PRE BID MEETING QUERIES & REPLIES FOR FGD SYSTEM REQD. FOR BONGAIGAON PROJECT - REVISED

Sl No	Job Spec. Reference				Items Description	Clarification requested	BHEL' s Clarification
	Sec	Part	Sub Sec	Clause No/ Page No			
1	1		1.3.0/ 1 of 2	BHEL Technical Specn.	**CODES, STANDARDS & REFERENCES** …. Following codes are shall be referred for use of load calculation and design of structures.	Instead of the following Indian Standards:(for Absorber only) • IS:1893; IS:800, Euro codes will be used	Equipments which are being imported can be as per relevant International standards and codes. However for absorber design since detailed design is done by FGD vendor relevant Indian standards and codes have to be followed.
2	III	V	3.03.0 8. (c)/ 9 of 40		**Ash loads** …. Ash Load in the flue gas Duct shall be taken considering it to be one fourth full with Ash	For circular duct "fourth full with Ash" it's reported to the diameter or to the area of the duct	For circular duct ¼ th of area of duct filled with ash is to be taken for considering duct design.
3			2.1.3	BHEL Technical Specification	Vibration systems (ONLY for recirculation pumps & oxidation blowers)	1. Scope of enduser (NTPC) are all vibration system including: • Sensor probe • Junction Boxes • Cables (sensor to monitor) • Monitor system Is it correct? 2. Scope of bidder is the "pad / holes" to install the probes on recirculation pumps. Is it correct?	Bidder's scope includes sensor pads, sensors and associated Junction Boxes including sensor cables upto JBs. From JB onwards it is not in bidder's scope. Makes of the sensors shall be as per enduser (NTPC) approved makes which will be informed during contract stage.
4			2.1.3	BHEL Technical Specification	• Winding temperature • Bearing temperature (ONLY for MV Motors)	Scope of End User (NTPC) are all the cables and cable tray from the JB to the DDCMIS: Is it correct?	Confirmed. All cables from JB to DDCMIS for wdg. And brg. Temp. of MV motors are in the scope of Purchaser.
5			2.1.3	BHEL Technical Specification	• Analyzer SOx, Nox, CO • Opacity meter (ONLY for the stack)	Scope of End User (NTPC) are all analyzers system on the stack including: • Sensors • Tapping points • Junction Boxes • Cables • Monitor systems Is it correct?	SO2 analyzers required for the FGD system shall be in the scope of the Purchaser. The analysers in stack are not in the scope of the bidder.

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6			3.4 Par. 1 (point e)	BHEL Technical Specification	• Motor starters • Controls (GGH)	Please clarify the meaning of: • Motor starters Soft Starters? • Controls Local Control Panel (with PLC)?	All starters for motors are in the scope of the Purchaser. However if any drive in the FGD system offered by the bidder calls for special starters like soft starters or VFD, the same can be offered by the bidders. Main FGD Plant PLC control is in the scope of the Purchaser. However if there are any small local control PLCs for some sub system controls the same can be offered by the bidders.
7	VI	A	III C	4.01.00	Instrument 2 out of 3 redundancy	1. Redundancy 2 out of 3 must be used in case of trip of main equipments (boiler, booster fan, position of flue gas dampers, GGH rotation…etc…). Is it correct? 2. Redundancy 2 out of 3 must be used in case of protection of main equipments (for example control of inlet temperature Absorbers). Is it correct?	Redundancy requirements for C&I like 2 out of 3 logic for trips will be taken care of by Purchaser for main FGD plant trip requirements based on logic to be given by bidders. Since all FGD plant trips are taken care of by main FGD plant PLC arranged by Purchaser there is no need for bidders to consider redundancy instrumentation.
8	VI	B	II M-04	4.03.03	Oxidation nozzle/sparges shall have a minimum redundancy of 10% spare...	Our standard design foreseen air lances instead of nozzles. The air is dispersed by the agitators. 10% margin is considered as margin on the air flow rate.	If multi no. of nozzles are used, 10% margin on nozzles are to be considered.
9	VI	B	II M-04	5.05.01	2 limestone slurry tank, each tank shall sized to meet 12 hours continuous limestone requirement of 3 units operating at 100% BMCR with Design/Worst/Best coal whichever gives the maximum limestone requirement. For tank volume calculation, solid concentration in the slurry shall be assumed not more than 20%	The operating limestone slurry concentration is 30%. Due to the fact that the plant operates mostly at guarantee point, we suggest to design the tank for the actual solid concentration and for the guarantee point, to avoid an over design of the tank.	For sizing of tanks, slurry density to be assumed as 20%.
10	VI	B	II M-04	6.03.04	…filter cloth, the same shall be endless, factory vulcanised rubber belts	… the cloth is vulcanised normally on site.	Vulcanizing can be done at site but the quality of vulcanizing has to be ensured.

