

S. No.	Reference of Bidding Document				Bidder's Query	Owner's/ PMC Reply
	Part/ Sec.	Page No.	Clause No.	Subject		
1	P-I/ Annx-1.2B P-I/ Annx-1.2A	PANIPAT: 235 of 1897 BHATINDA: 216 of 1897	PART-V	GCV of Natural Gas- Bidder to provide	We understand that LEAN (Natural Gas) shall be considered as guarantee fuel and the same shall be used for guarantee/ evaluation purpose. Kindly confirm. Further, Customer is requested to indicate the value of GCV of guarantee fuel based on which evaluation will be done, so as to avoid ambiguity and to bring all the bidders on equal footing.	Please refer Amendment of Annexure-1.2 specifying the NCV to be considered for guaranteed NG consumption.
2	P-II/Sec.-2A	PANIPAT: 325 of 1897 BHATINDA: 346 of 1897	3.3	Since hot BFW is being supplied in place of DM water at amb. Temp. Bidder to design the system to recover heat from flue gas exhaust to get maximum efficiency and min. NG consumptions, Bidder shall furnish detailed scheme along-with Bid documents. The desired stack temperature should be below 120°C.	1. We understand that only hot BFW is available at bidder's terminal point and installing heat recovery surfaces in stack is not envisaged. Achieving stack temperature of the order of 120°C at stack inlet with a feedwater temperature of 190/ 205°C, will not be thermodynamically possible. The minimum possible stack inlet temperature will be Boiler Feed Water Temperature + 10°C (if cold DM is not available for heat recovery in HRSG). Kindly concur. 2. Achieving stack inlet temperature of the order of 120°C is only possible by using cold DM water (at ambient temperature) to recover heat from hot flue gases . Hence, customer is requested to provide cold DM water for heat recovery in HRSG. Kindly Confirm.	Please refer the amendment being issued for BFW temperature
	P-II/Sec.-2A	PANIPAT: 315 of 1897 BHATINDA: 337 of 1897	1.4.15	BFW Supply Temperature (Normal)=205°C BFW Supply Temperature (Normal)=190°C		
3	P-II/Sec.-12	1442 of 1897	2.5, 2.6.2	Noise level of 85 dba at 1 meter.	Noise generated shall be 85dBA at 1m distance from the boiler under normal operating conditions. However in the case of safety valves, drain valve where occurrence of safety valve lifting/ drain valve operation is intermittent, higher values of noise level (115dBA) is allowed as per OSHA Standard.	As per NIT
4	P-II/Sec.-12	1443 of 1897	2.6.2	Rated net HP superheated steam (Normal at 102 kg/cm ² g and 500 OC) at output of 70 MTPH at hook up points with steam quality as per VGB Standard during capability test.	Kindly mention the document number (along with the revision number) of VGB standard which mentions about the steam quality guidelines. Further, customer/ consultant is requested to furnish a copy of the afore said VGB standard to avoid ambiguity.	As per NIT
5	P-II/Sec.-2A	PANIPAT: 317 of 1897 BHATINDA: 338 of 1897	1.6	Fuel Gas Quality: 1. Bhatinda: LEAN GAS AVERAGE GAS RICH GAS 2. Panipat: LEAN GAS AVERAGE GAS RICH GAS	Fuel Analysis specified in the tech. spec. for LEAN Gas in both PANIPAT and BHATINDA is same. However, values of LEAN GAS NCV mentioned for PANIPAT and BHATINDA (in tech. spec.) are different. Customer to clarify. Moreover, for the fuel analysis provided: - Lean Gas NCV Calculated comes to 8232 (kCal/Sm ³) Approx. - Lean Gas GCV Calculated comes to 9130 (kCal/Sm ³) Approx. - Rich Gas NCV Calculated comes to 9395 (kCal/Sm ³) Approx. - Rich Gas GCV Calculated comes to 10376 (kCal/Sm ³) Approx. Our calculated calorific values of gaseous fuels in units of (kCal/ Nm ³) is matching with values specified in tender. Customer to check the units of calorific value mentioned in tender and clarify.	Please refer the amendment being issued for Lean Gas NCV value of Panipat & Bathinda
6	P-II/Sec.-2A	PANIPAT: 326 of 1897 BHATINDA: 346 of 1897	3.3	Continuous on-line GTG exhaust and stack monitoring system consisting of sampling probes, piping, analysers, etc. for analysis of NO _x , CO and un-burnt Hydrocarbon and SO _x , NO _x , O ₂ , CO ₂ and CO respectively shall be provided on the GTG Exhaust and main stack of HRSG.	The combustion takes place in the presence of sufficient excess air in both GT & HRSG. So, the possibility for the presence of HCs in the flue gas is eliminated. Hence, HC analysers are not required. Kindly concur.	As per NIT

