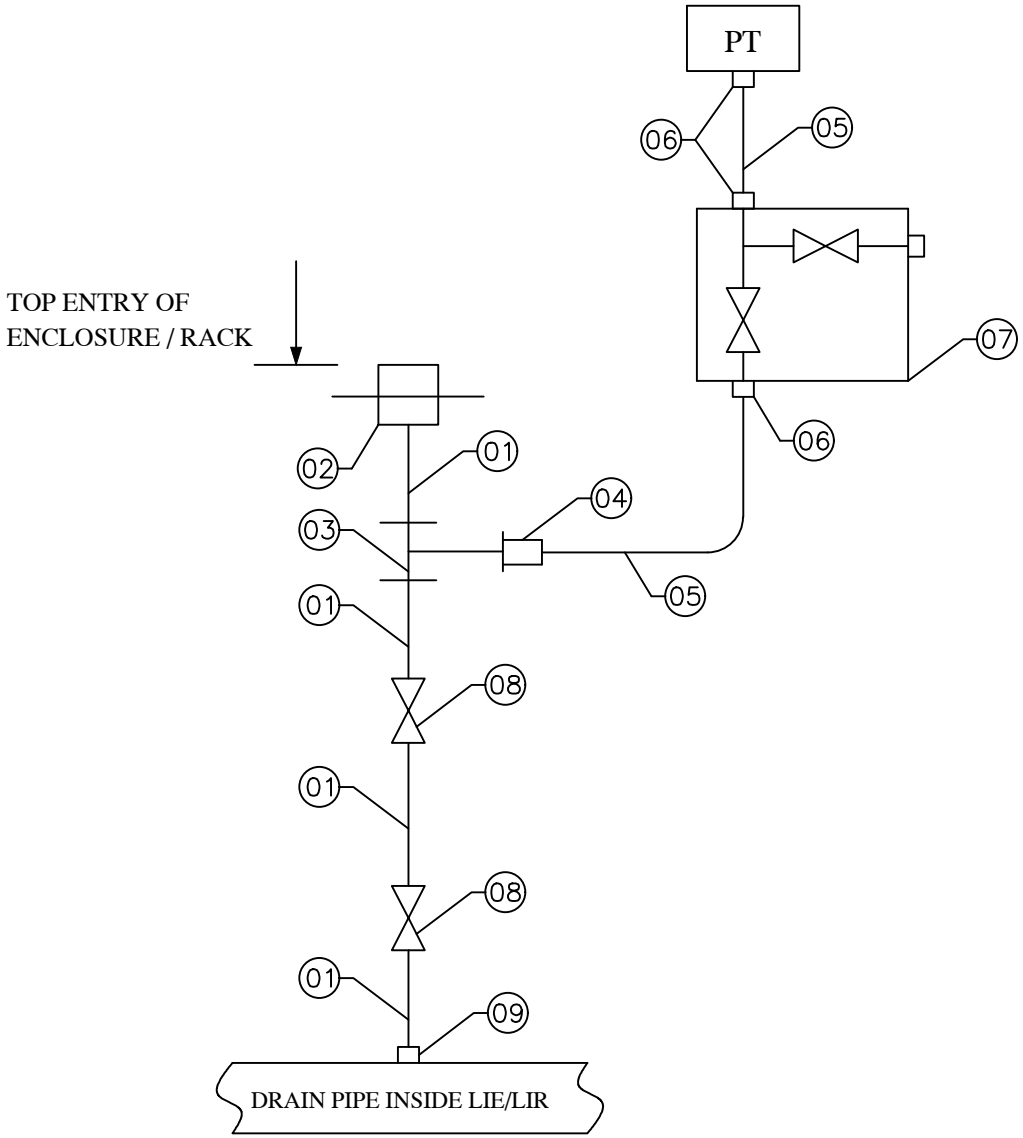


NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 03 OF 11

CE/416/KHURJA/HUP

REV. NO. 00

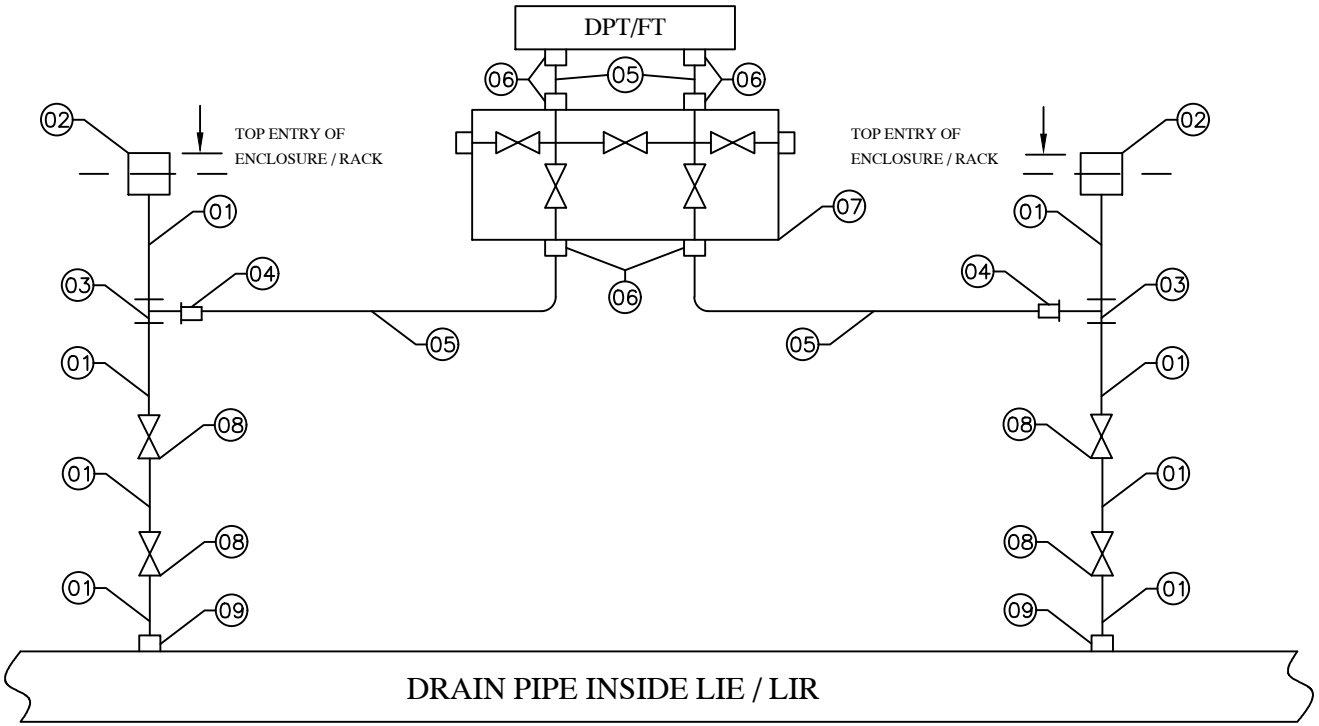
PAGE 02 OF 11

ITEM NO.	ITEM DESCRIPTION	QTY/INST.
01	IMPULSE PIPE MATL: ASTM A106 Gr.C SIZE: 1/2" NB-SCH 160	A/R
02	BULKHEAD UNION / COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL 6000 LBS	01
03	FORGED TEE / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL 6000 LBS	01
04	TEE-TUBE UNION MATL: SS316 SIZE: OD OF 1/2" NB-PIPE x TO SUIT 1/2" OD SS TUBE	01
05	TUBE MATL: A213 TP 316H SIZE: 1/2" OD x 2.1mm THK.	A/R
06	TUBE FITTING / DFDC MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	03
07	TWO VALVE MANIFOLD WITH VENT PLUG MATL: SS316 PORT SIZE: 1/2" NPTF / RATING: 6000 PSI	01
08	FORGED GLOBE VALVES BODY MATL: ASTM A105 / STEM MATL: A182 Gr.F6a SIZE: 1/2" NB-SW / CL 2500	02
09	HALF COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL 6000 LBS	01

REVISION NO | DATE

REVISION NO	DATE	COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.		

