Corrigendum - 2 dated 22/11/2024 to CPC Tender No. BHEL/CPC/UKI/PRE-BID_BOP/25/050 for the work of "PRE-BID TIE-UP/ MOU FOR EXECUTION OF BOP PACKAGES ON EPC BASIS AT 1X800 MW ULTRA SUPER CRITICAL UNIT No. # 7 TO BE CONSTRUCTED ON ASH DYKE AREA AT UKAI TPS, GSECL, GUJARAT".

A) Some of the Bidders had asked queries in the published tender specification. The clarifications issued by BHEL are as below:

Sl. No.	Reference Clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
1	1.0 Salient Features of NIT, SL NO V (BHEL NIT-Page-2)	Due Date & Time of Offer Submission: 25.11.2024, Time: 10 Hrs	Bid submission date Extension is required upto 26.12.2024 because Site Assessment is necessary	Tender conditions shall prevail.
2	1.0 Salient Features of NIT, SL NO IX V (BHEL NIT- Page 3)	Last Date for Seeking Clarification: Date-16.11.2024	Last date of seeking clarifications- extension is required upto 30.11.2024 because time is required to study whole Tender Doc.	Tender conditions shall prevail.
3	BHEL NIT Clause 16.0 NIT (Page 8 of 110)	The Bidder has to satisfy the Pre-Qualification Criteria specified in this NIT as per Annexure-1 or CEA Guidelines as per Annexure-23	It is requested to accept the PQR Clause as per SCCL Singareni-1x800 MW BOP EPC amended PQR/ or as per CEA guidelines- Consortium Mode (Route-8) with EPC Or ETC experience in place of only EPC experience plus Engg. Consultancy from Third Party for ETC Partner. Singareni PQR and CEA relevant Clause with requested changes are separately attached as Attachment-I & Attachment-II respectively	Taken up with customer and same is subjected to approval from GSECL.
4	Clause 3 (ii) CEA Guidelines for PQR (NIT Page54)	In case of Consortium bidding, total Performance BG shall be 15% (Consortium Leader- 10%)	Reduction of PBG amount from 15% to 10% of Contract Price for Consortium Bidding	Tender conditions shall prevail.
5	Annexure-6 (Sheet-5) Geotech Topo and Soil Invest SBC report, GSECL Corrigendum-8	GSECL Geotech & Soil Investigation report of Ash Dyke Area where the Power Plant will be constructed	Bid Price shall be based on Geo-tech data provided in Tender Documents. Any Cost Implications due to variations in Geo-Tech Data during execution stage shall be compensated by BHEL	Tender Conditions shall prevail.

Sl. No.	Reference Clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
6	Clause 8.3.1 (Page 119 of 506, GSECL- 4.2 Final Vol-1 COMM SPECS)	LC Usance period not mentioned in this Clause The credit period for Payment directly to bank for Domestic Supplies not mentioned	LC Usance period shall be 30 days from Invoice Date. Credit period shall be 30 days for payment to Contractor's bank for Domestic Equipment Supply & Mandatory Spares	Tender Conditions shall prevail.
7	Clause 8.3.2 (Page 120 of 506, GSECL- 4.2 Final Vol-1 COMM SPECS)	Direct Payment by Owner for "Other Payments" like Advance, Price Adjustment, etc: Credit period not mentioned	Direct Payment by Owner: Credit Period shall be 30 days from Invoice date	Tender Conditions shall prevail.
8	Clause 8.3.3 (Page 120 of 506, GSECL- 4.2 Final Vol-1 COMM SPECS)	Payment by Owner to Tenderor by RTGS/ NEFT to an Account maintained by Tenderor at a bank in Vadodara, Gujarat	Instead of Bank in Vadodara, it shall be bank of the Contractor anywhere in India	Noted & agreed.
9	Clause 8.3.4 (Page 120 of 506, GSECL- 4.2 Final Vol-1 COMM SPECS)	Final payment shall be made within 120 days from the date of Take Over Certificate	Full & Final payment shall be made within 30 days from the date of Take Over Certificate	Tender Conditions shall prevail.
10	BHEL MOU Clause 4 (Page 102 of 110)	Variation in Pricing and Alteration in Terms & Conditions: BHEL will directly negotiate with GSECL to secure the Order without consulting BOP EPC Bidder, Price and T&C may get changed	BHEL is requested to alter the clause 4.1. BHEL has to inform in advance and take concurrence from BOP Bidder for any changes in BOP Price and Terms & Conditions	Tender Conditions shall prevail.
11	Clause 40.1.1 (Page 150 of 506, GSECL- 4.2 Final Vol-1 COMM SPECS)	Notice for Suspension of Work: 10 days	Notice for Suspension of Work shall be 30 days in place of 10 days, similar for Termination	Tender Conditions shall prevail.