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7	P-II/Sec.-4.3	403 of 1897	3.1.2	The design of the HRSG module shall be based on field erected unit with as much equipment already pre-assembled as practical. The size and weight of modules shall be based on site transportation requirements and limits.	HRSGs are always supplied as follows 1. Drum is supplied as an assembly with Nozzles, fittings and internals 2. Super heater, Evaporator, Economiser and Water preheater coils (as per applicability)supplied as modules 3. Ducts are supplied as sub assemblies as loose items 4. Structural columns, beams and channels supplied as loose items 5. Insulation and cladding sheet supplied as loose items 6. Duct burner is supplied as sub assembly To the extent possible, considering the ODC constraints BHEL standardised shipment sizes to reduce the site work and to facilitate the easy & speedy erection activities to complete the project as per schedule. BHEL erection group will erect the equipments at site as per the established erection practices. a. Modularisation of burner with duct is not possible due to ODC constraints b. Modularisation of duct assembly with Insulation and cladding sheet is not feasible due to anticipated mechanical damage by handling, transportation and rains c. Modularisation of drum with riser tubes and sat links is also not feasible due to ODC constraints d. Modularisation by applying insulation over the four sides of the duct at shop works, covered with cladding sheet and then inserting modules (Super heater, Evaporator, Economiser) into the duct at site is not feasible. This	As per NIT
8	P-II/Sec.-4.3	403 of 1897	3.1.3	HRSG shall also be designed for GTG full load when no steam is generated (dry run condition)	When GT is in operation and no steam is generated in HRSG, the GT exhaust will be diverted into the by pass stack and the HRSG will be isolated by operating the guilotine gate/ diverter damper. Hence, HRSG will not be designed for dry running.	Noted. However, sufficient water volume to provided in boiler drum after Low Low level trip/any other scheme to avoid any dry run of HRSG to protect HRSG and accessories during transient changeover of divertor. In case divertor damper is passing/not closed. Submit backup calculation for this.
9	P-II/Sec.-5.3	458 of 1897	1.3.1	The calculation of wall thickness required for pipelines subject to internal and/or external pressure shall be based..... In any case a minimum corrosion allowance of 1.5 mm shall be considered while selecting the thickness.	Quality of Feed Water, Boiler Water and steam is monitored once in a shift to keep a check on the critical paramters such as pH, TDS, Dissolved Oxygen, Silica. This ensures maximum life of the boiler pressure parts/ piping. Since such stringent measures are taken during operation additional requirement (over and above that mentioned in IBR min. thickness formula) need not be considered. Hence, Corrosion allowance shall be as per IBR.	As per NIT
	P-II/ Sec.2A	322 of 1897	2.2	HRSG Design Code - IBR		As per NIT
10	P-II/Sec.-4.3	406 of 1897	3.2.1	Steam Drum shall be designed and fabricated in accordance with IBR latest edition and ASME Sec.VIII Div.1 latest edition.	ASME Sec.VIII is not applicable for Boilers/ HRSG. Steam Drum shall be designed as per IBR & ASME Sec.I requirements.	As per NIT
11	P-II/Sec.-4.3	412 of 1897	3.13.1	Adequate number of sampling points for saturated steam, superheated steam, drum water, feed water, etc. shall be provided by the Bidder. The sampling points shall be complete with nozzles, valves and connections. The sample piping shall be of stainless steel SS 304. All sample coolers shall be grouped and provided at ground level.	SWAS Analysers will be provided to continuously monitor the desired parameters at desired locations. SWAS system itself consists of manual sampling points and hence manual sampling points are an integral part of the SWAS system. Kindly concur.	As per NIT
12	P-II/Sec.-5.5	1038 of 1897	5.1.5	Bolted connections shall be adopted as far as practicable, except for cases where welded connections are required viz. (Galvanized.....)	Structures shall be of welded type. Kindly concur.	As per NIT