A4 – 11



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 05 OF 11

CE/416/KHURJA/HUP

REV. NO. 00

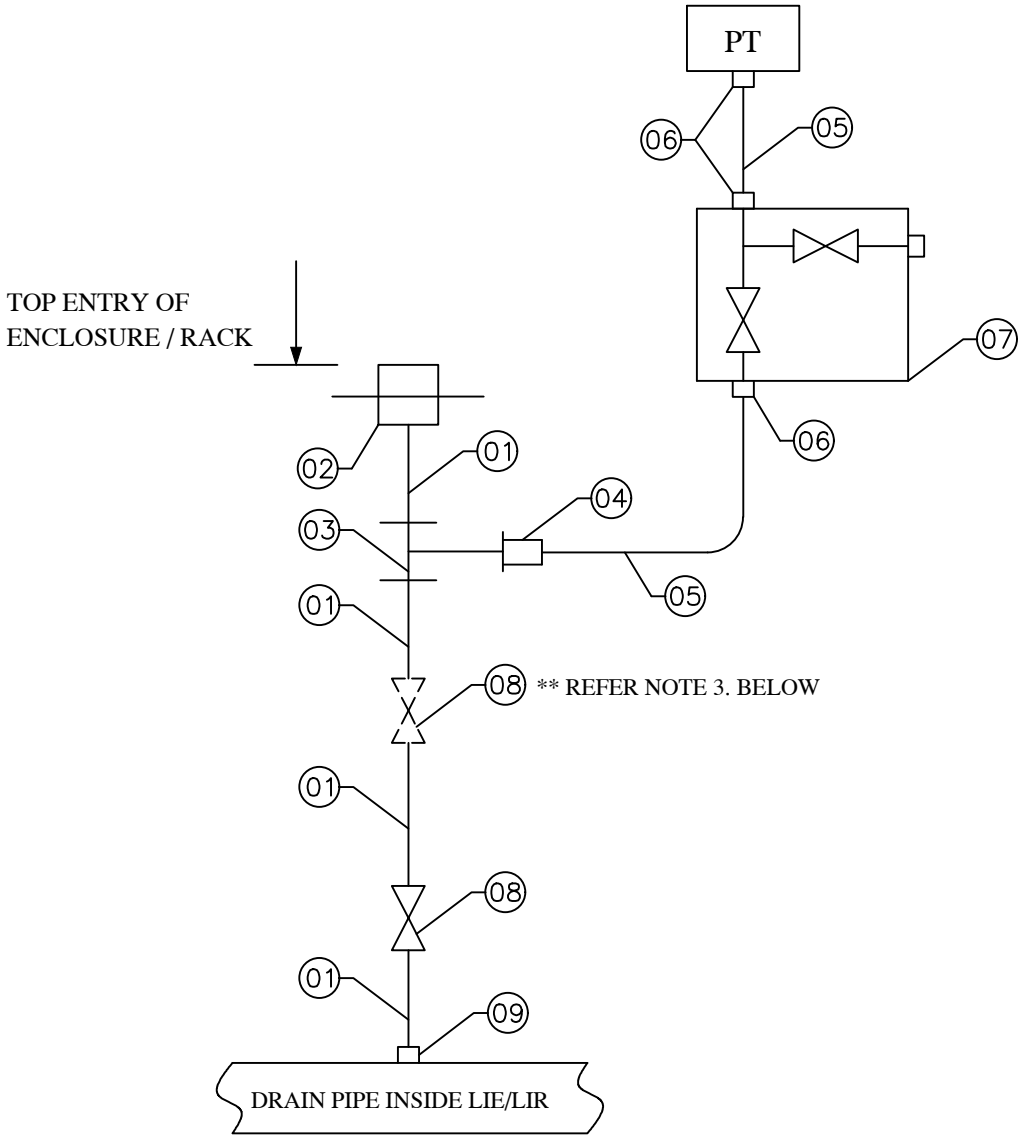
PAGE 04 OF 11

ITEM NO.	ITEM DESCRIPTION	QTY/INST.
01	IMPULSE PIPE MATL: ASTM A106 Gr.C SIZE: 1/2" NB-SCH 160	A/R
02	BULKHEAD UNION COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL 6000 LBS	02
03	FORGED EQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL 6000 LBS	02
04	TEE- TUBE UNION MATL: SS316 SIZE: OD OF 1/2" NB X TO SUIT 1/2" OD SS TUBE	02
05	TUBE MATL: ASTM A213 TP 316H SIZE: 1/2" OD X 2.1 THK.	A/R
06	TUBE FITTING / DFDC MATL: SS316 SIZE: 1/2" NPTM X TO SUIT 1/2" OD SS TUBE	06
07	FIVE VALVE MANIFOLD WITH VENT PLUG MATL: SS316 PORT SIZE: 1/2" NPTF / RATING: 6000PSI	01
08	FORGED GLOBE VALVE BODY MATL: ASTM A105 / STEM MATL: A182 Gr.F6a SIZE: 1/2" NB-SW / CL 2500	04
09	HALF COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW /CL 6000 LBS	02

REVISION NO | DATE

REVISION NO	DATE	COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.		

