

Our Ref: KETRACO/PT/045/2023

5th June 2024

Notice to all Bidders.

TENDER ADDENDUM AND CLARIFICATION No. 13 (TAC 13)

RE: Procurement of Plant, Design, Supply and Installation of the 220kV Mariakani - Dongo Kundu Transmission Line and Associated Substations (KETRACO/PT/045/2023)

The following amendments are made to the specified provisions for the bidding documents for procurement of plant, design, supply and installation of the 220kV Mariakani - Dongo Kundu Transmission Line and Associated Substations (KETRACO/PT/045/2023).

Save where expressly amended by the terms of this clarification, the Principal Tender Document shall continue to be in full force and effect.

Find herein the ADDENDUM and CLARIFICATION No. 13, consisting of Twenty-Two (22) pages into the Principal Tender Documents as attached. This document should be returned along with dully filled Form of Tender.

All other terms and conditions of the Request for Proposal document remains the same.


PETER NJEHIA
SENIOR MANAGER, SUPPLY CHAIN

Tender Addendum and Clarification No. 13 of Tender No. KETRACO/PT/045/2023 has been received and incorporated in the Tender Documents.

Name of Tenderer (*in block letters*):

Signature:

Date:

Signed for the Tenderer by
(*Name in block letters*):

In the office bearer capacity
of:



A. Addendum No. 13

Employer's Requirements; Section VI-2A Scope of Works-Substation.

Part A-Electrical Engineering Requirements.

1.12 Miscellaneous Materials

1.12.1 .Padlocks and Key Cabinet

All panels, cubicles, switchboards, switchgear compartments and Facilities for applying safety isolation shall be provided with padlocks.

Non-ferrous padlocks with stainless steel shanks with different key changes and two keys for each lock and bay-wise submaster as per standard practices of KETRACO shall be provided.

Wall mounted lockable cabinets for the accommodation of padlocks and keys, whilst not in use, shall be provided and labelled in an approved manner so that keys can be easily identified. Duplicate keys shall be mounted in a separate cabinet.

For extensions/modifications to existing substations, the prevailing "master/submaster" system shall be matched. Control room doors and gates of the new substations shall be fitted with locks to suit the master series of existing substations. New substations shall be provided with key changes to suit the submaster series bay-wise.

No grandmaster for each substation is required. Submaster series keys shall be locked off in a separate cabinet. All padlocks and keys shall be engraved with proper identification numbers e.g., circuit number, equipment number, etc. as per KETRACO standard numbering scheme. Locking facilities shall be such that it will accept sizes of padlocks & keys large enough to permit identification numbers, etc. to be embossed on them. Equipment shall be such that it can accept interlocks/scheme identical to that in existing substations.

B. Clarification No. 13

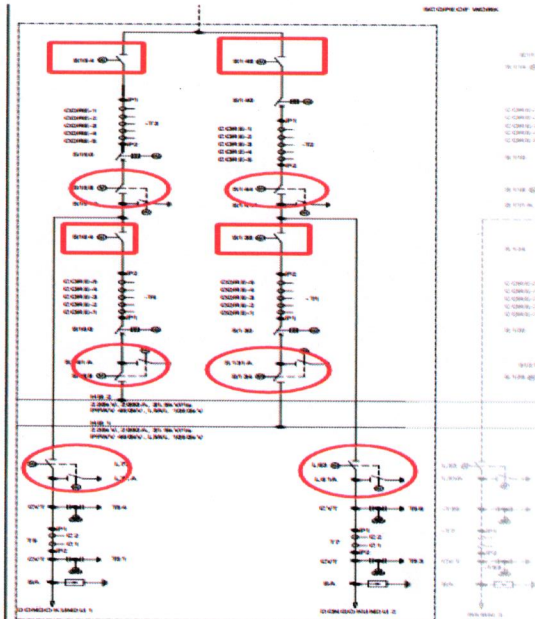
No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO
1.	Volume I of VII-PART 1	Section III. Evaluation and Qualification Criteria (without prequalification)	1.1.3 Subcontractor for major item of the Works	<p><Minimum Criteria to meet> The operational experience shall be supported by end-user certificates from at least three (3) utilities/clients with comprehensive contact details.</p> <p><Submission Requirement> End-user certificates/ letters from the utilities/clients</p>	<p>For most suppliers, it is very hard to secure for the end-user certificate. This condition will remain the same even if the definition of utilities/clients is changed to including the EPC Contractor.</p> <p>Therefore, please kindly consider that changing the condition from "at least three (3) utilities/clients" to "at least one(1) utility/client".</p>	Not acceptable.
2.	Volume I of VII-PART 1	Section III. Evaluation and Qualification Criteria (without prequalification)	1.1.3 Subcontractor for major item of the Works	<p><Minimum Criteria to meet> Higher rating being in successful operation for at least five (5) years.</p> <p><Submission Requirement> End-user certificates/ letters from the utilities/clients</p>	<p>Most suppliers have end user- certificates less than 5 years old,</p> <p>And 5 years is a "long time" for manufacturers to still be in close contact and reach out again to the utilities for an end user certificate. This is true even if the definition of utilities/clients changes its terms to include the EPC Contractor.</p> <p>Therefore, please kindly consider</p> <p>(1) the waive for the period of "at least five (5) years.</p>	<p>Not acceptable.</p> <p>Refer to Tender Addendum and Clarification No. 11 - item no.13.</p>