Sl. No.	Reference Clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
12	Clause 43.1 (Page 153 of 506, GSECL- 4.2 Final Vol-1 COMM SPECS)	Rejection of Defective Plant - time period for necessary corrections is given as 7 days only	Rejection of Defective Plant - time period for necessary corrections shall be granted as per normal & justifiable requirement for such defective Plants/Parts as per OEM instead of stipulated 7 days which is impractical for re-manufacture or repair	Tender Conditions shall prevail.
13	Clause 46 (Page 156 & 157 of 506, GSECL- 4.2 Final Vol-1 COMM SPECS)	Applicable Permits & Statutory Approvals to be taken by Contractor	Applicable Permits & Statutory Approvals to be taken by Contractor shall be for BOP EPC scope only for working within the Plant premises, i.e. pertaining to Work permit, staff & labour welfare, PF, ESI, etc.	Tender Conditions shall prevail.
14	Clause 8.00.00, Data Sheet-A, Vol III, Part A, Sec 14		The design water flow rate of the NDCT is missing from the duty parameters in the referred clause. The Water Balance Diagram in Vol IV, Bid Drawings, shows that the water flow rate to NDCT is 94,100 m3/hr. Please confirm that this is the design water flow rate to be considered for the thermal sizing of the NDCT	Bidder to derive design flow rate of NDCT in line with Tender specification/ amendment/pre bid replies by GSECL clauses together.
15	Clause 8.00.00, Data Sheet-A, Vol III, Part A, Sec 14	The design ambient WBT & RH specified are 27.5 deg.C & 50% respectively	Please confirm that these are the final design parameters governing for the sizing of the NDCT and that any other values specified elsewhere in the tender documents must be ignored.	Bidder may refer tender specifications/ amendments/ prebid replies by GSECL.
16	Clause 8.00.00, Data Sheet-A, Vol III, Part A , Sec 14	The design CWT specified is 32.5 deg.C	Please confirm that the design CWT to be considered for the sizing of the NDCT is 33 deg.C as per pre-bid resolutions document included with the tender	Bidder may refer tender specifications/ amendments/ prebid replies by GSECL.
17	Amendment-1, M-19	Range = 10.5 deg.C	Please confirm that the design range is 10.5 deg.C and the hot water temeprature is (33 + 10.5) 43.5 deg.C for the design of the NDCT	NDCT cooling Range may be decided based on the specifications/ amendment/ pre bid replies by GSECL clauses together. As far as condenser temperature rise is concerned the same is 10 degree C.

Sl. No.	Reference Clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
18	Clause 8.00.00, Data Sheet-A, Vol III, Part A , Sec 14	Film fill of 0.25 mm uniform thickness with edge folding	The type of fill to be used in the NDCT is film fill. However, the type of film fill, whether cross or straight or off-set fluted and the flute size (19, 20 or 21 mm, etc) is not specified. The type of film fill and its flute size determine the size of the NDCT and its consequent cost. As the circulating water quality is expected to be good (becaise of COC of 7 being envisaged), 19 mm cross-fluted film fill can be used in this project. Hence, please confirm that the film fill to be used is of cross-flutes with a minimum flute size of 19 mm.	Bidder may refer tender specifications/amendments/ prebid replies by GSECL.
19	Clause 4.08.01, vii, Vol III, Part A , Sec 14	Film fill of 0.25 mm uniform thickness with double folding or with increased uniform thickness of at least 0.275 mm for strengthening the edges	Please note that the thickness at the edges will be (0.25 x 2) 0.5 mm with double folding. However, the strength of this double folding method cannot be matched with an increased uniform thickness of 0.275 mm. The uniform thickness has to be at least 0.3 mm finished thickness (after forming) to match the strength. Hence, please revise the uniform thickness in the absence of edge folding to at least 0.3 mm instead of 0.275 mm	Bidder may refer tender specifications/amendments/ prebid replies by GSECL.