A4 – 11



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 07 OF 11

**3. ADDITIONAL DRAIN VALVE (ITEM 08) IS APPLICABLE FOR DESIGN PRESSURE/TEMPERATURE > OR EQUAL TO 40 Kg/Cm2/280 Deg C

CE/416/KHURJA/HUP

REV. NO. 00

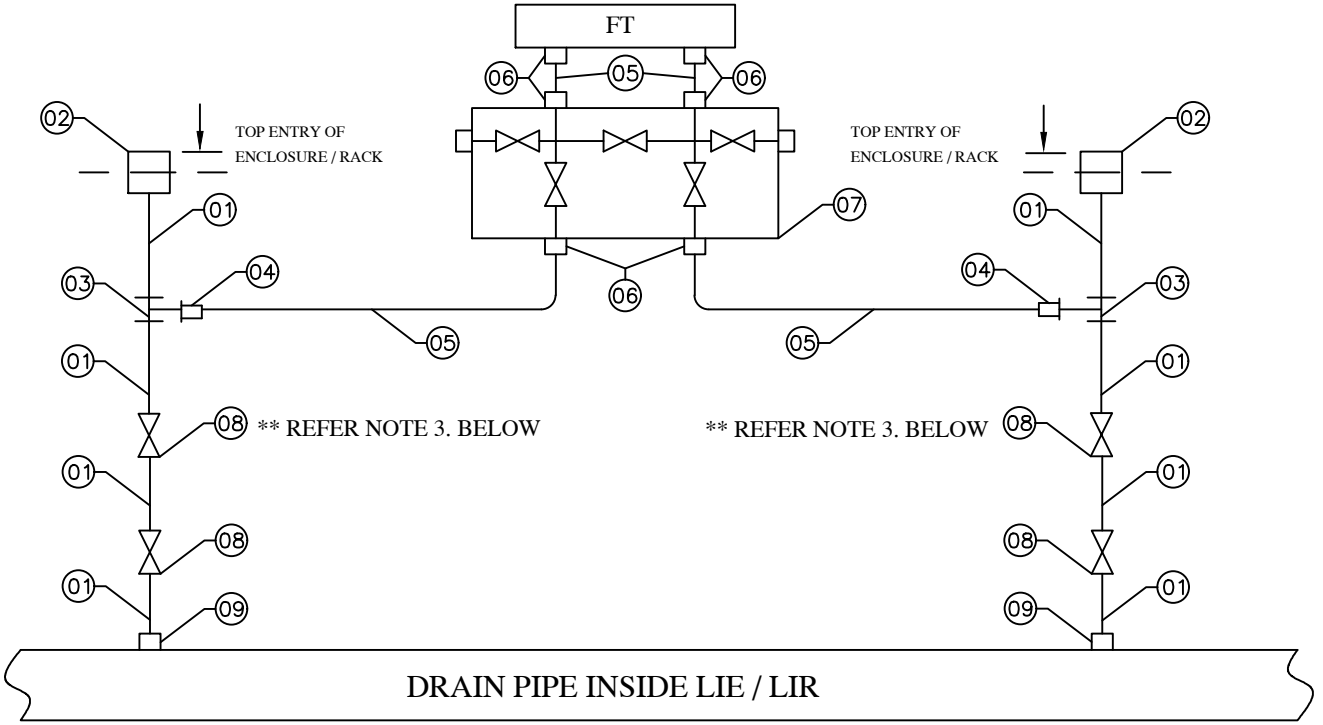
PAGE 06 OF 11

ITEM NO.	ITEM DESCRIPTION	QTY/INST.
01	IMPULSE PIPE MATL: ASTM A106 Gr.C SIZE: 1/2" NB-SCH 80	A/R
02	BULKHEAD UNION / COUPLING / AS PER ANSI B16:11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL 3000 LBS	01
03	FORGED EQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL 3000 LBS	01
04	TEE-TUBE UNION MATL: SS316 SIZE: OD OF 1/2" NB x TO SUIT 1/2" OD SS TUBE	01
05	TUBE MATL: A213 TP 316H SIZE: 1/2" OD x 2.1mm THK.	A/R
06	TUBE FITTING / DFDC MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	03
07	TWO VALVE MANIFOLD WITH VENT PLUG MATL: SS316 PORT SIZE: 1/2" NPTF / RATING: 3000PSI	01
**08	FORGED GLOBE VALVES BODY MATL: ASTM A105 / STEM MATL: A182 Gr.F6a SIZE: 1/2" NB-SW / CL 800	A/R
09	HALF COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL 3000 LBS	01

REVISION NO | DATE

REVISION NO	DATE	COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.		

A4 – 11



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 09 OF 11

**3. ADDITIONAL DRAIN VALVE (ITEM 08) IS APPLICABLE FOR DESIGN PRESSURE/TEMPERATURE > OR EQUAL TO 40 Kg/Cm2/280 Deg C

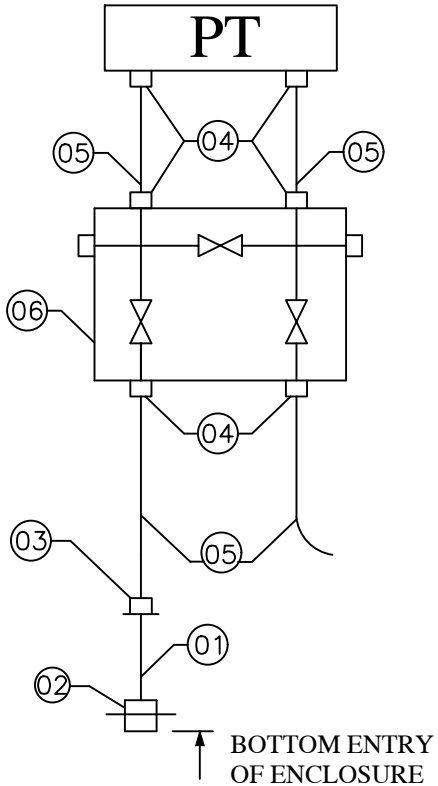
CE/416/KHURJA/HUP

REV. NO. 00

ITEM NO.	ITEM DESCRIPTION	QTY/INST.
01	IMPULSE PIPE MATL: ASTM A106 Gr.C SIZE: 1/2" NB-SCH 80	A/R
02	BULKHEAD UNION / COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW CL 3000 LBS	02
03	FORGED EQUAL TEE/ AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL 3000 LBS	02
04	TEE-TUBE UNION MATL: SS316 SIZE: OD OF 1/2" NB x TO SUIT TO 1/2" OD SS TUBE	02
05	TUBE MATL: A213 TP 316H SIZE: 1/2" OD x 2.1mm THK.	A/R
06	TUBE FITTING / DFDC MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	06
07	FIVE VALVE MANIFOLD WITH VENT PLUG BODY: SS316 PORT SIZE: 1/2" NPTF / RATING: 3000PSI	01
**08	FORGED GLOBE VALVE BODY MATL: ASTM A105 / STEM MATL: A182 Gr.F6a SIZE: 1/2" NB-SW / CL 800	A/R
09	HALF COUPLING/AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL 3000 LBS	02

REVISION NO | DATE

A4 – 11



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 11 OF 11

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL.: ASTM A106 Gr.C SIZE: 1/2" NB-SCH 80	A/R
02	BULKHEAD COUPLING / AS PER ANSI B16.11 MATL.: ASTM A105 SIZE: 1/2" NB-SW / CL : 3000 LBS	01
03	TEE TUBE UNION MATL.: SS316 SIZE: 1/2" NB PIPE x TO SUIT 1/2" OD SS TUBE	01
04	TUBE FITTING/DFDC MATL.: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	06
05	SEAMLESS TUBE MATL.: A213 TP 316H SIZE: 1/2" OD x 2.1mm THK.	A/R
06	THREE VALVE MANIFOLD WITH DRAIN PLUG BODY: SS316 PORT SIZE: 1/2" NPTF / PR. TESTING : 3000 PSI	01

PROJECT : KHURJA 2 X 660MW STPP TG & ASSOCIATED PACKAGES

CUSTOMER : M/s THDC INDIA PVT LTD

CONSULTANT: M/s NTPC

SCHEMATIC DRAWINGS
FOR
LOCAL INSTRUMENT ENCLOSURE / RACKS
(LIE / LIR)

REVISIONS :

APPROVED BY

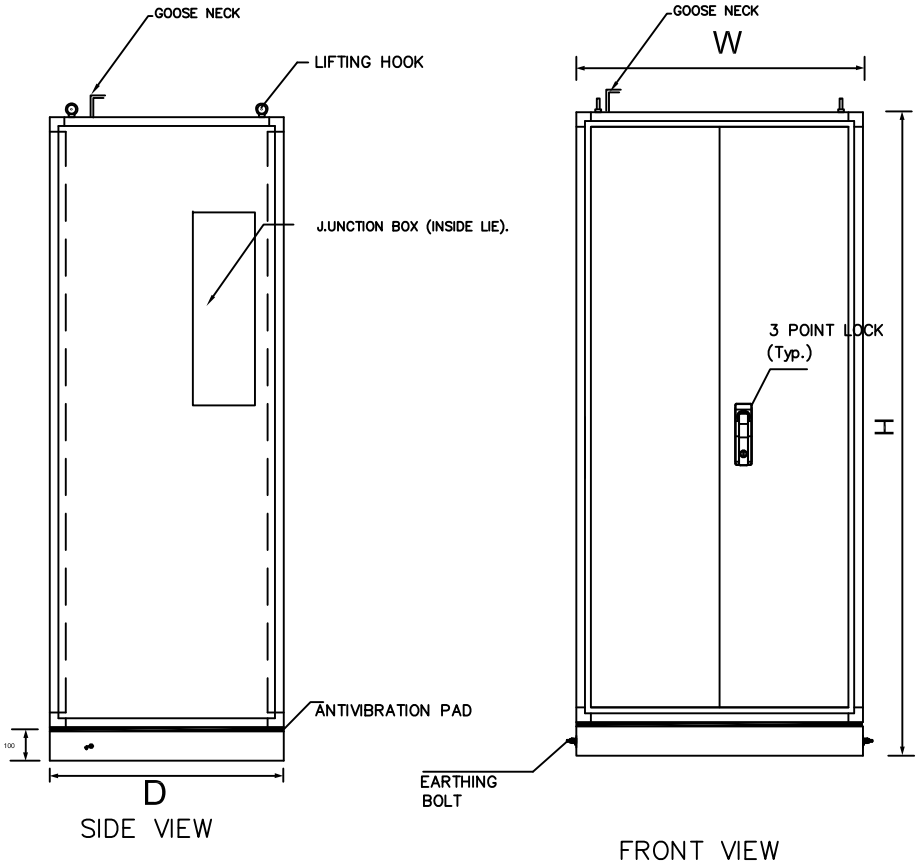
DIPTENDU GHOSH

PREPARED BY	ISSUED	DATE
RAJESH LINGUTLA	416	15/09/22

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

DRG. NO. CE/416/LIE/LIR/OGA2



NOTES:-

1. ALL SHEETs ARE 1.6mm CRCA SHEET
2. ALL DOORS WILL BE FLUSH / CONCEALED TYPE
3. BULK HEAD PLATE (Minimum 6mm thick) FOR TOP & BOTTOM SHALL BE PROVIDED
4. CABLE GLAND PLATE OF THICKNESS 3.0 mm. CRCA SHEET SHALL BE PROVIDED AT BOTTOM OF J.B
5. ENCLOSURE SHALL BE OF IP-55 PROTECTION CLASS
6. TERMINAL SHALL BE PROVIDED IN SIDE THE J.B. AS PER TRANSMITTER GROUPING
7. DOORS SHALL BE THREE POINT LOCKING FOR FRONT AND REAR DOOR
8. GASKET SHALL BE PROVIDED BETWEEN BULK HEAD PLATE & ENCLOSURE
9. EARTH BUS BAR 25x6mm COPPER SHALL BE USED
10. MIN JB DIMENSION 800 MM X 200 MM X 200 MM.
11. BASE FRAME SHALL BE MADE OF ISMC 100
12. 1 No LED 11W,230V AC WITH FIXTURE SHALL BE PROVIDED
13. DRAIN PIPE SLOPE WILL BE I : 25 APPROX.
14. POWER SOCKET SHALL BE PROVIDED IN J.B. OF ENCLOSURE

LIE TYPE	H	W	D
A	2200	1400	800
B	2200	1000	800
C	2200	700	800

REF. DRG. No. FLREF

SIGN. & DATE

INVENTORY No.