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13	P-II/Sec.-2A	PANIPAT: 325 of 1897 BHATINDA: 346 of 1897	3.3	Steam drums shall be designed for water storage time of minimum 3 minutes between normal water level and drum low level trip corresponding to MCR capacity	Steam drum shall be designed for a water storage time of 2 minutes between NWL and low level trip , corresponding to MCR steam generation. Kindly concur.	As per NIT
14	P-II/Sec.-2A	PANIPAT: 325 of 1897 BHATINDA: 346 of 1897	3.3	HRSG shall be designed for a turndown of min. 30% of Rated capacity at normal GTG load without opening the start up vent.	30% MCR turndown will be possible only at part load of GT. At normal GTG load, minimum steam generation with rated parameters will be greater than 30%MCR.	As per NIT
15	P-II/Sec.-2A	PANIPAT: 315 of 1897 BHATINDA: 336 of 1897	1.4	Boiler Feed Water Quality	As per our standard practise Boiler Feed Water Quality shall be as follows: - Total Hardness, ppb= Nil - pH at 25 °C (for Copper Alloy pre-boiler system) =8.8 – 9.3 - pH at 25 °C (for Copper-free pre-boiler system) =9.0 – 9.6 - Specific Electrical conductivity at 25 °C measured after Cation exchanger in the H+ form after CO2 removal {microsiemens / cm), (Max.) < 0.2 - Dissolved Oxygen, ppb, (Max.) <10 - Silica as SiO2 , ppb, (Max.) <20 - Iron as Fe, ppb, (Max.) <20 - Copper as Cu, ppb, (Max.) <3 - Residual Hydrazine, ppb = 10-20 - Total Organic Carbon , ppb, (Max.) <200 Kindly Confirm.	As per NIT
16	P-I/Annx-1.2 A	BHATINDA: 216 of 1897	-	Guaranteed Fuel Consumption	The normal operating condition at which input and output streams would cross the bidder's battery limit, based on which the guaranteed fuel consumption shall be calculated are as follows: 1. Natural gas (LEAN) shall be made available at 39 kg/cm2(g) and 30°C. 2. GCV of Natural gas (LEAN) shall be 9130 (kCal/Sm3). 3. Net Steam generated shall be 45 TPH at 102 (kg/cm2(g)) & 500°C. 4. Hot BFW shall be available at 125 kg/cm2(g) and 190°C. 5. DM Water (for dosing) shall be available at 7 kg/cm2(g) and 45°C. 6. Minimum flue gas temperature at stack inlet shall be Feed Water Temperature + 10°C. 7. Flue Gas Enthalpies shall be as per ASME PTC4.4. 8. Water/ Steam Enthalpy shall be as per IAWSP-IF97. Customer to confirm.	As per NIT.Please refer the amendment being issued for BFW temperature

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17	P-I/Annx-1.2 B	PANIPAT: 235 of 1897	-	Guaranteed Fuel Consumption	The normal operating condition at which input and output streams would cross the bidder's battery limit, based on which the guaranteed fuel consumption shall be calculated are as follows: 1. Natural gas (LEAN) shall be made available at 41 kg/cm2(g) and 30°C. 2. GCV of Natural gas (LEAN) shall be 9130 (kCal/Sm3). 3. Net Steam generated shall be 45 TPH at 102 (kg/cm2(g)) & 500°C. 4. Hot BFW shall be available at 130 kg/cm2(g) and 205°C. 5. DM Water (for dosing) shall be available at 7 kg/cm2(g) and 45°C. 6. Minimum flue gas temperature at stack inlet shall be Feed Water Temperature + 10°C. 7. Flue Gas Enthalpies shall be as per ASME PTC4.4. 8. Water/ Steam Enthalpy shall be as per IAWSP-IF97. Customer to confirm.	As per NIT
18	P-II/Sec.5.1	429/1897	5.3a (i)	UT Examination: All butt-welds in thickness greater than 50mm as supplement to radiography	1) For Boiler Drum: Accepted. 2) For Headers & Piping: As a practice, any one NDE i.e., UT or RT will be carried out.	Noted.Bidder to furnish explanation in their bid.
19	P-II/Sec.5.1	429/1897	5.3a(ii)	UT Examination:FPW of nozzle attachments of thk. above 50mm as supplement to radiography	UT alone may be performed.	Noted.
20	P-II/Sec.5.1	429/1897	5.3b(i)	All edges of plates and opening in shell of CS	Since all the edges are prepared by machining, no MT/PT is required. MT/PT will be performed only for the gas cut edges/openings.	Noted.
21	P-II/Sec.5.1	429/1897	5.3b(ii)	Root and final layer of all butt welds	Since all butt welds are covered by RT/UT, this stage is not envisaged.	NIT conditions shall be followed.
22	P-II/Sec.5.1	430/1897	5.3d	Test on welds of Cr-Mo, Materials after final heat treatment. The value shall comply with the IBR / relevant codes.	Hardness test will be carried out only for Gr.91 welds. This is the practice being followed for all customers.	NIT conditions shall be followed.
23	P-II/Sec.4.3	405 of 1897	3.1.12	HRSG Technical Specification The height of the HRSG flue gas main stack above finished grade level shall be as per design specification and shall be self-supporting type. Design of the stacks shall meet the requirements of various codes & rules/regulations	Since, there is no specific stack height mentioned in the tender, we consider the minimum stack height as 30 mtr. Customer may pl confirm.	As per NIT
24	P-II/Sec.-2A	325 of 1897	3.3	HRSG shall be designed to run normally at 45 TPH with provision to ramp up to rated capacity of 70 TPH in 2 minute, effortlessly with no side effect like overheating, auxiliary boilers over loading, etc. and capable of running continuously at 70 TPH.	As a standard practise to ensure safety of HRSG, a ramp up rate of 3% MCR per minute is suggested by BHEL. However, to increase the steam generation from 45 TPH to 70 TPH supplementary firing shall be gradually increased by monitoring after firing temperature(<850°C) , Metal temperature of Superheater and drum water level.	As per NIT
25	P-II/ Sec.5.5	908 of 1897 918 of 1897	7.1 & 8.0	Flue gas analysers	As per Cl.no.7.1 , sht 13 of 126, On-line gas analysers shall be CO, O2, SOx, NOx and UHC (Un-burnt Hydrocarbon), etc. But, As per cl.8.0. sht 23 of 126, Flue gas monitoring system shall be SOx, NOx, CO, O2, and CO2. Kindly clarify.	As per NIT