Sl. No.	Reference Clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
20	Vol III, Part A , Sec 14	-	There is no specification clause defining the minimum depth of each of the fill layers that make up the total fill height. For example, if the design film fill depth is 1.5 m, this depth can be made up of 5 layers of 300 mm or 2 layers of 600 mm plus 1 layer of 300. A single layer for the entire fill depth should not be permitted. This is because in case of fouling/choking of the film fill, the entire fill depth needs replacement if the depth is not made up of multiple layers. In case of multiple layers, the bottom most layer, which usually gets fouled/choked first because of impurities in water, need only be replaced in the event this happens. This is a standard clause in all tenders and hence, you may include the same in this project too.	Bidder may refer tender specifications/amendments/ prebid replies by GSECL.
21	Clause 4.05.05, Vol III, Part A , Sec 14	COC = 7	Such a high COC may be used when the circulating water quality is extremely good. There `is neither a make-up water nor circulating water quality report in the tender documents. It's necessary for us to review the circulating water quality report before we finalize the thermal design as the TDS at COC 7 needs to be checked for any impact of thermal sizing of the NDCT. Also, as a matter of routine practice, we need to check the pH, TSS, Total Hardness ($CaCO_3$), Silica as SiO_2, Oil content, if any, BOD and COD along with the associated TBC (cfu/ml). Hence, please provide the circulating water quality envisaged at COC 7	Bidder may refer tender specifications/amendments/ prebid replies by GSECL.

Sl. No.	Reference Clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
22	Vol III, Part A , Sec 14	-	Pumping head is an important design parameter that is required to determine the max air inlet and fill heights that can be used for the thermal design of the NDCT. This parameter is not available in the specification. The cost and optimization of the size of the NDCT varies with the available pump head. Hence, please provide the same	Bidder may refer tender specifications/amendments/ prebid replies by GSECL.
23	Vol III, Part A , Sec 14	-	Wind speed for thermal design/sizing of the NDCT is not specified in the tender. The size of the NDCT varies with design wind speed to be considered. This wind speed, as you may know, is different from the wind speed to be considered for structural/civil design of the NDCT shell. In case the design wind speed for thermal design cannot be specified, we will consider 1.5 m/s as a minimum for the sizing of the NDCT	Bidder may refer tender specifications/amendments/ prebid replies by GSECL.
24	Annexure-6	SBC in the NDCT Area (Bore Hole-8)	The SBC for few of the bore hole locations in the plot layout are available here. However, there is no SBC data for bore hole no.8 in the NDCT area. This data is required for finlaizng the type of foundation and the associated BOQ. Hence, please provide the same	"Please refer BH-8 for NDCT area. As per sub strata in BH-8, Net SBC shall be as below: 20 T/m2 at 2 m depth from EGL 30 T/m2 at 3 m depth from EGL 40 T/m2 at 4m depth from EGL 45 T/m2 at 4.5 m depth from EGL."
25	Vol III, Part A , Sec 14	-	There is no specification related to the terminal points of the hot water piping and CW channels in the tender documents. This is required to estimate the costs properly. Hence, please provide the same	Please refer Scope matrix document and tender specifications/ amendments/ prebid replies by GSECL.