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11	VI	B	II M-04	10.02.00	All the pipes handling slurry shall be provided with replaceable rubber lining of proven quality.	Suggest to use FRP piping for Bongaigaon project	Offer shall be with rubber lined CS as per tender spec.
12			2.4	BHEL Technical Specification	Part I …. CoverB Complete Technical offer including scope matix, Exclusions, Scope under BHEL (proposed), Terminal Points, Services, Training, Guarantee clarifications if any, Deviations & clarifications & data sheet as per 4.4	Understanding is that chapter 4.4 is "Technical data sheet " section VI part F subsection DM3 Please confirm/ clarify	Confirmed.
13			2.4	BHEL Technical Specification	Part II ….. Filled in evaluation data sheet – as per 4.3	Understanding is that mentioned chapter 4.3. is "4.2 Evaluation Data sheet (FGD vendor to sumit along with price offer). Please confirm/ clarify	Confirmed.
14	VI	F	DM3	1.00.00 up to 5.00.00	Technical data sheet	For items, which are not in FGD Vendor scope of supply, only basic information will be provided.	Confirmed.
15				4.20		Guarantee figures mentioned in clause 4.2 was given by BHEL to NTPC. According to our system calculation if Guarantee Figures changes (we are referring to Guarantee Figures of 10B only), are we allowed to take deviations	The guarantee figures specified have to be complied with as called for in the tender specification. .
16						Design the system to achieve SO_2 removal efficiency for Guarantee condition only. Also to furnish figures for design and additional condition only.	Confirmed.
17						Guarantee conditions are not very clear and should be clearly defined	It is clearly specified in the tender specification under Table 4.2 and 4.3.
18				18 of 33		Please refer to Annexure-II of un declared deviations, page 118 of 33, Gypsum purity is dependant upon inlet dust load. If inlet dust load is more than 50mg/NM^3 , then Gypsum purity of 90% may not be achievable	Not acceptable. It shall be as called for in the tender specification.

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19						Since calls for System Guarantee, vendor can keep some key equipments in their scope like oxidation compressor, agitators, whole GGH, some Instruments. Detail scope will be given in the offer.	Minimum scope shall be as per the tender specification. If bidders want to offer some additional items in their scope, the same can be mentioned in their offers.
20						As QR requirement, vendor need to give documents for only one plant only. However in 3A3 station1 and station 2 are mentioned.	If one plant meets the QR requirement it is sufficient.
21						As per Tender, there is no ADVANCE, vendor need Advance	Advance is not envisaged.
22						Please give payment mode for Indian supply	Payment terms for Indian supply will be as per GCC cl. No. 7.2. Payment terms will be documents thru' bank.
23						Please clarify Design, Engineering and Erection Supervision can be included in supply price	Separate Engg. Charges shall be mentioned in the bid as per clause no. 7.3 of GCC. Erection supervision charges shall be as per cl. No. 7.4 of GCC.
24						Vendor find that there are two sets of commercial conditions. One is BHEL requirements and other is NTPC requirements. Please confirm which one is applicable for this project	Both documents are applicable.
25						If you place separate order for Design and Engineering, we need to discuss regarding withholding Tax	Withholding tax is deductible as per relevant rules and will be followed by BHEL.
26						Please give us details regarding the Training requirements as it is not very clear for the FGD portion	For FGD system, training to NTPC at site is envisaged as per tender specification. Duration can be proposed by bidders in their offers.
27						Please give us the format of un-priced commercial offer.	Suggested format is enclosed. However bidder shall have to refer to GCC and Technical specification hosted on the website for more details. Any deviation to the GCC for Technical Specification shall be brought out clearly in a separate deviation statement along with technical bid.