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO
					(2) If not, change the period from "at least five (5) years" to "at least one (1) year".	
3.	Volume I of VII-PART 1	Section III. Evaluation and Qualification Criteria (without prequalification)	1.1.3 Subcontractor for major item of the Works	<p><Description Item> 220/33kV, 75MVA, Transformer Online monitoring system, water firefighting system, OLTC</p> <p><Submission Requirement> End-user certificates/ letters from the utilities/clients</p>	<p>Especially for the item lists in the left column "220/33kV, 75MVA, Transformer Online monitoring system, water firefighting system, OLTC", it is very hard to secure for the end-user certificate with the condition of tender requirement.</p> <p>Therefore, please kindly consider the followings.</p> <p><Operation Experience> (1) the waive for the period of "at least five (5) years." (2) If not, change the period from "at least five (5) years" to "at least one (1) year".</p> <p><End-user certificate> Changing the condition from "at least three (3) utilities/clients" to "at least one(1) utility/client".</p>	Not acceptable.
4	Volume I of VII-PART 1	Section III. Evaluation and	1.1.3 Subcontractor for	<Description Items>	Especially for the item lists in the left column, "245kV Switch Gear (d) Capacitor Voltage Transformer".	Not acceptable.

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO
		Qualification Criteria (without prequalification)	major item of the Works	no.2: 245kV Switch Gear (d) Capacitor Voltage Transformer <Submission Requirement> End-user certificates/ letters from the utilities/clients	it is very hard to secure for the end-user certificate with the condition of tender requirement. Therefore, please kindly consider the followings. <Operation Experience> (1) the waive for the period of "at least five (5) years." (2) If not, change the period from "at least five (5) years" to "at least one (1) year". <End-user certificate> Changing the condition from "at least three (3) utilities/clients" to "at least one(1) utility/client".	
5	Volume I of VII-PART 1	Section III. Evaluation and Qualification Criteria (without prequalification)	1.1.3 Subcontractor for major item of the Works	<Description Items> no.8 (a) LL ACSR conductor <Submission Requirement> End-user certificates/ letters from the utilities/clients	Especially for the item listes in the left column, "LL ACSR conductor", it is very hard to secure for the end-user certificate with the condition of tender requirement. Therefore, please kindly consider the followings. <Operation Experience> (1) the waive for the period of "at least	Not acceptable.

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO
					<p>five (5) years. (2) If not, change the period from "at least five (5) years" to "at least one (1) year".</p> <p><End-user certificate> Changing the condition from "at least three (3) utilities/clients" to "at least one(1) utility/client".</p>	
6	Volume I of VII-PART 1	Section III. Evaluation and Qualification Criteria (without prequalification)	1.1.3 Subcontractor for major item of the Works	<p><Description Items> no.5: Control, protection, and metering, SAS</p> <p><Submission Requirement> End-user certificates/ letters from the utilities/clients</p>	<p>Especially for the item lists in the left column, "Control, protection, and metering, SAS", it is very hard to secure for the end-user certificate with the condition of tender requirement.</p> <p>Therefore, please kindly consider the followings.</p> <p><Operation Experience> (1) the waive for the period of "at least five (5) years. (2) If not, change the period from "at least five (5) years" to "at least one (1) year".</p> <p><End-user certificate> Changing the condition from "at least</p>	Not acceptable.

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO
					three (3) utilities/clients" to "at least one(1) utility/client".	
7	Volume I of VII-PART 1	Section III. Evaluation and Qualification Criteria (without prequalification)	1.1.3 Subcontractor for major item of the Works	<p><Description Items> no.6: Tele-communication (fiber optic link)</p> <p><Submission Requirement> End-user certificates/ letters from the utilities/clients</p>	<p>Especially for the item lists in the left column, "Tele-communication (fiber optic link)", it is very hard to secure for the end-user certificate with the condition of tender requirement.</p> <p>Therefore, please kindly consider the followings.</p> <p><Operation Experience> (1) the waive for the period of "at least five (5) years. (2) If not, change the period from "at least five (5) years" to "at least one (1) year".</p> <p><End-user certificate> Changing the condition from "at least three (3) utilities/clients" to "at least one(1) utility/client".</p>	Not acceptable.