Sl. No.	Reference Clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
26			Bidder requests to clarify the following for the excavation / crushing of existing rock in the area: 1. Chemical and physical properties of rock incl. Bore log data and or rock analysis report like rock chemical and physical properties. 2. Blasted material that shall be generated, whether can be used in construction within. 3. Whether installation of crusher will be permitted by BHEL/GSECL in the area.	1. Bidder may refer tender specifications/amendments/ prebid replies by GSECL. 2. The same can be issued after obtaining customer approval & also complying the statutory requirement from mining Dept. 3. Yes
27	Note No. 3, TCC_Rev-00, Pdf Page No. 67 of 110	Bidder may note that BOP scope of work mentioned under "Broad Scope of Scope Matrix" may vary (addition/deletion) for BHEL in-house manufactured items. For any variation (addition/deletion), BHEL shall seek price implication from Bidders prior to price bid opening.	Bidder requests to please elaborate on the note and requests to provide specific information on such specific works as referred in Note No. 3.	Changes will be minor in nature. It will be informed during detail Engineering.
28	EOT Data Sheet 8.01.06, 8.01.09, 8.01.14 (i) & (ii)		Bidder requests to specify the following – · Capacity as per approved DDE · Span – as per approved crane clearance diagram · As per approved crane clearance diagram	Refer **Annexure-A** attached herewith.

<table>
<tr><th>Sl. No.</th><th>Reference Clause of Tender Document</th><th>Existing provision</th><th>Bidder's query</th><th>BHEL's clarification</th></tr>
<tr><td>29</td><td>Elevators</td><td></td><td>Bidder requests to specify the following
1. Location of Each Lift (Building Name)
2. Capacity of the Lift
3. Speed of the Lift
4. Number of Stops/Floors</td><td><table><tr><th>S.No.</th><th>Area</th><th>Type</th><th>Capacity (kg)</th><th>No. of landings</th><th>Speed</th></tr><tr><td>1</td><td>TG Building</td><td>Conventional Type Passenger cum goods Elevator</td><td>2000</td><td>G+3</td><td>0.6 m/sec</td></tr><tr><td>2</td><td>ESP cum FGD Control Building</td><td>Conventional Type Passenger Elevator</td><td>680</td><td>G+4</td><td>1.0 m/sec</td></tr></table>2 No. of elevator to be considered for ESP cum FGD control room. For further details refer tech spec / amendment / prebid replies by GSECL.</td></tr>
<tr><td>30</td><td>Main Single line Diagram Page No- 31 VOLUME - IV BID DRAWINGS</td><td>Design. Supply, Installation and commissioning of 1x800 MW ultra super thermal powerplant ukai region in gujrat. Main SLD shown the power transformer rating and Specification etc..</td><td>1. The given power transformer rating is considered same for the tender submission and estimation, voltage of transfromer upside and downside is not standard as manufacured.
2. As Tender Main SLD shown only bigger equipment rating and other side not shoen the auxliariy rating smaller euipments like e.g. Transformer, Motor rating, Driven motor and Bus bar rating etc. As the tender said scope of work is design submission for all equipments or can we proceed with tender SLD or design basis. Please clarify and confirm the above said query.</td><td>Bidder may refer tender specifications/amendments/ prebid replies by GSECL.</td></tr>
<tr><td>31</td><td>Plot Plan</td><td></td><td>Kindly share soft copy of revised Plot Plan. Dt 20.06.2024</td><td>Bidder may refer tender specifications/amendments/ prebid replies by GSECL.</td></tr>
<tr><td>32</td><td>Power Gaurentee</td><td></td><td>Requesting to provide maximum power gaurentee for different part of BOP like AHP,CHP,Cooling Tower,Water system,Chimney etc.</td><td>Bidder may refer tender specifications/amendments/ prebid replies by GSECL.</td></tr>
</table>

Sl. No.	Reference Clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
33	Site Infrastructure		Land for site office, Batching plant, labor colony & others etc. will be provide free of cost within campus. Please clarify.	Inside plant premises Site Office, Batching Plant shall be provided by BHEL free of cost as per availability, however, land for labour colony & others etc. outside plant premises may be arranged by bidder.
34	Bore Log Data		As per tender document, rock will be found after 6 M. Pile foundation may be considered for heavy loaded foundation. Please clarify the bearing capacity of soil at what depth to be considered.	Bidder may refer tender specifications/amendments/ prebid replies by GSECL.
35	Existing Unit		It is confirmed that proposed plant Ash dyke Area A is ash fillied area. Please confirm any type of Existing unit (like water /sewage Pipeline, Cable, tunnel etc.) will not find during construction. If found, it may be considered as extra item for claim.	Bidder may refer plot plan & visit site for better clarity.
36	Contour Plan		Existing level is varing 79 to 82 M. Please confirm Natural Ground Level & Floor Finish level of the Plant. Also confirm the appx. Quantity of Good Earth from outside for the plant.	Bidder may refer tender specifications/amendments/ prebid replies by GSECL or arrange to visit the site for further details.
37	Boundary Wall, Road & Drain		Boundary wall is to be constructed only Ash Dyke Area A as Proposed Plant. Kindly share the length of Boundary wall, Road & Drains.	Bidder may refer plot plan & visit site for better clarity.
38	Disposal Distance		Kindly clarify the disposal distance of unwanted material from the site or within campus.	Bidder may refer tender specifications/amendments/ prebid replies by GSECL or arrange to visit the site for further details.
39	Deadline for submission of bids		For precise working & to get offers from vendors, you are requested to extend bid submission date at least 4 weeks from reply of Prebid queries.	Tender Conditions shall prevail.