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28				8-12 of 13		Value of HCl and HF concentration of Flue Gas are missing. This is essential for Calculation of water balance i.e. waste water quality to be discharged. Please give figures for HCl & HF in Flue Gas a.m. load cases	HCL is 80-160 ppm at 6% O2.HF is 20 ppm at 6% O2.
29	VI II	B	II II	0 M-04 4 of 18 19 of 33		For load cases 50%TMCR, a clean Gas temperature of 80°C is requested at stack inlet. Flue Gas data (Volume flow, Temp) for this load case are missing. These are necessary for the thermal design of GGH. Moreover for thermal design, it is important to note if the condition of 100°C at stack inlet, respectively GGH – outlet at clean Gas side has to be fulfilled also for part loads. i.e Guarantee point 2 (80% - 200MW) This can be an additional requirement to a.m. item	Please refer page-12 & 13. As per NIT clause 4.2 Data Sheet on Utilities and Guaranties, FGD system outlet temp. shall suit stack inlet temp. of 100 deg. C (under design point conditions stipulated in Table 12 and Guarantee point conditions stipulated in Table 11)
30	VI XVII I	A A	IV VI	5 of 9 7 of 10		The applicable process water type for FGD is not clear - Cooling water quality : (CW) (or) - Raw water quality Please advise which water type shall be used for process water.	It is planned to use CW blow down water as process make up water.
31				8 of 13		For the Guarantee point, no reference to TMCR is given. We assume this will be 100% TMCR. [please also see the comments regarding GGH design] Please confirm the Guarantee point refers to 100% TMCR	Confirmed.
32			Enq Write up	29 to 30		For the blend of Assam and Bihar coal BHEL requests a reduction of SO_2 to less than 400mg/NM^3. Its is not clear if this value shall refer to dry or wet conditions and which shall be the reference O_2 content. Please give reference to dry or wet conditions and O_2 content for 400 mg//NM^3 of SO_2	The guarantee is under wet conditions and O2 values are already furnished in FGD selection data under Table no. 11 and 12.

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33			Techn. Specn	8-9 of 13		For the Guarantee point an SO_2 - removal of 95% is requested. The same number (95%) is also requested for the design point. Our understanding is as follows. For the Guarantee point (= optimum operating conditions) **n** spray levels shall be in operation. For the design point, **n+1** levels (i.e. including spare spray level) Please confirm bidder's understanding	No. of spray levels is decided by FGD process. Hence BHEL cannot decide on this aspect. Bidders to decide.
34		.	Techn. Specn	4.2 8 of 13		For the design of the absorber, it is essential to know the maximum design leakage of the GGH. In BHEL Enquiry For Cat-I Guarantee – 1.5% GGH leakage is stated For Cat-III Guarantee – GGH leakage is less than 1% Please advise GGH leakage to be the basis for absorber / GGH design	For PG of GGH, GGH leakage is 1% max. For absorber PG, GGH leakage is to be considered as max. 1.5%.
35			Techn. Specn.	8 to 12 of 13		Our understanding is that the absorber has to be designed for 95+1.5=96.5% to maintain an overall efficiency of 95% [with the exceptions of S max.	FGD system is to be designed for 95% net removal efficiency with a max. GGH leakage of 1.5%.
36	VI	B	Techn. Specn. II	M4 13 of 13 12 of 13 (table15) 10 of 18 12 of 18	There seems to be a discrepancy between NTPC specification and BHEL requirements regarding design of components, especially limestone mill and vacuum belt filter.	(i) Item.5 wet ball mills – 2x100% with 110% of max. lime stone consumption (ii) Item 8. Gypsum dewatering 2 x 100 (iii) Vendor understanding is that for the limestone-consumption we have to calculate with 3,5 % S in the coal) (iv) Item 5.04.01 :five (5 nos.) tube mills for 110 % with coal to give max. limestone requirement (v) Item 6.03.01 : 110 % with coal to give max. gypsum flow - Our understanding is that we have to calculate with 3,5 % S in the coal, but without additional 10 % margin.	Pl. see amendment 1 page 3 and 4 of 42 sl. No. 20 wherein no. of wet ball mills are specified as 2 x 100% with 110% max. limestone consumption. The wet ball mill has to be sized for 110% limestone consumption of all 3 FGD units and considering blended coal with worst/design/best coal quality whichever is high. Pl. see sl.no. 9 of Tech. Spec. for FGD cl. No. 4.2 Data sheet on utilities and guarantees which also should be met with. Condition with 3.5% S is onlyfor material selection and not for PG or capacity of the plant.