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO																			
8	Volume I - PART 1_20231227 .pdf	P137 Section IV. Price Schedules: C2-Substations Schedule No.3	<table><tr><th>Item No.</th><th>Description</th><th>Unit</th><th>Qty.</th></tr><tr><td>360</td><td>220 kV Mariakani Substation (Extension)</td><td></td><td></td></tr><tr><td>361</td><td>3-phase 220 kV gas circuit breaker complete with necessary steel support and accessories</td><td>No</td><td>4</td></tr><tr><td>362</td><td>3-phase 220 kV disconnector with Earth/Switch complete with steel support and accessories</td><td>No</td><td>8</td></tr><tr><td>363</td><td>3-phase 220 kV disconnector without Earth/Switch complete with steel support and accessories</td><td>No</td><td>2</td></tr></table> 	Item No.	Description	Unit	Qty.	360	220 kV Mariakani Substation (Extension)			361	3-phase 220 kV gas circuit breaker complete with necessary steel support and accessories	No	4	362	3-phase 220 kV disconnector with Earth/Switch complete with steel support and accessories	No	8	363	3-phase 220 kV disconnector without Earth/Switch complete with steel support and accessories	No	2	Regarding the 220 kV Mariakani Substation Extension, there is a discrepancy between the Bill of Quantities (BOQ) and the Single Line Diagram (SLD). The BOQ specifies: 8 units of 3-phase 220 kV disconnectors with Earth/Switch, complete with steel support and accessories 2 units of 3-phase 220 kV disconnectors without Earth/Switch, complete with steel support and accessories However, the SLD (document "MSEZ-2022-SS/E-019-Mariakani Substation Extension-Single Line Diagram Electrical") indicates: 6 units of 3-phase 220 kV disconnectors with Earth/Switch, complete with steel support and accessories 4 units of 3-phase 220 kV disconnectors without Earth/Switch, complete with steel support and accessories Please confirm whether the Bill of Quantities (BOQ) or the Single Line Diagram (SLD) should be taken as the basis for the BID.	Refer to Tender Addendum and Clarification No. 6 - item no. 74 and Tender Addendum and Clarification No. 11 - item no. 21.
Item No.	Description	Unit	Qty.																						
360	220 kV Mariakani Substation (Extension)																								
361	3-phase 220 kV gas circuit breaker complete with necessary steel support and accessories	No	4																						
362	3-phase 220 kV disconnector with Earth/Switch complete with steel support and accessories	No	8																						
363	3-phase 220 kV disconnector without Earth/Switch complete with steel support and accessories	No	2																						

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO
9		Tender Addendum and Clarification no,2	P.49 3.3 Software	For the software training, such as ETAP, AutoCAD, to be held in Kenya, based on the bidding requirements "The contractor shall provide training location, daily subsistence allowance, food/refreshment throughout the training period. "	Please kindly clarify how much is the daily subsistence allowance.	Daily subsistence allowance of USD 100 per participant shall apply for section VI-1B-01 clause 1.38.3 and section VI-2B clause 3.3. For section VI-1B-01 clause 1.38.3, the contractor shall also provide transport throughout the training period.
10	30-Section VI-2B-26-Specification s-Breaker Switch Capacitor Banks	Clause 26.4 Shunt Capacitor Banks Pdf Pg. 4/14	Voltage transformers shall be used for discharging, which are directly connected to the capacitor banks. They shall be able to discharge the capacitors in a matter of seconds after switching off. It is to be ensured that when banks are switched off and on at very short intervals, then at the time of reapplication of voltage, the voltage at the terminals of the capacitor bank shall be not more than 10% of rated r.m.s. voltage. An instrument transformer for protection purposes shall also be fitted in the neutral point connection.	The voltage transformer does not have discharge function; each unit has discharge resistor can meet the requirement mentioned in Clause 26.5 as follow each unit has discharge resistor can meet the requirement mentioned in Clause 26.5 as follow, Each capacitor unit shall be equipped with an internal discharge device, which reduces the residual voltage from crest value of rated voltage Un down to 50 Volts or less within 5 minutes after disconnection. Kindly confirm.	Confirmed.	