REV.	DATE	ALTERED – / CHECKED – / APPROVED –
–	–	

REV.	DATE	ALTERED – / CHECKED – / APPROVED –
–	–	

	NAME	SIGN	DATE
DRAWN	SAMY		14.09.2021
CHECKED	RKL		14.09.2021
APPROVED	RKL		14.09.2021

DEPT. BOP | CODE 416

PROD / PROJ : –

CUSTOMER: –

BHARAT HEAVY ELECTRICALS LIMITED.
ELECTRONICS DIVISION, BANGALORE

TITLE: OGA-FOR-LIE

No. OF SHEETS: 04

SHEET No.: 02

WBS. No.: –

DRG. No.: CE/416/LIE/LIR/OGA2

REV: 00

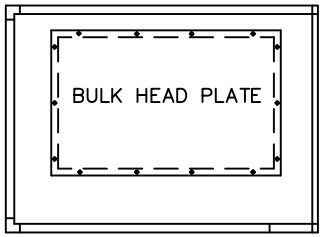
FORM No. A3-03

A3 SIZE

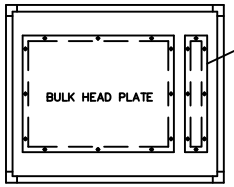
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

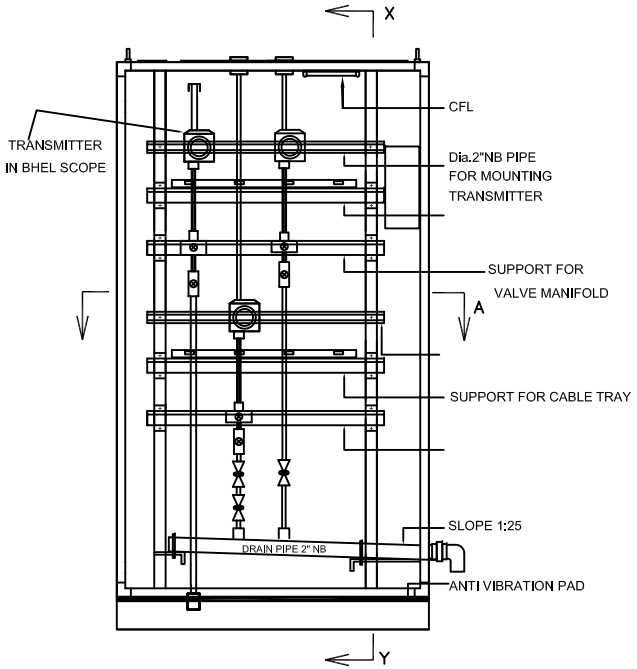
DRG. No. CE/416/LIE/LIR/OGA2



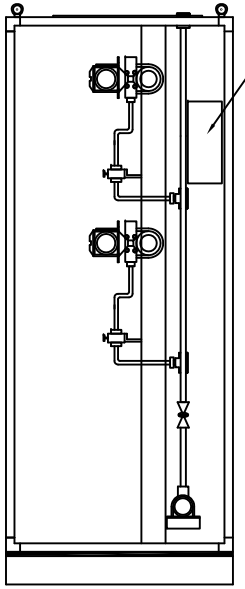
TOP VIEW



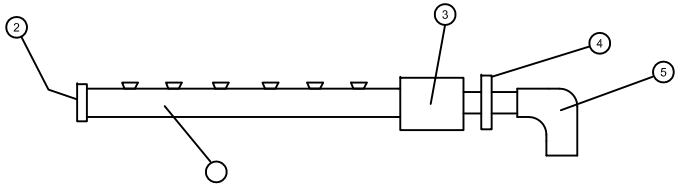
BOTTOM VIEW



FRONT VIEW



SIDE VIEW FROM X–Y



DRAIN PIPE

ITEM	DESCRIPTION	QTY.
1	2" NB ASTM A-106' SCH80/GR-C	A/R
2	2" S.W.CAP,CS ASTM A105	1No.
3	2" NBSW X 1" NPT(F) COUPLING CS ASTM A105	1No.
4	1" NPT (M) X1" BSP(M) HEX. COUPLING, CS ASTM105	1No.
5	1" BSP (F) ELBOW, CS ASTM A105	1No.

REF. DRG. No. FLREF

SIGN. & DATE

INVENTORY No.

PROD / PROJ : –

CUSTOMER: –

REV.	DATE	ALTERED – / CHECKED – / APPROVED –	REV.	DATE	ALTERED – / CHECKED – / APPROVED –
–	–		–	–	

	NAME	SIGN	DATE
DRAWN	SAMY		14.09.2021
CHECKED	RKL		14.09.2021
APPROVED	RKL		14.09.2021

DEPT. BOP | CODE 416

BHARAT HEAVY ELECTRICALS LIMITED.
ELECTRONICS DIVISION, BANGALORE

TITLE: OGA–FOR–LIE

No. OF SHEETS 04

SHEET No. 03

WBS. No. –

DRG. No. CE/416/LIE/LIR/OGA2

REV 00

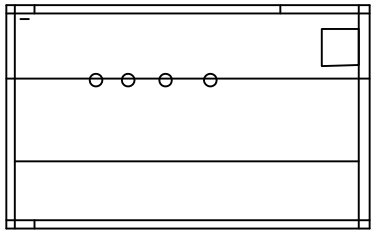
FORM No. A3–03

A3 SIZE

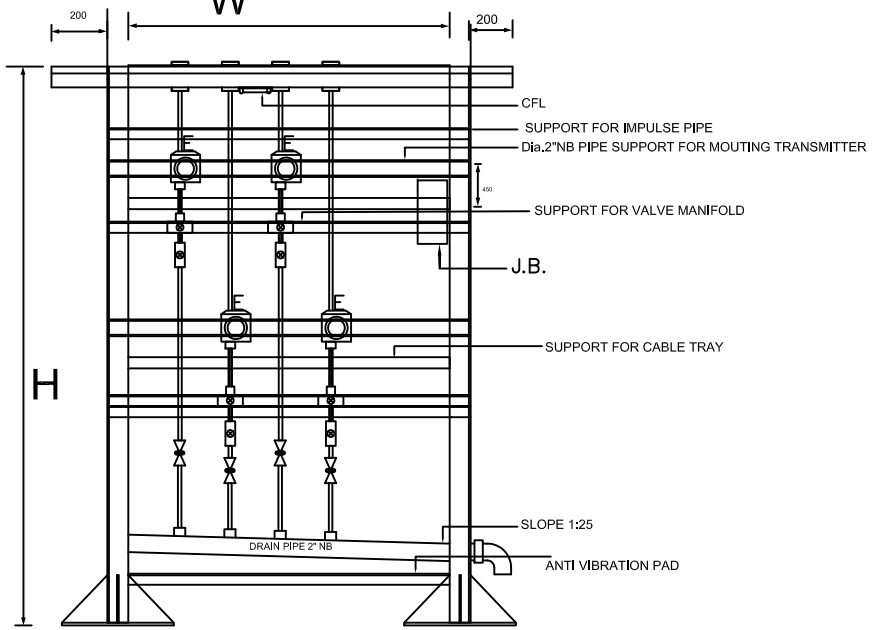
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