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26				Control room distance	Kindly mention the distance from HRSG field to control room.	One view only station for monitoring of both GTG & HRSG shall be required in Ammonia Control room. Second view only stayion to monitor both GTG & HRSG shall also be required in SGP control room and third one in DGM (Prod.) office. The tentative distance of shall be approx. 700 trs from 03 locations.
27	P-II/Sec.5.4	503 of 1897	10.1.2	The minimum size of power cables shall be 16 sq. mm (Cu).	The minimum size of power cables shall be 2.5 sq. mm (Cu) .	The minimum size of power cables shall be 2.5 sq. mm (Cu) is acceptable. However, as per NIT Clause No. 10.1 of Section-5.4, cables upto and including size of 16 sq.mm shall be of copper conductor and cables above 16 sq.mm shall be of aluminium conductor.
28	P-II/Sec. 5.8	1061 of 1897	3.01	Motorised Actuator:The motor shall be conforming to Ex"d", Gas group IIC, T3.	Whether all MOV motors,even in safe area also shall be Ex"d"type?PI confirm	NIT to be followed.

SL No.				Bid Specification Stipulation	Statement of clarification sought	Owner's/PMC Response
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1	BIDDER'S SCOPE OF WORK SCOPE OF SERVICES	Page 7 of 8	2.0 ii	Construction power / water shall be given at one point free of cost. Arrangements for further distribution of power and water by laying pipeline etc. shall be arranged by the bidder.	Please provide us the voltage level at which construction power will be provided at single point. As per the bid specifications we understood following: 1. Construction power will be provided at one point in each unit free of cost by the owner. Further distribution will be done by contractor.	At 415V, 50 Hz
	(SITE WORKING AND SAFETY CONDITIONS) ELECTRICITY & CONSTRUCTION POWER	SHEET 4&5 OF 16	2.12 2.13	ELECTRICITY Construction power shall be provided by NFL at one point. CONSTRUCTION WATER The Construction Contractor shall communicate his water requirements to the Owner within 7 days of the placement of LOI. Construction water, at single point, shall be provided by NFL. Any further distribution will be the responsibility of the Construction Contractor.	2. Construction water will be provided by owner at a single point free of charge. All arrangements for further distribution beyond this point have to be made by the Contractor. Kindly confirm.	As per NIT
2	(SITE WORKING AND SAFETY CONDITIONS) EMPLOYMENT OF LABOUR	SHEET 6 OF 16	5.5	It shall be the responsibility of Construction contractor to provide suitable accommodation including necessary facilities for their labour and staff.	Kindly clarify whether electricity and water for bidder office and labour colony shall also be provided at single point. If yes then whether it is free of cost or on chargeable basis.	ITB Condition Prevail
3	(SITE WORKING AND SAFETY CONDITIONS) EMPLOYMENT OF LABOUR	SHEET 6 OF 16	5.5	It shall be the responsibility of Construction contractor to provide suitable accommodation including necessary facilities for their labour and staff.	As per the bid specifications we understand that the owner shall provide land, free from all encumbrances, free of charge for construction of site office, open yard, closed storage sheds, labour colony and other site infrastructure. Approx. area required will be: • Open storage & fabrication Yard – 30000 Sqm • Closed Storage sheds – 8,000 Sqm • Site office & other facilities – 4000 Sqm Owner to confirm the availability of same.	Space for Labor colony shall not be given in factory however township accommodation on payment basis shall be made available as per availability, requirement of other indicated area is also more
	(SPECIAL CONDITIONS OF CONTRACT) LABOUR AND STAFF	Page 38 of 57	7.3	The CONTRACTOR shall at his own cost provide office and other accommodation for his staff and workmen. The CONTRACTOR shall also provide communication, transport and medical facilities to his staff and workmen.		
	(SITE WORKING AND SAFETY CONDITIONS) SITE ESTABLISHMENT	SHEET 3 OF 16	2.1	The Construction contractor shall provide all huts, stores, tarpaulins and other covers for the accommodation of his staff, workmen and materials. All materials likely to deteriorate in the open shall be stored under suitable cover.		