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO
11	30-Section VI-2B-26- Specification s-Breaker Switch Capacitor Banks	Clause 26.6 Unit Container Pdf Pg. 04/14		The container shall have stud for earthing.	The lower surface of unit's lifting lug is not painted and can be used for grounding purposes as shown in the following picture. This is the standard manufacture earthing provision supplying for all customers. Kindly accept.	Not acceptable.
12	30-Section VI-2B-26- Specification s-Breaker Switch Capacitor Banks	Clause 26.8 Power Losses Pdf Pg. 5/14		26.8 Power Losses The loss of the capacitor banks shall not exceed 0.2 W/kVAR. This shall include the losses due to the internal discharge resistors.	We understand that mentioned power loss is for capacitor unit not for capacitor bank. Please confirm our understanding. If yes capacitor bank loss will be based on design. Please confirm	Confirmed.
13	30-Section VI-2B-26- Specification s-Breaker Switch Capacitor Banks	Clause 26.20 Busbars, Conductors and Connectors Pdf Pg. 8/14		Busbars and electrical connections in outdoor substations made of aluminium shall be in accordance with BS 215 Part 1 and Part 2, BS 159, BS2898 in respect of current rating and material analysis. Aluminium busbars and connections of tubular shape shall be of alloy E91E to BS 2898 and stranded conductors to IEC 61089. The number and diameters of the individual wires forming the finished conductor and the thickness of the tubes shall be subject to approval. Whenever copper busbars and connections are used they shall be in accordance with BS.7884:1997, BS 159 or equivalent IEC standard. In case of hollow stranded copper conductors they shall be supported against crushing at clamping positions by sweating solid or plugging.	1. We can provide 100 * 10 aluminium bars for connections. The aluminium element in the aluminium bars is more than 99.5%. 2. The connection between capacitor units uses tinned copper stranded wire BV50, which follows the standard IEC 60228, Each wire contains 37 wires with a diameter of 1.35mm.	Bidder may submit technical specifications and catalogue for evaluation. Submit your proposal with design calculation at the design stage for Employer's approval.

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					We will provide the above two types of conductors and we can ensure that its current carrying capacity meets 1.3 times of the rated current. Kindly accept the proposal.	
14	30-Section VI-2B-26-Specification s-Breaker Switch Capacitor Banks	Clause 26.21.2 Overload Protection Relay Pdf Pg. 10/14	26.21.2 Overload Protection Relay On this relay a thermal image of the protected element will be incorporated. A variable time constant will be adjusted on the relays face-plate. Visual signal for the temperature rise of the protected object with compensation of temperature ambient and selection of the reference current value. For the capacitor banks a two stage relay shall be used for this protection, first stage set at 130% I _n would give an alarm. Second stage set at 250% I _n would give a trip of the circuit breaker	Second stage set at 143% I _n would give a trip of the circuit breaker because IEC 60871-1 (Refer below snap) clearly state the maximum current of the capacitor unit can reach 1,43 under continuous operation. Kindly confirm. 20 Overloads – Maximum permissible current Capacitor units shall be suitable for continuous operation at an r.m.s. current of 1,30 times the current that occurs at rated sinusoidal voltage and rated frequency, excluding transients. Depending on the actual capacitance value, which may be a maximum of 1,10 C ₁₀ , the maximum current can reach 1,43 I _n (see 27.6).	As per IEC60871-1.	
15	30-Section VI-2B-26-Specification s-Breaker Switch Capacitor Banks- 20230704	Clause 26.15 Switchgear Pdf Pg. 7/14	26.15 Switchgear Each 9 MVAR capacitor bank assembly shall individually be switched through an individual 33 kV isolator and circuit breaker. The specification for 33 kV switchgear shall apply, and additionally the Contractor must prove by calculations submitted for approval by the Employer/Engineer that the switchgear is fully capable of handling all currents and surges that may occur under any switching of the capacitor bank installation.	Earth switch is shown in the SLD 4-MSEZ-2022-SS-E-002-220-33kV. However specification requested for 33kV Isolator. We understand that Disconnecter is not applicable for capacitor Bank feeder as per addendum TAC 9 clarification No. 10. Kindly Confirm.	Confirmed.	