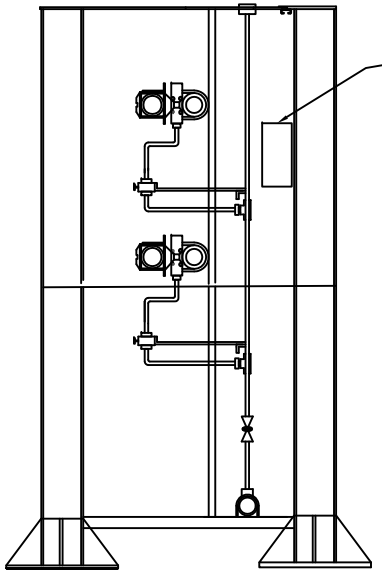
DRG. No. CE/416/LIE/LIR/OGA2



TOP VIEW



FRONT VIEW



SIDE VIEW

NOTES:

1. JB TO BE LOCATED INSIDE THE LIR. JB DOOR SHALL OPEN FORM OUTSIDE.
2. LIR's ARE WITH 4 LEGS.
3. MINIMUM JB DIMENSION IS 800MM X 200MM X 200 MM.
4. SUPPORTING LEG SHALL BE MADE OF 6 MM THK ANGLE.
5. BULK HEAD PLATE SHALL BE PROVIDED AT THE TOP
6. TERMINAL SHALL BE PROVIDED IN SIDE THE J.B. AS PER TRANSMITTER GROUPING
7. GASKET SHALL BE PROVIDED BETWEEN BULK HEAD PLATE & RACK
8. EARTH BUS BAR 25x6mm COPPER SHALL BE USED
9. 1 No LED 11W,230V AC WITH FIXTURE SHALL BE PROVIDED
10. POWER SOCKET SHALL BE PROVIDED IN J.B. OF RACK
11. CANPAY ASSEMBLY WITH 3MM THICK CRCA SHEET

LIR TYPE	H	W	D
A	2200	1650	800
B	2200	1330	800
C	2200	1010	800

REF. DRG. No. FLREF

SIGN. & DATE

INVENTORY No.

REV.	DATE	ALTERED – / CHECKED – / APPROVED –
–	–	

REV.	DATE	ALTERED – / CHECKED – / APPROVED –
–	–	

	NAME	SIGN	DATE
DRAWN	SAMY		14.09.2021
CHECKED	RKL		14.09.2021
APPROVED	RKL		14.09.2021

DEPT. BOP | CODE 416

PROD / PROJ : –

CUSTOMER: –

BHARAT HEAVY ELECTRICALS LIMITED.
ELECTRONICS DIVISION, BANGALORE

TITLE: OGA–FOR–LIR

No. OF SHEETS: 04

SHEET No.: 04

WBS. No. –

DRG. No. CE/416/LIE/LIR/OGA2

REV 00

FORM No. A3–03

A3 SIZE

PROJECT : KHURJA 2 X 660MW STPP TG & ASSOCIATED PACKAGES

CUSTOMER : M/s THDC INDIA PVT LTD

CONSULTANT: M/s NTPC

COMPONENT VENDOR LIST

\

REVISIONS :	APPROVED BY DIPTENDU GHOSH		
	PREPARED BY	ISSUED	DATE
	RAJESH LINGUTLA	416	15/09/22

SUB COMPONENT VENDOR LIST

Sl No	Item Description	Approved Vendors
1	Socket Weld Fittings	PRECISION ENGG INDUSTRIES, MUMBAI
		V.K.INDUSTRIES,BANGALORE
		VIKAS INDUSTRIAL PRODUCTS,NOIDA
		EXCEL HYDRO-PNEUMATICS PVT LTD,MUMBAI
		METPRESS ENGINEERING WORKS,KOLKATA
		BALDOTA VALVE AND FITTINGS PVT LTD,MUMBAI
		PMT ENGINEERS,AHMEDABAD
		FLOWTECH, KOLKATA.
		PANAM ENGINEERS LTD,MUMBAI
		AURA INC,NEW DELHI
		PAUL INDUSTRIES,HOWRAH
		ARCELLOR CONTROLS ,AHMEDABAD
		HP VALVES & FITTINGS (INDIA) PVT. LTD,CHENNAI
		NAV DURGA FORGING AND FITTINGS PVT LTD, THANE, MAHARASTRA.
		PRIME ENGINEERS,MUMBAI
		DYNA FLUID VALVES AND FLOW CONTROLS,UDYAMBAG,BELGAUM
		ARYA CRAFTS & ENGINEERING PVT. LTD,MUMBAI
2	Compression Fitting	PRECISION ENGG INDUSTRIES, MUMBAI
		EXCEL HYDRO-PNEUMATICS PVT LTD, MUMBAI
		METPRESS ENGINEERING WORKS, KOLKATA
		ASTEC VALVE & FITTINGS PVT. LTD., MUMBAI
		FLUID CONTROLS PVT. LTD,PUNE
		PANAM ENGINEERS LTD,MUMBAI
		AURA INC, NEW DELHI
		HP VALVES & FITTINGS (INDIA) PVT. LTD, CHENNAI
		PMT ENGINEERS,AHMEDABAD
		PRIME ENGINEERS,MUMBAI
		ARCELLOR CONTROLS ,AHMEDABAD
		ARYA CRAFTS & ENGINEERING PVT. LTD,MUMBAI
		SWAGELOCK,USA
		DYNA FLUID VALVES AND FLOW CONTROLS,UDYAMBAG,BELGAUM
		FLOWTECH. KOLKATA.
		FLUID FIT ENGINEERING PVT LTD, PALGHAR, MAHARASHTRA.
		PARKER HANNIFIN INDIA PVT. LTD.,CHENGAL PATTU,TAMILANADU
3	Instrument Valves	BHARAT HEAVY ELECTRICALS LIMITED VALVES DIVISION, TIRUCHIRAPALLI, TAMILANADU.
		PARKER ,USA
		EXCEL HYDRO-PNEUMATICS PVT LTD,MUMBAI
		HYLOK CORPORATION, KOREA
		HAMLET, ISRAEL
		DK TECH CORPORATION, KOREA.
		BALDOTA VALVE AND FITTINGS PVT LTD,MUMBAI
		HP VALVES & FITTINGS (INDIA) PVT. LTD,CHENNAI
		METPRESS ENGINEERING WORKS,KOLKATA
		SWAGELOK, USA
		INSTRUMENTATION LIMITED,PALGHAT

SUB COMPONENT VENDOR LIST

Sl No	Item Description	Approved Vendors
4	Valve Manifolds	EXCEL HYDRO-PNEUMATICS PVT LTD,MUMBAI
		BALDOTA VALVE AND FITTINGS PVT LTD,MUMBAI
		ASTEC VALVE & FITTINGS PVT. LTD,MUMBAI
		HYD AIR , LONAWALA.
		PARKER, USA.
		HAMLET, ISRAEL
		DK TECH CORPORATION, KOREA.
		HYLOK CORPORATION, KOREA
		SCHNEIDER, GERMANY
		HP VALVES & FITTINGS (INDIA) PVT. LTD,CHENNAI
		MICRO PRECISION PRODUCTS PVT LTD, FARIDABAD, HARYANA.
		METPRESS ENGINEERING WORKS,KOLKATA
		SWAGELOK, USA
		ANDERSON AND GREENWOOD, USA
5	Impulse Pipes / Seamless Tube	BHARAT HEAVY ELECTRICALS LTD, TRICHY
		Mahrastra Seamless, Raigarh (CS Pipes Only)
		HEAVY MEATAL TUBES, AHMADABAD (only for CS Pipes & SS Pipes &Tubes)
		RATNAMANI METALS & TUBES LTD, AHMADABAD(only for SS Pipes &Tubes)
		SUMITOMO CORPORATION ,JAPAN
		TPS TECHNITUBE ROHREN WERKE GMBH, GERMANY
		ISMT, Ahamadnagar (CS Pipes Only)
		SANDVIK, SWEDEN. (only for SS Pipes &Tubes)
		VELURIC & MANNESMANN, GERMANY.
6	Instrument cables	POLYCAB ,DAMAN
		Paramount, Khuskhera
		CORDS, Bhiwadi
		CORDS, Kaharani
		KEI, Bhiwadi
		Kerpen Cables, Germany
		Delton, Faridabad
		UNIVERSAL CABLE, SATNA.
		NICCO, KOLKATA.
		TEW & C, USA.
		HABIA CABLES, SWEDEN.
		LAPP CABLES, GERMANY.
		ELKAY TELE LINKS, FARIDABAD.
		CMI, FARIDABAD
		ADVANCE CABLES PVT LTD, BENGALURU.
		THERMO ELECTR BV, NETHERLAND.
		SPECIAL CABLES PVT LTD, RUDRAPUR.
		TC COMMUNICATION, GAZIABAD.
		GEMS CAB INDUSTRIES LTD, BHIWADI.
		SUYOG ELECTRICALS LTD, HALOL (GUJARAT)
		GUPTA POWER INSTRUMENT PVT LTD, Khurdha.
		THERMOCABLES LTD,HYDERBAD