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4	(CONSTRUCTION, ERECTION, PRECOMMISSIONING, COMMISSIONING AND START UP)	Page 65 of 98	9.0	List of construction & testing equipment	As per the bid specifications we understand that the list of construction & testing equipment provided is only suggestive/indicative list and the same will be finalized only after award of project and as per actual requirement to meet the project implementation schedule. Kindly Confirm.	Noted

S.No.	Document	Page No.	Clause No.	Specification Requirement	BHEL Comment	OWNER'S / PMC REPLY
1.		304/ 1897	2.2	Meteorological data	We understand that maximum ambient temperature is 47 deg C and minimum ambient temperature as 1 deg C. Please confirm. Please clarify coincident Relative Humidity (%) for maximum and minimum ambient temperature.	As per NIT
2.		304/ 1897 327/ 1897	2.2 4.0	Meteorological data Atmospheric pressure	Clause 2.2 indicates site elevation above mean sea level as 236.5 meters which corresponds to atmospheric pressure of 986 mbar. Clause 4 indicates atmospheric pressure as 971 mbar. Please clarify which atmospheric pressure needs to be considered for performance guarantees.	As per NIT
3.		309/ 1897	2.2	Meteorological data	We understand that maximum ambient temperature is 48 deg C and minimum ambient temperature as 1 deg C. Please confirm. Please clarify coincident Relative Humidity (%) for maximum and minimum ambient temperature.	As per NIT
4.		309/ 1897 348/ 1897	2.2 4.0	Meteorological data Atmospheric pressure	Clause 2.2 indicates site elevation above mean sea level as 207 meters, which corresponds to atmospheric pressure to 989.4 mbar. Clause 4 indicates atmospheric pressure as 971 mbar. Please clarify which atmospheric pressure needs to be considered for	As per NIT

					performance guarantees.	
5.		317/ 1897	1.6	Fuel Gas Quality	We understand that lean gas needs to be considered for performance guarantees. Please confirm.	As per NIT
		321/ 1897	2.1	Lean Gas		
6.		323/ 1897	3.1	Installation	We understand that gas turbine installation shall be outdoor. i.e., without any civil building/shed. Please confirm.	GTG shall be under shed and EOT/Overhead Crane/ equivalent lifting machines/tools of suitable capacity for carrying out future maintenance work of GTG shall be in Bidder's scope.
		343/ 1897	3.1	Installation		
7.		323/ 1897	3.1	Pulse filters	We understand that pulse-cleaning filters are to be supplied for inlet air system of gas turbine. Please confirm.	As per NIT
		344/ 1897	3.1	Pulse filters		
		447/ 1897	5.7.3	Air inlet filters		
8.		323/ 1897	3.1	Inlet air chilling system	Please clarify whether downstream equipment of gas turbine such as generator, transformer, HRSG etc. needs to be sized considering inlet air chilling. If yes, please clarify chiller outlet temperature to be considered for chiller sizing. Kindly consider chiller under evaluation and for meeting the qualification requirement of 20 MW (Net) power.	Provision to be provided for future installation
9.		329/	4.3	NOx from stack	We propose to supply Non-DLN	As per NIT

		1897 350/ 1897	4.3		combustion system with water injection for the gas turbine which shall limit NOx emission at GT stack to 50 ppmvd@15% O2 and comply with CPCB guidelines. Please confirm.	
10.		330/ 1897 350/ 1897	5.0 5.0	Fire fighting system Fire fighting system	We propose to offer CO2 fire fighting system with 100% back-up cylinders as loose supply for the gas turbine. Please confirm.	As per NIT
11.		338/ 1897 342/ 1897	1.6 2.1	Fuel Gas Quality Lean Gas	We understand that lean gas needs to be considered for performance guarantees. Please confirm.	As per NIT
12.		358/ 1897	ee	GTG recommended maintenance schedule for 15 years	Please clarify whether Long Term Service Agreement (LTSA) for 15 years is required for the Gas turbine (Flange to Flange only)? Also please clarify whether LTSA is also part of evaluation	As per NIT
13.		361/ 1187	3.0 (iii) 3.0 (xxvii)	Lube Oil purifier	Please clarify whether we need to offer fixed lube oil centrifuge or portable lube oil purifier.	As per NIT
14.		362/ 1187	3.0 (xvi)	System-1	We understand that System-1/Condition monitoring system needs to be supplied for gas turbine. Please confirm.	As per NIT
15.		364/ 1897	5.0	EQUIPMENT QUALIFICATION CRITERIA	Kindly include the following paragraph to meet qualification criteria of DLN combustion system: "The GT manufacturer meeting the above qualification criteria with Standard Combustion System can also utilize the	As per NIT