Sl. No.	Reference Clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
40	Scope Matrix Clause No. 2	Flue gas Desulphurisation system	Please provide the capacity / parameters of Equipment / systems (e.g. LHP, GHP, Gypsum Dewatering System, Ball Mill etc.) which are kept in BOP scope.	Bidder shall design and derive the capacity of systems as per given tender specifications / amendment.
41	Scope Matrix Clause No.3	Steam Turbine & Auxiliaries	As per scope Matrix, entire civil works in BTG area is in BHEL scope, hence RCC casing of CW Duct (including excavation & back filling) in Turbine Hall is NOT included in BOP. Please confirm	Please refer the scope matrix for CW Piping for details.
42	Scope Matrix Clause No.21 A	Equipment Cooling Water System including ACW Pumps	Please indicate the Designed Flow rate & pressure drop across heat exchangers. Mentioned attached file in Scope Matrix for Battery limit is not available, it may please be provided.	Please refer the scope matrix for ECW/ACW System for details.
43	Scope Matrix Clause No.21 B	Circulating Water System	Please indicate the Design Flow rate and pressure drop across the Condenser to work out the parameters of C W Pump as CW Pump is in BOP scope.	a) Required CW flow for Condenser is 77000 Cubic Meter/hour. Pressure drop across condenser is 5.6 MWC. Temperature rise across condenser is 10 degree C. b) Regarding required ACW: Total required ACW flow shall be 7500 Cubic meter/hour. Temperature rise for ACW within terminal point is 9 to 10 degree C.
44	Scope Matrix Clause No.21 C	NDCT	Please indicate the Designed Flow rate.	Bidder to derive design flow rate of NDCT in line with Tender specification/ amendment clauses together.
45	Scope Matrix Clause No.22	Chimney	Please provide the Flue gas parameters for Chimney design	Bidder may refer **Annexure 1 & 2** attached herewith.

Sl. No.	Reference Clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
46	Scope Matrix Clause No.24	Air conditioning & Ventilation	Drg / area / heat load detail of BTG may please be shared where Air conditioning & Ventilation is required	Tentative Heat dissipation data for BTG area of UKAI Unit-7 EPC proposal in the **Annexure-B** attached herewith. Furnished Data may change during detail engineering. BOP vendor to further estimate Heat dissipation for Area's under BOP scope.
47	Scope Matrix Clause No.25	Fire Detection and Protection System	BTG drawing may please be shared as FDPS is required for BTG area also as per the BOP scope	Tender drawings may be referred.
48	Scope Matrix Clause No.32	Hoist	BHEL may please indicate the Capacity & Qty of Hoists / EOT cranes required for BTG as Supply of Hoist is in BOP scope as per the scope Matrix	Refer **Annexure-A** attached herewith.
49	Scope Matrix Clause No.33	EOT Crane		Refer **Annexure-A** attached herewith.
50	Scope Matrix Clause No.26	Coal and Bio mass handling Plant	Please mention the Bunker Height	Tentative Elevation of bunker is EL 64.98M.
51	Scope Matrix Clause No.28	Ash Handling System	Please provide the ash generation rate to be considered for system Design and also the number of hoppers to be considered for various areas.	Total ash generation rate: 270 to 285 tph. Eco and Eco outlet hoppers - 10 Nos. total APH and Duct hoppers - 6 to 8 Nos. each ESP hoppers - 108 to 120 Nos.
52	Scope Matrix Clause No.49	Road & Drain	For clarity purpose, please mark the portion of Road in Plot Plan which is covered in BTG,	Tender drawings may be referred.