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO
16	30-Section VI-2B-26-Specification s-Breaker Switch Capacitor Banks-20230704	Clause 26.12 Tests Pdf Pg. 7/14		<u>Factory acceptance tests:</u> Factory acceptance tests are to be performed on each completed capacitor bank in the presence of the Employer/Engineer unless he waives the test. The factory acceptance tests shall be the same as mentioned above as routine tests.	FAT will be conducted for only capacitor unit with 10% of total quantity.	Requirement in 30-Section VI-2B-26-Specifications-Breaker Switch Capacitor Banks-20230704 Clause 26.12 Tests shall apply.
17	29-Section VI-2B-25-Specification s-33kV Gas Insulated Switchgear (Indoor)-20230704	Clause 25.4.6 Enclosures and Busbars Pdf Pg. 07/16		f) Design of the switchgear must allow for the removal of individual breaker bays, or parts thereof, without disturbing the remaining bays.	As per specification requirement of 33kV Switchgear is GIS Type, hence it is not possible without disturbing the remaining bays in GIS Type. Kindly confirm.	Not acceptable. Breaker bays are to be independent. Refer to 29-Section VI-2B-25-Specifications-33kV Gas Insulated Switchgear (Indoor)-20230704 Clause 25.4.6 Enclosures and Bus bars, d and e.
18	05-Section VI-2B-01-Specification s-Circuit Breakers-20230704	Clause 1.1.2 Standards Pdf Pg. 3/22		1.1.2. Standards Unless otherwise stated in this specification, the delivery shall fulfil all requirements of the relevant IEC standards. The latest revision of the standards shall be applicable as they are valid on the date of both the Bidding and the Contract. Full type test reports certified by an approved laboratory affiliated with international organizations who is a member of the Short-Circuit Testing Liaison (STL) proving the successful passing of such tests shall be provided.	Breaker are type tested as per IEC 62271-100 and the short circuit test report shall be from the member of Short Circuit Testing Liaison (STL) however, few other test reports may not be from STL labs. The other reports shall be from internationally approved and accepted labs. The similar Breakers are already supplied worldwide based on same reports. Kindly accept.	Full type test reports must be compiled as per the Bid document provisions.

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO
19.	05-Section VI-2B-01- Specification s-Circuit Breakers- 20230704	1.1.5.2. Circuit Breaker Operating Mechanisms General Pdf Pg. 7/22		The mechanism shall be capable of being locked in either the open or closed position. Circuit breakers may be subject to several single shot auto-reclose duty cycles in quick succession upon the occurrence of multiple faults coupled with short reclaim timer settings. The operating mechanism shall be capable of fully closing and opening again after the auto-reclose time interval specified i.e.: performing a complete 0-0.3 sec-CO-3 min-CO duty.	The Operating mech. is provided with a cabinet which has provision for padlocking. However physical padlocks are not considered. Further considering CB functionality it is not required to lock it mechanically in closed or open position (since this protection can be achieved by the padlock on the cabinet of the mech. However in case KETRACO would like to lock the closing operation of the CB in certain condition after it has tripped then provision for preventing the next closing operation through mech. interlocking can be made available. Please confirm.	Not confirmed. The required functionality as per specifications must be provided.
20.	05-Section VI-2B-01- Specification s-Circuit Breakers- 20230704	Clause 1.1.8.1. Control Pdf Pg. 11/22		<ul style="list-style-type: none"> EMERGENCY TRIP DEVICE, suitable for manual operation in event of failure of electrical supplies. The device shall be accessible without opening any access doors and distinctively labelled and protected against inadvertent operation. 	Provision for mech. emergency manual trip and close is available soon as the cabinet of the operating mech. is opened. However it is strongly recommended not to install an emergency trip device in a position that can be easily accessed without opening the access doors of the cabinet since a sensitive operation can then get triggered by unauthorized personnel also. Further such an operation can be a serious safety threat to the equipment and personnel since such operation does not taken into account	Emergency Trip Device shall be provided as per the technical specifications which are in line with KETRACO standards and operations.

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					the healthy or unhealthy status of the breaker before the operation happens. In case there is anything unhealthy in the CB such an emergency mech. operation can have severe safety consequences. Hence we strongly recommend the Purchaser to review this requirement, allow and accept the provision available for such emergency manual operation within the cabinet (which is padlocked and can be opened only by authorized personnel of KETRACO. In case however the KETRACO insists for such facility outside the cabinet of the operating mech. the entire risk for any consequences arising due to any untoward CB operation in the field on personnel and equipment safety would need to be borne by KETRACO. Kindly confirm	
21.	TECHNICAL DATASHEETS FOR CIRCUIT BREAKERS	Clause 1.26 Data sheet <				