Note: Bidders Can Propose additional sub component vendors for above items with filling Sub Vendor questionnaire format (which is the part of this specifications), However if same is not approved by customer vendors to provide sub component makes from the approved list without any price impact.

PROJECT : KHURJA 2 X 660MW STPP TG & ASSOCIATED PACKAGES

CUSTOMER : M/s THDC INDIA PVT LTD

CONSULTANT: M/s NTPC

TYPICAL QUALITY CHECK LIST

REVISIONS :

APPROVED BY

DIPTENDU GHOSH

PREPARED BY	ISSUED	DATE
RAJESH LINGUTLA	416	15/09/22

	MANUFACTURER'S NAME & ADDRESS	MANUFACTURING QUALITY PLAN		
		ITEM : LOCAL INSTRUMENT ENCLOSURE & LOCAL INSTRUMENT RACK	QP Ref NO.: CE/416/LIE-LIR/QP REV. : 00 DT. :14.09.2022 PAGE : 02 OF 06	

S. NO.	COMPONENTS & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY D*	AGENCY M	AGENCY C	AGENCY E	REMARKS
1	2	3	4	5	6	7	8	9	D*	**10			11
(A)	***MATERIAL***												
1	CRCA SHEET	A) MATERIAL	MAJOR	CHEMICAL COMPOSITION	SAMPLE	IS-513 APP.DRG	IS-513	M.T.C./Q.A.REP.		V	V	V	
		B) THICKNESS	MAJOR	MEASUREMENT	100%	APP.DRG	APP.DRG	M.T.C./Q.A.REP.		P	V	V	
		C) HARDNESS	MAJOR	STRENGTH	SAMPLE	IS-513	IS-513	M.T.C./Q.A.REP.		V	V	V	
		D) SURFACE FINISH	MAJOR	VISUAL	100%	IS-513	IS-513	M.T.C./Q.A.REP.		P	V	V	
2	MS C- CHANNELS /	A) DIMENSION	MAJOR	VISUAL	100%	APP.DRG/ F.S.	APP.DRG/ F.S.	M.T.C./Q.A.REP.		P	V	V	
	MS ANGLE	B) SURFACE DEFECTS	MAJOR	VISUAL	100%	APP.DRG/ F.S.	APP.DRG/ F.S.	M.T.C./Q.A.REP.		V	V	V	
		C) STRAIGHTNESS	MAJOR	MESUERMENT	100%	APP.DRG/ F.S.	APP.DRG/ F.S.	M.T.C./Q.A.REP.		V	V	V	
3	GASKET	A) DIMENSION	MAJOR	MEASUREMENT	SAMPLE	APP.DRG/ F.S.	APP.DRG/ F.S.	M.T.C./Q.A.REP.		P	V	V	
		B) HARDNESS/SHORE HARDNESS	MAJOR	MEASUREMENT	SAMPLE	APP.DRG/ F.S.	APP.DRG/ F.S.	M.T.C.		V	V	V	
4	TERMINALS	A) TYPE, SIZE & MAKE	MAJOR	VISUAL	100%	APP.DRG	APP.DRG	M.T.C./Q.A.REP.		P	V	V	

		LEGEND :	FOR END USER :
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		** M : MANUFACTURER/ SUBCONTRACTOR	
MANUFACTURER /SUBCONTRACTOR	CONTRACTOR	C: CONTRACTOR/ NOMINATED INSPECTION AGENCY E : END USER	
		INDICATE `P' PERFORM, `W' WITNESS AND `V' VERIFICATION	
SIGNATURE		AS APPROPRIATE "CHP" END USER SHALL IDENTIFIED IN COLUMN `E'	REVIEWED BY
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	MANUFACTURER'S NAME & ADDRESS	MANUFACTURING QUALITY PLAN	
		ITEM : LOCAL INSTRUMENT ENCLOSURE & LOCAL INSTRUMENT RACK	QP Ref NO.: CE/416/LIE-LIR/QP REV. : 00 DT. : 14.09.2022 PAGE : 03 OF 06

S. NO.	COMPONENTS & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	RECORD		M	C	E	REMARKS
1	2	3	4	5	6	7	8	9	D*	**10			11
5	PVC WIRE/ CABLE	A) TYPE, SIZE, MAKE	MAJOR	MEASUREMENT	SAMPLE	IS 694/APPD. APP.DRG	IS 694/APPD. APP.DRG	M.T.C./Q.A.REP.		P	V	V	
6	PAINT	A) SHADE	MAJOR	VISUAL	SAMPLE	APP. DRG	APP. DRG	M.T.C./Q.A.REP.		P	V	V	
		B) FINISH	MAJOR	VISUAL	SAMPLE	APP. DRG	APP. DRG	M.T.C./Q.A.REP.		P	V	V	
7	FLEXIBLE CONDUIT / M.S. CABLE TRAY	A) TYPE, SIZE & MAKE	MAJOR	VISUAL	SAMPLE	APP.DRG	APP.DRG	M.T.C./Q.A.REP.		P	V	V	
(B)	***COMPONENTS **												* TYPE / MODEL /RANGE OF COMPONENTS AS PER BOM
1	VALVES, MANIFOLDS	MECHANICAL	MAJOR	A)CHEM. TEST	SAMPLE	SUPPLIER CAT./ APP.DRG	SUPPLIER CAT./ APP.DRG	M.T.C./Q.A.REP.		V	V	V	OF LIE/ LIR .
				B)FUNCTIONAL	100%	-DO-	-DO-	M.T.C./Q.A.REP.		P	V	V	
				C) DIMENSION	100%/SAM.	-DO-	-DO-	M.T.C./Q.A.REP.		P	V	V	
				D)HYDROSTA-TIC	10%	-DO-	-DO-	M.T.C./Q.A.REP.		V	V	V	
2	FITTINGS	MECHANICAL	MAJOR	A)CHEM. TEST	SAMPLE	-DO-	-DO-	M.T.C./Q.A.REP.		V	V	V	
				B) DIMENSION	100%/SAM.	-DO-	-DO-	M.T.C./Q.A.REP.		P	V	V	
				C)HYDROSTA-TIC	10%	-DO-	-DO-	M.T.C./Q.A.REP.		V	V	V	
3.a	PIPES	MECHANICAL	MAJOR	A)CHEM. & PHY. TEST	SAMPLE	-DO-	-DO-	M.T.C./Q.A.REP. M.T.C./Q.A.REP.		V	V	V	
				B) DIMENSION	100%/ SAM.	-DO-	-DO-	M.T.C./Q.A.REP.		P	V	V	

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MANUFACTURER /SUBCONTRACTOR	CONTRACTOR	C: CONTRACTOR/ NOMINATED INSPECTION AGENCY E : END USER	
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SIGNATURE		AS APPROPRIATE "CHP" END USER SHALL IDENTIFIED IN COLUMN `E'	REVIEWED BY

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		ITEM : LOCAL INSTRUMENT ENCLOSURE & LOCAL INSTRUMENT RACK	QP Ref NO.: CE/416/LIE-LIR/QP REV. : 00 DT. : 14.09.2022 PAGE : 04 OF 06	