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37						Please inform us where enduser (NTPC) is planning to sell gypsum as a by-product of FGD absorption, concrete material supplier, building material supplier or any other received	Gypsym purity has been identified. This has to be complied with. Use of gypsum by End User is not known.
38						Sample requested to be sent. / 2 items 1. Lime stone: 20 Kg per each kind of Lime stone i.e. If enduser (NTPC) has not fixed the Limestone from several source yet, Please kindly send all kinds of Limestone. (I believe it should be maximum 2 or 3 source..) 2. FGD absorber make-up process water: 25 Liter. Address to be sent:	Limestone sample will be sent only for the successful bidder. Process water details have been given for process design.
39						Concentration of HCl and HF are note specified the Gas conditions. Please specify since those figures are essential for process design.	HCL is 80-160 ppm at 6% O_2.HF is 20 ppm at 6% O_2.
40				8 of 13		In clause 3.02.03 of NTPC Techncial Requirement GGH, 50% TMCR is required as design conditions of GGH while of GGH while no gas condition can be found. Please specify.	Please refer page-12 & 13.
41						Design temp. of process make up water is required for sizing of vacuum pump while it is not specified. Pl. specify.	CW blow down water of temp. 33 to 34 deg. C
42						Atmos. Pr. Is requird for sizing of the absorber while it is not specified.	10278 mm wc.
43						Scope of Limestone Slurry recirc. Pump system	This system includes recircn. Pump and interconnecting piping upto internals etc., by bidder.

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44						No. of copies of offer	1 original and 3 copies of offer shall be given by bidders. Bid submission shall be as called for in the tender specification.
45						Tender Fee	This shall be as per GCC and shall be by Demand Draft as mentioned in Newspaper advertisement.
46						Bidders requested for tender due date extension	TENDER DUE DATE IS EXTENDED BY ONE MONTH UP TO 30.07.2008
47			GCC	2 (i)	***Codes and Standards*** **The Codes and Standards for the Works under the Seller's scope shall be complied at least with one of the standards specified in the Technical specification.**	FGD facilities will be applied the International Codes and Standard as specified in Section –VI, Part-C, SUB-SECTION, General Technical Requirements Para. 5.02.00.	Equipments which are being imported can be as per relevant International standards and codes. However for absorber design since detailed design is done by FGD vendor we have to follow relevant Indian standards and codes.
48			GCC	3.3	***Performance guarantee test*** **The Performance test is in the scope of the Seller**. However the Purchaser shall support the Seller at the time of Performance test for successful execution of the contract.	Scope of Performance Test is unclear. Please specify more details of Performance Test in order to estimate properly.	PG test for guarantee parameters mentioned in the tender specification is to be demonstrated to the End User by the bidder along with Purchaser.
49			GCC	4.8	***The Seller's Responsibility*** **Conducting Performance guarantee test at Site and prove the Guarantees**	Scope of Performance Test is unclear. Please specify more details of Performance Test in order to estimate properly.	PG test for guarantee parameters mentioned in the tender specification is to be demonstrated to the End User by the bidder along with Purchaser.
50			GCC	19.4 (b)	***The Performance Guarantees*** (b) The performance test shall be carried out by the Seller **in accordance with such procedures, programs, methods, testing conditions and other terms and conditions duly approved by the END USER** as provided for in the Contract and in compliance with the relevant Technical Documents; and	Scope of Performance Test is unclear. Please specify more details of Performance Test in order to estimate properly.	PG test for guarantee parameters mentioned in the tender specification is to be demonstrated to the End User by the bidder along with Purchaser.