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO				
22.	TECHNICAL DATASHEETS FOR CIRCUIT BREAKERS	Clause 1.30 Data sheet Pdf Pg. 21/22		<table><tr><td>1.30</td><td>Maximum time interval between closure of first and last phase of three phase circuit breaker</td><td>ms</td><td>3.3</td></tr></table>	1.30	Maximum time interval between closure of first and last phase of three phase circuit breaker	ms	3.3	We will follow maximum time interval between closure of first and last phase of three phase circuit breaker is 5 ms as per IEC. Kindly confirm.	As per IEC62271.
1.30	Maximum time interval between closure of first and last phase of three phase circuit breaker	ms	3.3							
23.	TECHNICAL DATASHEETS FOR CIRCUIT BREAKERS	Clause 1.34 b) Data sheet Pdf Pg. 21/22		<table><tr><td>b. Fault current - 40 kA</td><td>15 to 20</td></tr></table>	b. Fault current - 40 kA	15 to 20	Electrical contact life in number of operations at: Fault current - 40 kA is 12 as per type test. Kindly confirm	Not acceptable.		
b. Fault current - 40 kA	15 to 20									
24.	General	220kV Outdoor Equipment's			All cleaning, painting practices shall be as per Hitachi Energy proven practices. Surface treatment and materials shall comply to relevant ISO, National standards and Hitachi Energy proven practices where we have not foreseen Please furnish the variations any modification of those or their approval by Purchaser. Since Aluminum is used as base metal for all equipment cabinets, Hitachi Energy practices are suitable for tropical conditions and hence all painting will be done as per Hitachi Energy proven and earlier used practices	Hitachi Energy proven practices are acceptable as long as they are in line with the technical specifications.				

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					only. Similar practices have been adapted for equipment supplied to various international customers earlier. Kindly accept.	
25.	07-Section VI-2B-03-Specification s- Disconnectors & Earthing Switches-20230704	Clause 3.4. Electrical Ratings and Requirements Pdf Pg.4/20		Earth switches on line circuits shall be capable of interrupting the current induced in the line by a parallel fully loaded line.	The earth switches are suitable for interrupting capacitive and inductive currents as per definition of negligible currents in IEC. Kindly Confirm.	Confirmed.
26.	07-Section VI-2B-03-Specification s- Disconnectors & Earthing Switches-20230704	Clause 3.5.3 Operating mechanism Pdf Pg.5/20		Operating mechanisms shall be capable of being locked in the open or closed positions; Power operating mechanisms shall be suitable for the operation from voltage specified in the Schedules of this Specification.	The padlock provision is available on the operating mechanism box, no physical locks are considered. Kindly accept.	In addition to padlock provision to be provided on the operating mechanism box, physical padlocks shall also be provided. Refer to Addendum No. 13.
27.	07-Section VI-2B-03-Specification s- Disconnectors & Earthing	Clause 3.5.3 Operating mechanism Pdf Pg.6/20		Manual hand operation shall be provided on power-operated disconnectors and the power drive shall be mechanically disconnected during hand operation. It is required that the manual effort to operate the disconnectors or earth switches shall be less than 150N. There shall be adequate access for the manual operation.	The manual hand drive of the offered disconnector shall be suitable for 250 Nm torque requirement to operate the disconnector. Kindly accept.	Manual hand operation must be achieved with manual effort less than 150Nm.

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	Switches-20230704					
28.	07-Section VI-2B-03-Specification s-Disconnectors & Earthing Switches-20230704	Clause 3.5.3 Operating mechanism Pdf Pg.6/20	3.5.4 Main contacts The main contacts of the disconnecter or earthing switch shall be made of plain copper or copper alloy and have to be silver-plated with a thickness of 25µm. The design shall incorporate features which shall reduce or eliminate very high frequency voltage transients during disconnecter operation. Disconnecter switch blades shall be of tin plated copper for H2S polluted environments. Adequate protection of blades should also be provided in case of other pollutants at installation site.	The contacts of disconnecter shall be of springless type which ensure high consistency of contact resistance throughout the life since there are no small parts like springs and fasteners that are required. Besides they are of superior design with self-tensioning materials like Cu-CR-Zr and are type tested for the offered short circuit withstand level. The same are used in all our international supplies to major Utilities in the world and are thus much superior in performance to designs with springs. Kindly accept.	The main contact must be silver-plated with a thickness of 25µm.	
29.	07-Section VI-2B-03-Specification s-Disconnectors & Earthing Switches-20230704	Clause 3.5.4 Main contacts Pdf Pg.6/20	The main contacts of the disconnecter or earthing switch shall be made of plain copper or copper alloy and have to be silver-plated with a thickness of 25µm.	The specification asks for main contacts to be silver plated. However silver plating is not suitable for H2S environment which is specified for this case. Hence the contacts shall be tin plated to serve the purpose. Kindly confirm.	Refer to item 28 above.	