Sl. No.	Reference Clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
53	General	---	G A drawing of Boiler, TG Hall, ESP may please be shared as some BOP system e.g. Fire fighting, Air conditioning etc to be provided in BTG area also.	Tentative dimension of Power house is listed below: - AB bay 156.5 (L) x 31 (B) x 40 (H) - BC bay 156.5 (L) x 13 (B) x 34.5(H) + deaerator roof at 40 M (65.5 (L) x 13 (B) x 5.5 (H)) - CD bay 21 (L) x 12 (B) x 34.5 (H) - DE bay 21 (L) x 11 (B) x 34.5 (H) - EF bay 21 (L) x 11 (B) x 34.5 (H) - FG bay 21 (L) x 10 (B) x 25 (H) - GH bay 21 (L) x 10 (B) x 25 (H) - HI bay 21 (L) x 10 (B) x 18 (H) Further final data shall be shared during detail Engineering. However, for tender purpose Bidder to follow tender specifications / amendment/ Pre Bid replies by GSECL.
54	General	---	Autocad file of Plot Plan may please be shared	Autocad drg shall be provided through mail on request basis from individual bidders.
55	General	---	Scope of Auxiliary Boiler is not mentioned, we understand that Auxiliary Boiler, if required, shall be supplied by BHEL. Please confirm.	Aux Boiler is in BTG Scope.
56	General	Number of ESP hoppers	Please confirm the number of ESP hoppers. As per the latest designs by ESP suppliers they are providing 108 or 120 hoppers with 12 number of columns instead of 16 columns. Kindly note that for Smoother AHP operation and equal distribution we suggest 12x9 or 12x10 hoppers instead of 16x8.	ESP hoppers shall be maximum 120 Nos.

Sl. No.	Reference Clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
57	General	Conveying Air Compressors	We propose provision of Twin/Tri loble blowers instead of compressors which will be best suited for conveying ash to silos which are within 300M. In case of Blowers we will also not require the Air Dryers and Air receivers as the pressure will be max. 11 MWC.	Bidder to follow specification
58	General	Hydrobins	The Hydrobin Design shown in the flow diagram is one vendor specific and varies from vendor to vendor. We have noted that the Ash is to be discharged to either truck or Belt conveyor which will be achieved using reversible conveyors. Hence, we request you to kindly consider change.	Bidder to follow specification
59	GSECL SPECIFICATION Clause No. 2.04.09, 2.04.10 & 2.04.11	Adequately sized Compressors, dryers and receivers	As the distance of conveying is within 300 M from the fartest Buffer Hopper, we propose to use Twin/Tri lob blowers instead of compressors. The blowers are cost effective and maintenance free as compare to Compressors.	Bidder to follow specification
60	GSECL SPECIFICATION Clause No. M 40	Vacuum cleaning system	Please confirm that Vacuum Cleaning system to be provided for Boiler to ensure proper hygiene is NOT included in BOP scope.	Bidder's understanding is correct

Note:

1) **All other terms and conditions against this NIT shall remain unchanged.**
2) **This corrigendum is to be submitted duly signed and stamped along with the Techno-commercial bid (Part- I).**

for BHARAT HEAVY ELECTRICALS LTD
Sr. Manager/ SCT- CPC

352 - 286 A

Annexure-1

DATA FOR CHIMNEY DESIGN

GENERAL DATA			
Project Name	**GSECL Ukai (1X800MW)**		
Boiler Application	Utility	**No. of Chimneys**	By Bidder
Boiler Capacity	800 MW	**Type of Chimney**	
No. of Boilers / No. of Absorbers	ONE (01) / ONE (01)	**Chimney Arrangement**	
Fuels Fired	Coal	**Height of Chimney**	