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51			GCC	20.0 (ii)	***Defect Liability*** The Defect Liability Period shall be eighteen (18) months from the date of **successful Completion of the Facilities** or twelve (12) months from the date of **Operational Acceptance of the Facilities** (or any part thereof), whichever occurs first	Please describe more details for following sentence; - Successful Completion of the Facilities - Operational Acceptance of the Facilities Please clarify detail procedure of Defect Liability	Successful completion is defined in GCC under cl. No. 1.18. Operational acceptance means acceptance of the facilities by the End User of the Facilities which certifies the fulfillment of the contract in respect of functional guarantees of the facilities.
52			Technical Specification	2.1.1 4 of 13	***Scope of supply for FGD system (proposed)*** B6) Supply of Major Bought outs like (**including all electricals & instrumentation but excluding HT motors**) Complete GGH system, Complete Limestone recirculation pump system, Complete wet Ball Milling system, Complete Belt filter system	Please clarify the meanings of this sentence. Does it mean that all electrical and instrument items, except HT motors, included in the GGH system, Limestone recirculation pump system, wet Ball Milling system and Belt Filter system should be estimated, even though the all electrical and instrument items are supplied by BHEL?	HT motors and cables are excluded from scope of bidder. GGH system with LV motors and other systems with LV motors shall be by bidder. If any local PLC is required for systems like GGH, the same shall be by bidder. Motor Control Centre and cables for HT motors and LT motors is by Purchaser. All instruments are by Purchaser but equipment mounted instruments for items like GGH shall be by bidder. List of motors and instruments offered by bidders shall be given in the offer. List of instruments to be arranged by BHEL shall also be indicated by bidders in the offer.
53			Technical Specification	2.1.1 4 of 13	***Scope of supply for FGD system (proposed)*** B13) Manufacture & supply by BHEL (FGD vendor to **review & confirm**) B13c) Procurement of Bought out items based on Specification by vendor	Please describe more details for "review & confirm"	For drawings and documents prepared by BHEL, based on the basic design of bidders, check and review of the same are required. Bidders have to be estimate for the same suitably. For bought out items to be procured by BHEL, bidders have to give specification and BHEL will procure based on the same.
54			Technical Specification.	2.1.2 5 of 13	***Terminal Point - FGD system*** **Duct, Cooling Water and Steam**	Terminal point for Duct, Cooling Water and Steam is not specified. Please specify the terminal point for elevation of duct and terminal point of Cooling Water and Steam.	Bypass duct tap off from main duct for FGD and joining point with main duct is the TP for duct and elevation is 12.5 M. For cooling water the TP will be a single point at the limestone milling room. Steam also will be provided near the GGH.

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55			Technical Specification	2.2 7 of 13	***Process Water*** **8) Process Water Temperature**	Please clarify Process water Temperature	CW blow down water which will be used for process is 33 to 34 deg. C.
56			Technical Specification	2.2 7 of 13	***Cooling Water*** **Cooling Water Pressure**	Please clarify cooling water supply pressure.	4 kg/cm square
57			Technical Specification	2.2 7 of 13	***Ambient Pressure*** **Ambient Pressure**	Please clarify ambient pressure at PJ site.	10278 mm wc.
58			Technical Specification	2.2 8 ~ 12 of 13	***Selection Data*** **Table- 11~15** **HCl and HF is not applicable**	Please clarify HCl and HF Value in Flue Gas Composition.	HCL is 80-160 ppm at 6% O2.HF is 20 ppm at 6% O2.
59			Technical Specification	2.4 13 of 13	***Documents to be submitted with offer*** ***Part I Cover A:*** Filled up format 3.A.3 -in 4.1 provenness data sheet Experience list, **latest customer certificate** Expression of interest to quote	Please describe more details for "latest customer certificate"	Certificate shall be obtained from a customer for a plant which has been supplied and is in operation meeting the QR requirements but the certificate should have been obtained within the last one year.
60			-	-	***Summary Table of Scope of Work***	Please clarify the detail scope of Basic Engineering and Detailed Engineering, especially the difference between Basic and Detailed.	Basic design is for the total FGD plant. Detailed design is for the absorber based on which BHEL will manufacture.
61			-	-	***Summary Table of Scope of Work*** D4) **Motors**	Please clarify the scope of supply for LT motors for vendor's supply equipment.	Bidder has to supply the LT motors for systems coming in his scope.
62			-	-	***Summary Table of Scope of Work*** D5) **Fire Alarm and fire fighting System**	Fire Alarm and fire fighting System is out of Seller's scope, including Basic Engineering. Is Fire Alarm and fire fighting System designed by NTPC ?	It is not in bidder's scope. Input requirements on this, if any, shall be given by the bidder during contract stage.
63			-	-	***Summary Table of Scope of Work*** D7) **Telecommunication System**	Telecommunication System is out of Seller's scope, including Basic Engineering. Is Telecommunication System designed by NTPC ?	It is not in bidder's scope.