					past proven experience of DLN combustor system sourced from their licensor/technical collaborator (in the proposed GT model) for the purpose of qualification of the proposed GT model”	
16.		364/ 1897	6.1.3	Margins should be provided as an allowance for performance degradation due to fouling etc. during period of continuous operation	Please clarify the margin in terms of% Degradation to be considered?	Bidder to consider suitable margin against the degradation of the machine during period of continuous operation ensuring net minimum 20 MW power generation at site condition excluding internal power consumption all the time.
17.		364/ 1897 483/ 1897 499/ 1897	6.2 6.3	Starting system Voltage level	We understand that Diesel engine needs to be supplied as starting system for the gas turbine. Please confirm. If motor starting is required for gas turbine, the customer shall provide voltage level of 6.6 kV.	Only Diesel Engine shall be supplied as starting system for the gas turbine. Motor is not acceptable as starting system for the gas turbine.
18.		368/ 1897 449/ 1897	6.10 5.8.11	Enclosure ventilation Ventilation system	Clause 6.10 and 5.8.11 (a) indicates positive ventilation system whereas Clause 5.8.11 (c) indicates negative ventilation system to be supplied for the gas turbine. Please clarify.	As per NIT
19.		446/ 1897	5.7.1	All metallic air path components shall	We propose to offer complete inlet air system along with ducting in carbon steel.	As per NIT

				be of Type 304 stainless steel	Please confirm.	
20.		484/ 1897	6.6.3	DC System	Please clarify whether DC system required for gas turbine auxiliaries shall include 2x100% battery banks with 2x100% charger for each battery bank.	Yes. Two separate DC Power System, one for GTG Auxiliaries (to meet total DC requirement for 4 hours) and other for switchgear control supply (to meet total DC requirement for 2 hours), shall be provided, as per NIT. Each DC System shall be Dual type (100% redundancy).
		501/ 1897	8.17			
21.		1237 /189 7	2.0	Operational spare parts	We understand that operational spare parts are not under evaluation and hence are optional to quote. Please confirm.	As per NIT
		1304 /189 7	2.0	Operational spare parts		
22.		1443 /189 7	2.6.4	GCV/NCV	Generally, performance guarantees shall be furnished on NCV basis and hence gas data during performance guarantee test will be considered on NCV basis only. Please confirm. If not, kindly provide GCV for Lean and Rich gas compositions.	Please refer Amendment of Sec-1.2 specifying the NCV to be considered for guaranteed NG consumption.
23.		1445 /189 7	3.0	Works cost	Generally, performance guarantees shall be furnished on NCV basis and hence NCV of natural gas needs to be considered for evaluation/works cost. Please confirm.	As per NIT

					If not, kindly provide GCV for Lean and Rich gas compositions.	
24.	General	-	-	Dampers	We shall offer electrically operated diverter damper & guillotine gate for operation of gas turbine in open cycle. Please confirm.	Noted
25.	General	-	-	Cooling Water Temperature	Please furnish cooling water temperature at (maximum, minimum , 15 deg C & Design) ambient conditions.	As per NIT

SUBJECT: GTG & HRSG PROJECT - NFL, PANIPAT & BATHINDA- ISM HT Motor

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4.1	4.1.4	4	4.1.4	Canopies	If Motor is IP-55 protected, canopies are generally not require.	Required as per NIT.
4.1	4.1.5	4	4.1.5	Hardware	Generally all hardware of SS are not required.	Required as per NIT.
4.1	4.1.7	4	4.1.7	Efficiency Class	Efficiency class is not applicable for HT motors.	Noted.
4.5	4.5.5	5	4.5.5	Shaft Voltage	Normally shaft voltage limit is 250 mV(rms) to avoid circulating currents as per standards.	Required as per NIT.
4.9	4.9.1	6	4.9.1	Bearing Life	Normally bearing life is 40,000 hours as per standards.	Noted.
9.0	9.0	12	9.0	Noise Level	Rather specifying values, It should be as per IS 12065.	Noted.