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30.	07-Section VI-2B-03- Specification s- Disconnectors & Earthing Switches- 20230704	Clause 3.6.2 Protection Pdf Pg.8/20	3.6.2 Protection Operating motors shall be provided with thermal overload protection and in the case of 3 phase motors, phase unbalanced protection. The protection which shall have at least two (2) free alarm signalling contacts (break contacts). Resetting of this relay shall be both manual and auto.		The motor of the offered Disconnectors is quite small in rating and is of only 470 Watts and therefore thermal overload protection of motor is not required. Relevant MCB's are provide for adequate protection. Kindly confirm.	Not acceptable.
31.	07-Section VI-2B-03- Specification s- Disconnectors & Earthing Switches- 20230704	Clause 3.6.5 Contact Requirements Pdf Pg. 9/20	Auxiliary contacts shall be suitable for: <ul style="list-style-type: none"> AC: 230 V, 20 A, $\cos \phi = 0.85$ DC: 110 V, 20A, time constant 20 ms 		Auxiliary contacts shall have ratings suitable to the control voltage specified. As most control circuit requirements of Disconnectors circuits are of very low power nature it is not relevant for the auxiliary switches to be rated for very high electrical continuous current rating. The proposed aux. contacts shall be suitable for continuous current rating of 10A at 220Vdc which are the most common ratings recommended by standards as well for auxiliary contacts being used in the control circuits of HV Switchgear. Kindly Confirm.	Not acceptable.
32.	07-Section VI-2B-03- Specification s-	3.10. Tests Routine Tests			Please note that as per IEC in case the insulation of the equipment is only brought about by solid core insulators and is in air (which is the case with	Not acceptable.

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO					
	Disconnectors & Earthing Switches-20230704	Pdf Pg. 12/20		<p>Routine Tests</p> <p>Tests shall be carried out prior to shipment on each apparatus manufactured, as per IEC 62271-102 and IEC 62271-1 Standards.</p> <p>The following tests shall be made:</p> <ul style="list-style-type: none">Dielectric test of the main circuit, and on auxiliary and control circuits.	Disconnectors) then Dielectric testing on the DS is not necessary during routine testing and in lieu of it dimensional verification suffices. Hence, we have foreseen dimension verification in lieu of dielectric testing of the main ckt of the DS during routine testing. Kindly Confirm.						
33.	10-Section VI-2B-06-Specification s-Power Transformer-20230704	Clause 6.19 Control Cubicles Pdf Pg. 20/101		The cubicles shall comply with the requirements of Section 6.3 - General Technical Requirements. All control cubicles shall be of IP 65 degree of protection, weather, vermin and insect-proof with sufficient ventilation and equipped with humidity controlled heating and sufficient illumination switched on and off by door contacts as well as one socket outlet 240V a.c, 16 A. Separate sunshades shall be provided for each cubicle. Wherever applicable window panels shall be fitted with laminated glass only. A three phase socket outlet rated 150 A shall be provided for oil filtration equipment.	Control cubicle mounted outdoor will be IP55 and indoor will be of IP43. kindly accept.	Not acceptable.					
34.	1.0 220/33 kV POWER TRANSFORMERS		<table><tr><td>9</td><td>1.28 data sheet 43/26</td><td>Section VI-2B: Specifications - Substations 06 - Power Transformer</td><td>Maximum current density at rated power: 250A/cm2</td><td>We will propose the current density based on the design by confirming guaranteed losses and winding temperature rises. We can use optimum level of copper without current density limitation</td><td>Confirmed, but to complete the Technical Datasheet 1.28 for evaluation.</td></tr></table>	9	1.28 data sheet 43/26	Section VI-2B: Specifications - Substations 06 - Power Transformer	Maximum current density at rated power: 250A/cm2	We will propose the current density based on the design by confirming guaranteed losses and winding temperature rises. We can use optimum level of copper without current density limitation	Confirmed, but to complete the Technical Datasheet 1.28 for evaluation.	As per addedndum TAC 3 DONGO KUNDU No.9. We understand that we can increased current density as much as to maintain guaranteed losses . Please confirm.	Confirmed.
9	1.28 data sheet 43/26	Section VI-2B: Specifications - Substations 06 - Power Transformer	Maximum current density at rated power: 250A/cm2	We will propose the current density based on the design by confirming guaranteed losses and winding temperature rises. We can use optimum level of copper without current density limitation	Confirmed, but to complete the Technical Datasheet 1.28 for evaluation.						

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO
35.	05-Section VI-2B-01- Specification s-Circuit Breakers- 20230704	Clause 1.1.5.2. Circuit Breaker Operating Mechanisms Pdf Pg. 8/22		The local - remote selector switch shall be lockable in both positions and the trip-neutral close control switch shall be lockable in the neutral position. For maintenance purposes, means shall be provided for manual operation including the slow closing and opening of those circuit breakers whose moving contacts are mechanically coupled to the direct linkage mechanism. Such operation shall be possible without the necessity of gaining access to the interior of the power unit, and shall not require excessive physical effort.	Modern HV breakers are hermetically sealed and no maintenance is required during the course of electrical life of the breaker which is very long i.e. about 2000 operation at rated continuous current. Hence, there is no necessity to make any provision for slow closing as it is not required during the course of electrical life of the CB. However, slow closing is possible after removal of the connection between the poles (in an extremely rare case that it may be required during any maintenance operation etc). Kindly confirm.	Confirmed.
36.	05-Section VI-2B-01- Specification s-Circuit Breakers- 20230704	Clause 1.1.7. Support Structure Pdf Pg. 11/22		All circuit breakers shall be provided with safety platforms to protect operators from dangerous potentials. The safety platform shall be installed near the operating mechanisms, permanently secured to the support structures and be connected to the station-grounding grid.	Offered CB is presently provided with a the std height of the support structure which is sufficient to meet all air clearance requirements and safety clearances as per IEC. With this arrangement there is no need for separate ladder or platform for easy access to the operating mechanism. Kindly Confirm.	Not acceptable.