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64			-	-	***Summary Table of Scope of Work*** D8) **Air conditioning and ventilation System**	Air conditioning and ventilation System is out of Seller's scope, including Basic Engineering. Is Air conditioning and ventilation System designed by NTPC ?	It is not in bidder's scope.
65			-	-	***Summary Table of Scope of Work*** F1) **Lining at site** **Detail Engineering : Lining Vendor**	Lining Materials will be supplied by BHEL and Detail Engineering by Lining Vendor is in BHEL scope. Please confirm	Bidder has to provide specification for the same based on which BHEL will execute. Erection supervision shall be provided by Bidder.
66			-	-	**Check and Review of BHEL Drawings** IV1) Drawings of Logic Diagram, absorber area and other areas of FGD for BHEL scope of work.	Please describe the detail procedure for "Check and Review of BHEL Drawings"	For drawings and documents prepared by BHEL, based on the basic design of bidders, check and review of the same are required. Bidders have to be estimate for the same suitably.
67	XVIII				***Flue Gas Desulphurisation System*** **Proposal to NTPC by BHEL**	Please clarify priority of scope of supply in BHEL's Technical Specification (colour table : Summary Table of Scope of Work) and BHEL's Proposal. Seller reads BHEL's Proposal only for reference.	It is only for reference. For any item proposed to be offered by bidder additionally, shall be at optional price.
68	VI	C	GTR	15.00.00 23 of 39	***PACKAGING AND TRANSPORTATION*** While packing all the materials, **the limitation from the point of view of the sizes of railway wagons available in India** should be taken account of. The Contractor shall ascertain the availability of Railway wagon sizes from the Indian Railways or any other agency concerned in India well before effecting dispatch of equipment.	Please clarify inland transportation and limitation of the size of railway wagons available in India (W x L x H)	Bidders to ascertain these details from the respective agencies. However, details will be furnished during contract stage.
69				GCC clause 28	***Liquidated Damages***	Please clarify whether loading factors will be applicable.	Loading Factors are applicable as detailed vide GCC clause 28.1. 1),2),3),4)

Sl. No.	Clarification Required	BHEL'S Clarification
70	Please provide the Limestone Particle Size distribution at inlet of day silo.	**AS PER NIT, SIZE IS LESS THAN 1MM**
71	The connection location of flue in stack is 35m high above the ground, please identify by height whether it means the central height or bottom height of interface.	**Not in Bidder's scope**
72	Please provide WORD version of forms which is for Bidder to fill in.	**This will be furnished to the successful bidder**
73	Please provide CAD version of Layout of FGD and Equipment Layout at EL 0.00m provided in the bidding documents.	
74	Please provide section drawing of bypass duct	
75	Cooling water volume (10m3/h) and steam volume (4.8t/h) given in the bidding documents is not enough for 3 units. Pls clarify if it can be added.	**Pl furnish your requirement in the offer**
76	Please provide FGD inlet flue gas conditions of 50% TMCR (including volume velocity and temperature).	**Enclosed in the pre bid meeting queries and replies**
77	Please clarify the boundary of FGD area, limestone slurry preparation area and gypsum dewatering area. Please provide the corner coordinates of these areas.	**This will be furnished to the successful bidder, based on FGD layout**
78	Article 2.0 f) in Part A of Technical Specification, "furnishing of spares on FOR site basis". Please clarify if FOR means Free on Rail and explains the scope of FOR terms.	**FOR site =Base price + P&F (if extra) + freight & Insurance (Taxes & duties are extra)**
79	Does the Purchaser issue an L/C covering 70% of value of the corresponding lot of dispatch before each lot of dispatch or issue only one L/C covering 70% of Contract Value but negotiate in lots? Please clarify.	**Purchaser issue an L/C covering 70% of value of the corresponding lot of dispatch before each lot of dispatch with total L/C validity period of 3 months including negotiation period.**
80	Please explain what the following paragraph in Article 21.2 means. Loading factors are as follows: Loading 1) If not agreed for 20% - 20% on quoted value will be loaded. 2) If agreed for 10% only - 10% on quoted value will be loaded. 3) For any other percentage - The shortfall percentage with respect to 20% will be loaded.	**Bidders who does not accept to furnish Performance Bank Guarantee for 20% of contract value, loading factors will be applied as detailed in GCC.**