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Electrical						
1	PC-135/136/E-601/P-II/5.4	5 of 39	1.1 p	11/3.3/0.415kV Switchboard extension /retrofitting/modification in existing panels.	Customer /consultant may please clarify that new 11/3.3/0.415 switchboards are to be considered for this package or the existing switchboards needs to be utilised with modification(if required).	New Switchboards shall be provided for GTG & HRSG Package. At present retrofitting in existing Emergency Power Distribution Board for tapping of Emergency power is envisaged. Bidder may access retrofitting in other switchboards, as per requirement, for hook-up with existing system and the same shall be in bidder's scope.
2	PC-135/136/E-601/P-II/5.4	6 of 39	1.1 gg	11kV Switchboard	Bidders understanding is that one no. of 11kv switchboard with one incomer and two tie lines along with feeders for GT -HRSG requirement to be considered. Customer /consultant may review and confirm the requirement.	11 kV Switchboard with 2 Nos. Incomer (one working and another Spare) and 4 Nos. tie-line (including two spares) shall be considered. Further Distribution, as required for GTG & HRSG Package) shall also be in bidder's scope, as per NIT.
3	PC-135/136/E-601/P-II/5.4	7 of 39	1.2	Hookup with Existing systems	Customer/consultant may please provide us the key SLD of the plant along with the details of hookup requirements with the existing systems.	SLDs of Existing System are attached. Hook-up with the existing system are elaborated in NIT. Further hook-up with Existing System shall also be in bidder's scope, if arises, during detailed engineering.

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Sl. No.	Part No./ Volume	Page no.	Clause No.	Subject		
4	PC-135/136/E-601/P-II/5.4	7 of 39	1.8	Electrical system studies	Customer/consultant may please note that the systme studies as per the referred clause shall be included for new system supplied by bidder. However, Implications/modifications required in existing system due to system study may be done by customer. Customer/consultant may review and confirm.	System Study of Electrical System shall be done by bidsder as per NIT Bidder to access implication / modification required in existing system at this stage only and include cost of the same, if applicable, in their lumpsum price. .
5	PC-135/136/E-601/P-II/5.4	9 of 39	3	Tie in points	Bidders understanding is that two no. of 11kv VCB Feeders to be considered in New GTG 11KV switchboard for existing 11/132kv Transformers. Customer /consultant may review and confirm the requirement.	4 Nos. 11 K VCB Feeders (including two spare) shall be considered for 11/132 KV Transformers.
6	PC-135/136/E-601/P-II/5.4	9 of 39	3	Tie in points: Main receiving station	Customer/consultant may please provide us the location of existing main receiving station from proposed GT HRSG Plant.	Please refer Plot Plan. The tentative distance between proposed GTG HRSG Plant and existing main receiving substation is approx. 1200 Mtrs.
7	PC-135/136/E-601/P-II/5.4	9 of 39	3	Tie in points:Existing Central Shift Office in AFCP Substation	Customer/consultant may please provide us the location existing Central Shift Office in AFCP Substation from proposed GT HRSG Plant.	Please refer Plot Plan. The tentative distance between proposed GTG HRSG Plant and existing Central Shift Office in AFCP Substation is approx. 700 Mtrs.

REFERENCE OF BIDDING DOCUMENT					Bidder's Query	OWNER'S/PMC REPLY
Sl. No.	Part No./ Volume	Page no.	Clause No.	Subject		
8	PC-135/136/E-601/P-II/5.4	9 of 39	3	Tie in points:OLTC Control panel.	Bidders understanding is that existing OLTC panels of two no. of 11/132kv Transformers to be replaced with new OLTC Panels. Customer /consultant may review and confirm the requirement.	Confirmed.
9	PC-135/136/E-601/P-II/5.4	9 of 39	3	Tie in points:Emergency power from the existing EPMCC-1/2.	Customer/consultant may please provide us the location of existing EPMCC-1/2 and also inform us the available feeder details like rating, type etc. for GT-HRSG Package	EPMCC-1/2 are located in AFCP Substation. The tentative distance between AFCP Substation & proposed GTG HRSG plot is tentatively 700 mtrs. Available feeder details like rating, type etc. will be informed later.
10	PC-135/136/E-601/P-II/5.4	11 of 39	6.2	Existing system interface: Hookup with the existing 11/132kv (MT-1&MT-2) Transformers.	Bidders understanding is that the existing 11/132KV Transformers are to be disconnected from existing 11kv customers switchboard and the same may be connected with the tie lines of the proposed 11kv switchboard. Customer /consultant may review and confirm.	Confirmed. However, disconnection from existing 11kv customers switchboard and connection with New 11 kV Switchboard shall be in bidder's scope.
11	PC-135/136/E-601/P-II/5.4	14 of 39	7.8	a) A clear space of 1.5 M behind the single front switchboard b) A clear space of 5 M between the two Boards facing each other. c) A clear space of 5 M on either side at entrance / exit d) A clear space of 2.5M between two boards in same line.	As per standard practice, following are the clear spaces required to be maintained. a) A clear space of 1.0 M behind the single front switchboard b) A clear space of 2.5 M between the two Boards facing each other. c) A clear space of 2.5 M on either side at entrance / exit d) A clear space of 1.0 M between two boards in same line. Customer /consultant may review and accept bidder proposal.	Clear Space shall be as per NIT.