OPERATING CONDITIONS (Per Boiler)			
Boiler Load			**Chimney Design point**
			BMCR
Type of Coal			**Worst Coal**
At absorber outlet			
Flue Gas Flow	:	**TPH**	4186.04
Flue Gas Volume	:	**m^3/s (wet)**	1116.39
Flue Gas Temperature	:	**°C**	57.3
Flue Gas Density	:	**kg/m^3**	1.04156

FGD OUTLET-FLUE GAS COMPOSITION % BY Volume – (WET BASIS)			
CO_2	:	%	10.72
N_2	:	%	66.66
O_2	:	%	5.44
SO_2	:	%	0.0022
H_2O	:	%	17.18

*DUST SIZE DISTRIBUTION AT CHIMNEY INLET - % MICRONS			
Below 10	5 to 25	Between 50-70	5 to 15
Between 10-30	10 to 25	Between 70-90	5 to 10
Between 30-50	5 to 15	Between 90-100	4 to 10
		>100	25 to 40

OTHER DATA		
Elevation of Breeching Line of the Duct		By Trichy
Duct Opening Size		By Trichy
Chimney Shell Opening Dimensions		By Trichy
Flue Gas Pressure at Chimney Entry Level	Refer Tender/Clarifications/Amendments	

REMARKS:

1. The above mentioned flue gas characteristic is for one (1) boiler.
2. The above parameters are when FGD is in operation. Trichy data shall be referred for chimney sizing when FGD is bypassed.
3. The data is preliminary and subject to changes after NTPC review and approval.

DATA FOR CHIMNEY DESIGN

GENERAL DATA

Boiler Application	Utility	No. of Chimneys	One
Boiler Capacity	**2555** t/h	Type of Chimney	By bidder
No. of Boilers	One (01)	Chimney Arrangement	
Fuels Fired	Coal	Height of Chimney	

OPERATING CONDITIONS (Per Boiler) @ FGD Inlet

DESCRIPTION / LOAD		BMCR-DC (Oper. Pt.)	TMCR-DC (Oper. Pt.)	BMCR-WC (Oper. Pt.)	Chimney Design Point BMCR-WC 20% EA, 45°C & 60% RH
Flue Gas Flow	t / h	3568	3645	3272	3998
Flue Gas Volume	m^3 / s	1177	1182	1053	1335
Flue Gas Temperature	°C	145	135	135	145
Flue Gas Density	kg / m^3	0.842	0.857	0.863	0.832

FLUE GAS COMPOSITION % BY WEIGHT - WET BASIS

CO_2	19.03	19.09	18.92	17.36
N_2	69.29	68.36	69.32	69.00
O_2	4.82	4.79	4.92	6.42
SO_2	0.15	0.20	0.15	0.18
H_2O	6.72	7.57	6.69	7.05

*DUST SIZE DISTRIBUTION AT CHIMNEY INLET - % MICRONS

Below 3	97.16	Between 10 - 20	0.17
Between 3 - 5	1.18	Between 20 - 30	0.03
Between 5 - 10	0.78	Between 30 - 40	0.68

OTHER DATA

Elevation of Breeching Line of the Duct	m	Refer GA drawing
Duct Opening Dimensions	mm x mm	Refer GA drawing
Flue Gas Pressure at Chimney Entry Level	mmwc	+ 40

REMARKS: ***APPLICABLE ONLY FOR COAL FIRING**

a) Suitable margins may be added over and above the given operating conditions for chimney design.

b) The temperature at FGD inlet can vary within the range of **110°C** to **150°C** (corresponding density will be in the range of **0.919** kg/m^3 to **0.823** kg/m^3).

c) FGD group BAP/Ranipet to furnish the density and temperature at chimney inlet when FGD is in operation.

Tentative value.