NTPC / BONGAIGAON TPP - 3 x 250 MW
PRELIMINARY DATA REQUIRED FOR FGD PLANT – 50% TMCR

1.	**Selection Data - FOR INTERNAL PURPOSE ONLY _ Performance Points (Wet Basis)**			
	Boiler Load in MW_e	50% TMCR	50% TMCR	50% TMCR
	Type of Coal	Design Coal	Worst Coal	Best Coal
	Ambient Conditions	27°C Temp, 60% RH		
	Flue gas flow, Nm^3/s at ID Fan Outlet (Wet Basis)	141.2	144.6	139.2
	Flue Gas Temperature, deg. C	145	153	147
	Density of Flue gas, kg/m^3	0.848	0.825	0.847
	Flue Gas Composition at ID Fan Outlet			
	SO_2 % by Vol (Wet Basis)	0.200	0.216	0.194
	SO_3	1.5% Conversion from SO_2		
	Moisture % by Vol (Wet Basis)	10.878	11.991	10.222
	CO_2 % by Vol (Wet Basis)	11.309	11.075	11.437
	O_2 % by Vol (Wet Basis)	5.437	5.347	5.489
	N2 % by Vol (Wet Basis)	72.176	71.371	72.659
	NOx PPM	334	329	336
	CO PPM	100		
	Dust mg/Nm^3	< 50		
	Inlet SO_2 Concentration, mg/Nm^3 (Wet Basis)	5737.7	6169.3	5562.9
	SO_2 Removal Efficiency	Not specified		

2.	**Selection Data - FOR INTERNAL PURPOSE ONLY _ Performance Points (Wet Basis)**			
	Boiler Load in MW_e	50% TMCR	50% TMCR	
	Type of Coal	Worst Coal-2	Best Coal-2	
	Ambient Conditions	27^oC Temp, 60% RH		
	Flue gas flow, Nm^3/s at ID Fan Outlet (Wet Basis)	145.7	137.7	
	Flue Gas Temperature, deg. C	152	149	
	Density of Flue gas, kg/m^3	0.825	0.846	
	Flue Gas Composition at ID Fan Outlet			
	SO_2 % by Vol (Wet Basis)	0.214	0.186	
	SO_3	1.5% Conversion from SO_2		
	Moisture % by Vol (Wet Basis)	12.201	10.001	
	CO_2 % by Vol (Wet Basis)	11.031	11.417	
	O_2 % by Vol (Wet Basis)	5.328	5.505	
	N2 % by Vol (Wet Basis)	71.226	72.891	
	NOx PPM	328	339	
	CO PPM	100		
	Dust mg/Nm^3	< 50		
	Inlet SO_2 Concentration, mg/Nm^3 (Wet Basis)	6098.9	5403.1	
	SO_2 Removal Efficiency	Not specified		

PRE BID MEETING QUERIES & REPLIES FOR FGD SYSTEM REQD. FOR BONGAIGAON PROJECT - REVISED

PRICE BID FORMAT FOR ENQUIRY 4180185E DT.30.04.2008

VENDOR NAME :

OFFER REF & DT :