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO
37	05-Section VI-2B-01- Specification s-Circuit Breakers- 20230704	Clause 1.1.8. Control, Protection and Monitoring Pdf Pg. 11/22		EMERGENCY TRIP DEVICE, suitable for manual operation in event of failure of electrical supplies. The device shall be accessible without opening any access doors and distinctively labelled and protected against inadvertent operation.	A manual emergency trip device is strongly not recommended to be installed on the outside of the cabinet of operating mechanism & is foreseen to be provided on the inside of the cabinet of the operating mechanism in the interest of safety for the breaker. Note that a mech. manual emergency operation is relatively not very safe operation as it bypasses the status of the control ckts of the breaker & the status of SF6 gas. Hence, such an operation is only to be done by authorized personnel. By providing such an arrangement inside the cabinet of the operating mech. it is ensured that only authorized personnel of the Purchaser can access such a emergency. Kindly Confirm	Not acceptable.
38.	08-Section VI-2B-04- Specification s-Instrument Transformers -20230704	Clause 4.1.7.2 Temperature rise Pdf Pg. 12/20		With the voltage transformer loaded at rated output and at 1.2 times rated primary voltage continuously, the temperature rise above ambient temperature in the EMU shall not exceed: <ul style="list-style-type: none"> • 60 K for the windings • 50 K for the oil. 	Proposed CVT is hermetically sealed hence temperature rise will be followed as per IEC i.e top oil, hermetically sealed – 55K & winding average, hermetically sealed – 65K. Kindly Confirm.	Confirmed.

No.	Volume	Part / Page	Section/ Clause No.	Reference	Clarification	Reply from KETRACO
39.	10-Section VI-2B-06- Specification s-Power Transformer- 20230704	Clause 6.5 Magnetic Circuit Pdf Pg. 6/101		The core shall be built up of high-grade, non-ageing, low-loss, high-permeability grain oriented steel sheets. Both sides of each steel sheet shall be insulated with a durable, hot oil and heat resistant baked enamel varnish or other chemical treatment. The cores shall be clamped and braced to withstand, without damage or deformation, the forces caused by short-circuit stresses, transportation, or handling, and to prevent the shifting of the core laminations. The bolts, nuts, and end plates of the assembly and clamp structure shall be of a nonmagnetic type, and shall be effectively insulated and locked so that they ensure an even pressure on the whole core assembly and are not loosened by vibrations caused by transport and operation. The supporting framework of the cores shall be designed to avoid the presence of pockets which could prevent complete draining of the tank or cause the trapping of air when filling during service.	Core clamps will be made of mild steel which is standard practice of hitachi energy globally and suitable for forces occurred, hardware M12 & above shall be hot dip galvanized, M10 & below shall be of SS material and end plates are made of wood and clamp structure will be mild steel and not non magnetic type. Kindly accept.	Acceptable.
40	10-Section VI-2B-06- Specification s-Power Transformer- 20230704	Clause 6.4 Windings Pdf Pg. 10/101		Where silica gel type breathers are used, they shall be of adequate capacity and of the maintenance-free type, with integrated heater, capable of automatic recharge. Breathers shall be fitted with oil traps and contain a minimum of 2.5 kg of silica gel. Breather compartments and oil cup shall be made of glass. The breather and associated pipework shall be firmly fixed to the transformer tank.	We are providing maintaianance free breather, maintainance free breather type does not require oil cup and other mentioned accessories. Hence same is not provided. Kindly confirm.	Refer to Tender Addendum and Clarification No. 12 - item no. 5.
41	10-Section VI-2B-06- Specification s-Power Transformer- 20230704	Clause 6.11 Transformer oil Pdf Pg. 11/101			We use factory standard Ergon make oil for FAT purpose and new insulating oil as per specification will be sent directly to site location. Kindly accept	Not accepted. Oil used for FAT purpose shall be the same type as the oil to be used in the transformer on site and the oil shall comply with the specifications.