Customer / Plant: GSECL/ Ukai USC, Unit #7, 1 x 800MW EPC

Prop. No.:-100124	Rev. 0		Rev. 1		Rev. 2		Rev. 3	
	Sign	Date	Sign	Date	Sign	Date	Sign	Date
Engineer : KSC		31.05.24						
Reviewer : SJS		31.05.24						
Approver : AVR		31.05.24						

Annexure-A

1x800 MW UKAI TPP

DOUBLE GIRDER CRANES

Sl. No	Area / Equipment description	Qty (nos)	Capacity (T)	Remarks
1	TG HALL (Both cranes in independent operation)	2	142/30 (Main/Auxilliary)	BTG
2	BFP	1	70	BTG

SINGLE GIRDER CRANES

Sl. No	Area / Equipment description	Qty (nos)	Capacity (T)	Remarks
1	COMPRESSOR HOUSE	1	8	BTG

ELECTRIC HOISTS

Sl. No	Area / Equipment description	Qty (nos)	Capacity (T)	Remarks
1	VACUUM PUMP	2	5	BTG
2	DMCW TG	1	5	BTG
3	DMCW SG	1	5	BTG
4	DRIP PUMP	1	10	BTG
5	CEP STRAINER	3	2	BTG
6	TDBFP LUBE OIL SKID	2	2	BTG
7	OVERLOAD VALVE	1	3	BTG
8	LUBE OIL UNLOADING	1	1	BTG
9	LPBP VALVE ACTUATOR	2	2	BTG
10	SCS (INSIDE TG HALL)	2	5	BTG
11	ACW PUMPS	1	5	BTG
12	ESP & FGD CONTROL ROOM COMMON BUILDING	1	12.5	BTG
13	BOILER SWGR ROOM	1	12.5	BTG

CHAIN PULLEY BLOCKS

SL. NO.	Area / Equipment description	Qty (nos)	Capacity (T)	Remarks
1	TG BUILDING MAINTENANCE (GENERAL PURPOSE)(CPB without TT)	6	2T	BTG

NOTES

1	The capacity and quantity above are indicative and subject to finalisation of respective system/layout during detailed engineering.
2	Tentative dimension of Power house is listed below: - AB bay 156.5 (L) x 31 (B) x 40 (H) - BC bay 156.5 (L) x 13 (B) x 34.5(H) + deaerator roof at 40 M (65.5 (L) x 13 (B) x 5.5 (H)) - CD bay 21 (L) x 12 (B) x 34.5 (H) - DE bay 21 (L) x 11 (B) x 34.5 (H) - EF bay 21 (L) x 11 (B) x 34.5 (H) - FG bay 21 (L) x 10 (B) x 25 (H) - GH bay 21 (L) x 10 (B) x 25 (H) - HI bay 21 (L) x 10 (B) x 18 (H) Further final data shall be shared during detail Engineering. Lift, span, travel length to be decided accordingly.
3	Handling equipment in any other area which may not be specifically not mentioned above but required as per system/layout shall be provided.
4	Bidder to also refer handling equipment requirement mentioned in Volume-III Part-A Section 13 of technical specification.

Annexure-B

1 X 800 MW GSECL UKAI TPS 7 PROPOSAL (TENTATIVE INPUT)

HEAT DISSIPATION DATA

[A] CCR,CER & other AC areas in Power House Area

Sl. No.	Description of panel/ system	Heat Dissipation for 1 unit(KW)
1	CER(per unit)	75
2	CCR(per unit)	16
3	Compter/Programmers Room(per unit)	7
4	Offsite Control Room(Common)	21
5	Conference Room-20 persons(Common)	2
6	Shift Incharge Room(Common)	2
7	C&I Engineer's Room(Common)	1.5
8	UPS Room(Per Unit)	35
9	SWAS Room(@ 0.0 M)	3.5
10	PADO Room(per unit)	3
11	C&I Lab/Water Analysis Lab	5
12	Simulator Room	5
13	EPBAX Room	3
Total Heat Dissipation		**179**

[B] ESP cum FGD Control Building

Sl No.	Description of panel/ system	Heat dissipation (in KW)
1	ESP cum FGD Control Room Unit#1	118
Total Heat Dissipation		**118**

[C] Compressor control room

Sl No.	Description of panel/ system	Heat dissipation (in KW)
1	Compressor control room for Unit#1	2
Total Heat Dissipation		**2**

[D] CEMS room

Sl No.	Description of panel/ system	Heat dissipation (in KW)
1	CEMS room for Unit#1	1
Total Heat Dissipation		**1**

[E] Aux. Boiler control room

Sl No.	Description of panel/ system	Heat dissipation (in KW)
1	Aux. Boiler control room	6
Total Heat Dissipation		**6**