Enq. Sl.No.	Item description	Enq.Qty	Price quoted with currency details	
			Unit rate	Total Price
001	FGD System and accessories as per Technical Specification TEP:FGD: Bongaigaon.Rev.00 dt.07.03.2008	1 Set. *		
002	GGH [Gas to Gas Heater] System as per Technical Specification TEP:FGD: Bongaigaon.Rev.00 dt.07.03.2008	1 Set. *		
003	Slurry recirculation Pump System as per Technical Specification TEP:FGD: Bongaigaon.Rev.00 dt.07.03.2008	1 Set. *		
004	Absorber System Internals as per Technical Specification TEP:FGD: Bongaigaon.Rev.00 dt.07.03.2008	1 Set. *		
005	Lime Stone Mill System as per Technical Specification TEP:FGD: Bongaigaon. Rev.00 dt.07.03.2008	1 Set. **		
006	Gypsum Belt Filter and accessories as per Technical Specification TEP:FGD: Bongaigaon.Rev.00 dt.07.03.2008	1 Set. **		
	Engineering charges			
	Supervision of Erection and Commissioning charges			
	Performance Testing charges			
	Any other extra charges			
		Total		

* One set means individual system to be offered for each 250 MW unit. [pls. refer Tech. Specn]

** One set means common system to be offered for the complete power station consisting of 3 x 250 MW. [pls. refer Tech. Specn]

COMMERCIAL TERMS AND CONDITIONS [Foreign Vendor]

(To be filled in full and to be submitted along with offer)

SL. NO.	DESCRIPTION	BHEL'S REQUIREMENT	SUPPLIER'S COMMENTS
01	PRICE	Firm till completion of order.	
02	DELIVERY TERMS	F.O.B.- SEA / AIR PORT Basis	
03	PACKING&FORWARIDING	Included. (if extra , to be indicated separately).	
04	FREIGHT & INSURANCE	to BHEL A/C	
05	PAYMENT TERMS	Please refer GCC	
06	DELIVERY PERIOD	Please refer GCC	
07	L.D.CLAUSE	Please refer GCC	
08	OFFER VALIDITY	Minimum 90 days from the date of price bid opening.	
09	INSPECTION	Please refer GCC	
10	TEST CERTIFICATE	Required	
11	**Guarantee Clause**	Please refer GCC	
12	Supervision of Erection and Commissioning.	Supplier's scope	
13	**Performance Bank Guarantee**	Please refer GCC	
14	O&M MANUAL	As per enquiry / specification.	
15	WEIGHT details	Furnish Weight of each item and Total consignment weight to decide mode of dispatch (AIR/SEA).	

Date: Signature With Seal

COMMERCIAL TERMS AND CONDITIONS [Indian Vendor]

(To be filled in full and to be submitted along with offer)

SL. NO.	DESCRIPTION	BHEL'S REQUIREMENT	SUPPLIER'S COMMENTS
01.	PRICE	Firm till completion of order.	
02.	DELIVERY TERMS	F.O.R. DESTINATION (Destination as per Enquiry).	
03.	PACKING&FORWARIDING	Included. (if extra indicate in %)	
04	FREIGHT & INSURANCE	Included. (if extra indicate in %)	
05	EXCISE DUTY in %	To be indicated by vendor. (MODVAT copy to be provided along with supply)	
06.	SALES TAX in %	To be indicated by Vendor. (Concessional form C will be given)	
07.	OCTROI	If any, to supplier's account only.	
08.	PAYMENT TERMS	Please refer GCC	
09.	DELIVERY PERIOD	Please refer GCC	
10.	L.D.CLAUSE	Please refer GCC	
11.	OFFER VALIDITY	Minimum 90 days from the date of price bid opening.	
12.	INSPECTION	Please refer GCC	
13.	TEST CERTIFICATE	Required	
14	**Guarantee Clause**	Please refer GCC	
15	Supervision of Erection and Commissioning.	Supplier's scope	
16	**Performance Bank Guarantee**	Please refer GCC	
17	O&M MANUAL	As per enquiry / specification.	
18	WEIGHT details	Furnish Weight of each item and Total consignment weight to decide mode of dispatch.	