S. NO.	COMPONENTS & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	RECORD	D*	M	C	E	REMARKS
1	2	3	4	5	6	7	8	9		**10			11
3.b	TUBES	MECHANICAL	MAJOR	A)CHEM. & PHY. TEST	SAMPLE	SUPPLIER CAT./ APP.DRG	SUPPLIER CAT./ APP.DRG	M.T.C./Q.A.REP.		V	V	V	
				B) DIMENSION	100%	-DO-	-DO-	M.T.C./Q.A.REP.		P	V	V	
				C) HYDROSTA-TIC	10%	-DO-	-DO-	M.T.C./Q.A.REP.		P	V	V	
(C)	**INPROCESS**												
1	FABRICATED/CUBICLE AND COMPONENTS	A) DIMENSION	CRITICAL	MEASUREMENT	100%	APP.DRG	APP.DRG	Q.A. REPORT		P	V	V	
		B) LIFTING FACILITY	CRITICAL	VISUAL	100%	APP.DRG	APP.DRG	Q.A. REPORT		P	V	V	
		C) CABLE ENTRY	CRITICAL	VISUAL	100%	APP.DRG	APP. APP.DRG	Q.A. REPORT		P	V	V	
		D) STRAIGHTNESS / WAVINESS	CRITICAL	VISUAL	100%					P	V	V	
		E) GASKET ARGMNT.	CRITICAL	VISUAL	100%	APP.DRG	APP.DRG	Q.A. REPORT		P	V	V	
		F) DEBURRING	CRITICAL	VISUAL	100%	APP.DRG	APP.DRG	Q.A. REPORT		P	V	V	
		G) WELDING	CRITICAL	VISUAL	100%	APP.DRG	APP.DRG	Q.A. REPORT		P	V	V	
		H) REMOVAL OF WELDING SLAGS	CRITICAL	VISUAL	100%	APP.DRG	APP.DRG	Q.A. REPORT		P	V	V	

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MANUFACTURER /SUBCONTRACTOR	CONTRACTOR		
SIGNATURE			

	MANUFACTURER'S NAME & ADDRESS	MANUFACTURING QUALITY PLAN	
		ITEM : LOCAL INSTRUMENT ENCLOSURE & LOCAL INSTRUMENT RACK	QP Ref NO.: CE/416/LIE-LIR/QP REV. : 00 DT. : 14.09.2022 PAGE : 05 OF 06

S. NO.	COMPONENTS & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
										M	C	E	
1	2	3	4	5	6	7	8	9	D*	**10			11
2	PRETREATMENT	A) DEGREASING	CRITICAL	VISUAL	100%	IS- 6005/F.S.	IS- 6005/F.S.	Q.A. REPORT		P	V	V	
	(7 TANK PROCESS)	B) DERUSTING	CRITICAL	VISUAL	100%	IS- 6005/F.S.	IS- 6005/F.S.	Q.A. REPORT		P	V	V	
		C) PHOSPHATISING	CRITICAL	MEASUREMENT	100%	IS- 6005/F.S.	IS- 6005/F.S.	Q.A. REPORT		P	V	V	
		D) PASSIVATION	CRITICAL	VISUAL	100%	IS- 6005/F.S.	IS- 6005/F.S.	Q.A. REPORT		P	V	V	
3	SURFACE PREPARA-	A) PRIMER(2 COATS)	CRITICAL	VISUAL	100%	APP.DRG	APP.DRG	Q.A.REPORT		P	V	V	
	-TION & PAINTING	B) SURFACER	CRITICAL	VISUAL	100%	APP.DRG	APP.DRG	Q.A.REPORT		P	V	V	
		C) FINAL PAINTING	CRITICAL	VISUAL	100%	APP.DRG	APP.DRG	Q.A.REPORT		P	V	V	
		D) THICKNESS	CRITICAL	MEASUREMENT	SAMPLE	APP.DRG	APP.DRG	Q.A.REPORT		P	V	V	
4	ELECTRICAL & MECH.	A) CHECK ARRANGE / LAYOUT OF COMP. & MOUNTING	CRITICAL	VISUAL	100%	APP.DRG	APP.DRG	Q.A.REPORT		P	V	V	
		B) WIRE CLAMPING & FERULING	CRITICAL	VISUAL	100%	APP.DRG	APP.DRG	Q.A.REPORT		P	V	V	
		C) INTERCONNECTION B/W COMPONENT	CRITICAL	VISUAL	100%	APP.DRG	APP.DRG	Q.A.REPORT		P	V	V	
		D)LUG SIZE&CRIMPING	CRITICAL	VISUAL	100%	APPD. APP.DRG	F.S./APP.DRG	Q.A.REPORT		P	V	V	
		E) COMPONENT IDENTIFICATION	CRITICAL	VISUAL	100%	APPD. APP.DRG	APP.DRG	Q.A.REPORT		P	V	V	
		F) WIRE SIZE	MAJOR	VISUAL	SAMPLE	IS-694 / APP.DRG	IS-694 / APP.DRG	M.T.C./QA REP.		P	V	V	
		G) NAME PLATES	CRITICAL	VISUAL	100%	APP.DRG	APP.DRG	Q.A.REPORT		P	V	V	
		H) PIPING	MAJOR	VISUAL	100%	APP.DRG	APP.DRG	Q.A.REPORT		P	V	V	

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S. NO.	COMPONENTS & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
										M	C	E	
1	2	3	4	5	6	7	8	9	D*	**10			11
D)	***FINAL INSPECTION***												
1	A) VERIFICATION OF COMPONENTS /RATING/ ARRANGEMENTS/ LOCATION FOR EASY ACCESSABILITY AND MAINTENANCE .		CRITICAL	VISUAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
	B) COMPLETENESS OF WIRING ,TUBING/ PIPING		CRITICAL	VISUAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
	C) TERMINAL ARRANGEMENTS,SPARE TER--MINALS , EARTH BUS TIN PLATED COPPER)		CRITICAL	VISUAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
	D) PAINT SHADE,THICKNESS & ADHESION		CRITICAL	MEASUREMENT	SAMPLE	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
	E) DOOR ALIGNMENT		MAJOR	VISUAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
	F) GENERAL APPEARENCE (STRAIGHTNESS, FREE FROM SCRATCHES, BENDS, DENTS AND SHEET THICKNESS)		MAJOR	VISUAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
	G) HYDROSTATIC TEST FOR ASSEMBLY. (1.5 TIMES RATED PRESSURE) (PNEUMATIC TEST FOR PURGING LINES (NO LEAKAGED WITH SOAP SOLUTION)		CRITICAL	MECHANICAL	100%	APP.DRG	APP.DRG/ NO LEAK/ PRESSURE DROP	Q.A. REPORT		P	W	W	PERFORMED BY VENDOR 100 % BHEL WITNESS ON 10%
2	OVERALL FINISH		MAJOR	VISUAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
3	CONTINUITY TEST		MAJOR	FUNCTIONAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
4	IR TEST		MAJOR	MEASUREMENT	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
5	HV TEST		MAJOR	MEASUREMENT	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
6	FUNCTIONAL TEST		MAJOR	FUNCTIONAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
7	IP TEST TYPE TEST		MAJOR	VERIFICATION	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	V	V	

M. T.C. = MANUFACTURER'S / MATERIAL TEST CERTIFICATE
F.S. = FACTORY STANDARD
Q.A.REP.= QUALITY ASSURANCE REPORT
APP. APP.DRG = APPROVED DRAWING
SAM. = SAMPLE

NOTE :- CUSTOMER / INSPECTION AGENCY / END USER MAY DO INSPECTION ON SAMPLE BASIS

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MANUFACTURER /SUBCONTRACTOR	CONTRACTOR	REVIEWED BY	NAME & SIGN OFAPPROVING AUTHORITY WITH SEAL
SIGNATURE			

CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन

SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली

i.	***Item/Scope of Sub-contracting*** **उप-सविदा(नुबध) का मद/ दायरा**			
ii.	***Address of the registered office*** पंजीकृत कार्यालय का पता		***Details of Contact Person*** संपर्क व्यक्ति का विवरण ***(Name, Designation, Mobile, Email)*** (नाम, पदनाम, मोबाइल, ईमेल)	
iii.	***Name and Address of the proposed Sub-vendor's works where item is being manufactured*** प्रस्तावित उप-विक्रेता के कार्यों का नाम और पता, जहां मद का निर्माण किया जा रहा है		***Details of Contact Person:*** संपर्क व्यक्ति का विवरण ***(Name, Designation, Mobile, Email)*** (नाम, पदनाम, मोबाइल, ईमेल)	
iv.	***Annual Production Capacity for proposed item/scope of sub-contracting*** **उप-सविदा(नुबध)** के प्रस्तावित मद / दायरे के लिए वार्षिक उत्पादन क्षमता			
v.	***Annual production for last 3 years for proposed item/scope of sub-contracting*** **उप-सविदा(नुबध)** के प्रस्तावित मद / दायरे के लिए पिछले 3 वर्षों का वार्षिक उत्पादन			
vi.	***Details of proposed works*** **प्रस्तावित कार्यों का विवरण**			
1.	***Year of establishment of present works*** वर्तमान फैक्टरी की स्थापना का वर्ष			
2.	***Year of commencement of manufacturing at above works*** उपरोक्त फैक्टरी में निर्माण कार्य शुरू होने का वर्ष			
3.	***Details of change in Works address in past (if any*** पूर्व में फैक्टरी स्थल में परिवर्तन का विवरण (यदि कोई हो)***)***			
4.	***Total Area*** कुल क्षेत्र			
	Covered Area शामिल क्षेत्र			
5.	***Factory Registration Certificate*** फैक्टरी पंजीकरण प्रमाण पत्र		***Details attached at Annexure – F2.1*** विवरण अनुलग्नक- एफ 2.1 पर संलग्न है	
6.	***Design/ Research & development set-up*** डिजाइन / अनुसंधान और विकास सेटअप ***(No. of manpower, their qualification, machines & tools employed etc.)*** (श्रमिकों की संख्या, उनकी योग्यता, मशीन और उपलब्ध उपकरण आदि)		***Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design)*** ***Details attached at Annexure – F2.2*** ***(if applicable)*** लागू / लागू नहीं, अगर विनिर्माण मुख्य संविदाकार / खरीददार के डिजाइन के अनुसार है) विवरण अनुलग्नक –एफ 2.2 पर संलग्न है । (यदि लागू हो)	
7.	***Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc)*** मैनपावर विवरण के साथ समग्र संगठन का चार्ट(डिजाइन / विनिर्माण / गुणवत्ता आदि)		***Details attached at Annexure – F2.3*** विवरण अनुलग्नक – F2.3 में संलग्न है ।	
8.	***After sales service set up in India, in case of foreign sub-vendor(Location, Contact Person, Contact details etc.)*** भारत		***Applicable / Not applicable*** लागू / लागू नहीं	

	में बिक्री सेवा की स्थापना के बाद, विदेशी उप-विक्रेता के मामले में(स्थल , संपर्क व्यक्ति, संपर्क विवरण आदि)	***Details attached at Annexure – F2.4*** विवरण अनुलग्नक -2.4 पर संलग्न है।
9.	***Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any*** फ्लोचार्ट सहित विनिर्माण प्रक्रिया निष्पादन योजना , जिसमें आउटसोर्स प्रक्रिया, यदि कोई हो, सहित कच्चे माल से तैयार उत्पाद तक विनिर्माण के विभिन्न चरणों को दर्शाया गया हो,	***Details attached at Annexure – F2.5*** विवरण अनुलग्नक - F2.5में संलग्न है।
10.	***Sources of Raw Material/Major Bought Out Item*** कच्चे माल के स्रोत / खरीदे हुए मुख्य मद	***Details attached at Annexure – F2.6*** विवरण अनुलग्नक - F2.6में संलग्न है।
11.	***Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing*** कच्चे माल / खरीदे हुए मद, प्रक्रियाबद्ध, अंतिम परीक्षण, पैकिंग करते समय गुणवत्ता नियंत्रण	***Details attached at Annexure – F2.7*** विवरण अनुलग्नक - F2.7 पर संलग्न है
12.	***Manufacturing facilities (List of machines, special process facilities, material handling etc.)*** विनिर्माण सुविधा(मशीनों की सूची , विशेष प्रक्रिया सुविधाएं, सामग्री रख-रखाव आदि)	***Details attached at Annexure – F2.8*** विवरण अनुलग्नक - F2.8में संलग्न है।
13.	***Testing facilities (List of testing equipment)*** परीक्षण सुविधाएं(परीक्षण उपकरण की सूची)	***Details attached at Annexure – F2.9*** विवरण अनुलग्नक – F2. 9 में संलग्न है।
14.	***If manufacturing process involves fabrication then-*** यदि निर्माण प्रक्रिया में फेब्रिकेशन की गई है तो-	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.10*** विवरण अनुलग्नक - F2.10में संलग्न है। ***(if applicable)*** लागू / लागू नहीं
	List of qualified Welders पात्र वेल्डर की सूची	
	List of qualified NDT personnel with area of specialization विशेषज्ञता के क्षेत्र सहित पात्र एनडीटी कार्मिकों की सूची	
15.	***List of out-sourced manufacturing processes with Sub-Vendors' names & addresses*** सब-वेंडर द्वारा बाह्य स्रोतों (उनके नाम और पते सहित)से करवाएं गए निर्माण प्रक्रियाओं की सूची	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure. –F2.11*** विवरण अनुलग्नक - F2.10में संलग्न है। ***(if applicable)*** (यदि लागू हो)
16.	***Supply reference list including recent supplies*** नवीनतम आपूर्ति सहित आपूर्ति संदर्भ सूची	***Details attached at Annexure – F2.12*** विवरण अनुलग्नक - F2.12 में संलग्न है। ***(as per format given below)*** (नीचे दिए गए प्रारूप के अनुसार)

Project/ package परियोजना /पैकेज	***Customer Name*** ग्राहक का नाम	***Supplied Item (Type/Rating/Model /Capacity/Size etc)*** आपूर्ति की गई वस्तु (प्रकार / रेटिंग / मॉडल / क्षमता / आकार आदि)	***PO ref no/date*** पीओ संदर्भ सं. / तिथि	***Supplied Quantity*** आपूर्ति की मात्रा	***Date of Supply*** आपूर्ति की तारीख

17.	***Product satisfactory performance feedback letter/certificates/End User Feedback*** उत्पाद के संतोषजनक प्रदर्शन संबंधी फीडबैक पत्र / प्रमाण पत्र / अंतिम उपयोगकर्ता फ़ीडबैक	***Attached at annexure - F2.13*** अनुलग्नक F2. 3पर संलग्न है
18.	***Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product***	***Applicable / Not applicable*** लागू / लागू नहीं

	(similar or higher rating) प्रस्तावित उत्पाद (एक समान या उच्च रेटिंग वाले) के लिए टाइप टेस्ट रिपोर्ट (टाइप टेस्ट विवरण, रिपोर्ट संख्या, एजेंसी, जांच की तारीख) का सारांश नोट: - रिपोर्ट प्रस्तुत करने की आवश्यकता नहीं है ***Note:- Reports need not to be submitted***	***Details attached at Annexure – F2.14*** विवरण अनुलग्नक - F2.1 4में संलग्न है ***(if applicable)*** (यदि लागू हो)
19.	***Statutory / mandatory certification for the proposed product*** प्रस्तावित उत्पाद के लिए वैधानिक / अनिवार्य प्रमाणीकरण	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.15*** ***(if applicable)*** (यदि लागू हो)
20.	***Copy of ISO 9001 certificate*** आईएसओ 9001 प्रमाण पत्र की प्रति ***(if available***(यदि उपलब्ध हो)	***Attached at Annexure – F2.16*** अनुलग्नक में संलग्न - F2.1 6 है
21.	***Product technical catalogues for proposed item (if available)*** प्रस्तावित मद के लिए उत्पाद तकनीकी कैटलॉग (यदि उपलब्ध हो)	***Details attached at Annexure – F2.17*** विवरण अनुलग्नक - F2.1 7 में संलग्न है

Name: ***नाम:***		***Desig:*** ***पदः***		***Sign:*** ***हस्ताक्षर:***		***Date:*** ***तिथि:***	

Company's Seal/Stamp:- कंपनी की मुहर / मोहर: -