REFERENCE OF BIDDING DOCUMENT					Bidder's Query	OWNER'S/PMC REPLY
Sl. No.	Part No./ Volume	Page no.	Clause No.	Subject		
12	PC-135/136/E-601/P-II/5.4	16 of 39	7.23	Two Panel extension space on each side (for each Bus section) or three panel extension space on one side (in exceptional cases) shall be provided for all HV switch board & PMCCs.	Customer /consultant may please clarify whether extension space as mentioned in the ref.clause is including the clear space required between two boards in the same line as per clause. 7.8.d. or not.	The space required for extension shall be excluding of space required between two switchboards.
13	PC-135/136/E-601/P-II/5.4	25 of 39	8.8.5	Generator isolation transformer with Off load tap changer.	As per the ref. clause , Generator with Off load tap changer is the requirement where as as per clause no .8.8.4 , the requirement is On load tap changer. Customer /consultant may review and clarify the requirement.	On load Tap changer is required for Generator isolation transformer.
14	PC-135/136/E-601/P-II/5.4	32 of 39	10.2.1	Cable trenches	As per the ref. clause , Cable trench inside the plant area are not acceptable. where as as per clause no .10.2.2 , cable trenches are acceptable. Customer /consultant may review and clarify the requirement.	In general, cables shall be laid in existing overhead cable tray / existing cable trench as far as possible or new overhead cable trays with new structure. In extreme case, where new overhead cable trays are not feasible at all, cable trench may be considered with consent of owner / PMC Consultant.
15	PNMM/PC135...136/E-601/P-II/Sec.-5.4	3 of 6	3.1	Aluminium Cable trays	As per the ref. clause ,Aluminium Cable trays is the requirement . where as as per doc.no PC135..136-PDS:E 530 GI Trays also acceptable. Customer /consultant may review and clarify actual requirement.	The cable trays shall be of aluminium, as per NIT.

REFERENCE OF BIDDING DOCUMENT					Bidder's Query	OWNER'S/PMC REPLY
Sl. No.	Part No./ Volume	Page no.	Clause No.	Subject		
Mechanical						
1	PNMM/PC135..136/E-601/P-II/Sec.-2A	5 of 21	1.4	Feed water supply temperature	Feed water supply normal temperature is mentioned 205 Deg C. We understand that same is to be considered at guarantee condition. Please confirm.	Kindly refer amendment for BFW temperature. However, for cold start up, BFW at 45 deg.C is to be considered.
2	PNMM/PC135..136/E-601/P-II/Sec.-2B	5 of 20	1.4	Feed water supply temperature	Feed water supply normal temperature is mentioned 190 Deg C. We understand that same is to be considered at guarantee condition. Please confirm.	Normal Pressure & temp. of BFW to be considered.
3	PNMM/PC135..136/E-601/P-II/Sec.-2A	7 of 21	1.6	Fuel Gas Quality	Please indicate the guarantee gas composition and its supply parameters.	As per NIT
4	PNMM/PC135..136/E-601/P-II/Sec.-2B	7 of 20	1.6	Fuel Gas Quality	Please indicate the guarantee gas composition and its supply parameters.	As per NIT
5	PNMM/PC135..136/E-601/P-II/Sec.-12.0	8 of 10	2.6.2, v	Fuel Consumption (in SM3/hr along with GCV)	As per normal practice GT heat input is guaranteed w.r.t NCV basis only. However, in this tender it is asked on GCV basis. Customer is requested to take data of heat input on NCV basis also from all the bidders to avoid any error in guarantee heat input. Heat input on GCV basis = GCV/ NCV x Heat input on NCV basis. As GCV basis for GT is not a standard practice, hence there is a chance of mistake made by bidder. Hence, Customer is requested to check and ensure.	Please refer Amendment of Annexure-1.2 specifying the NCV to be considered for guaranteed NG consumption.
6	General	NA	NA	LP Steam for Gas Heater, if required	Please confirm the availability of LP steam from customer end for Gas heater, if required.	Can be supplied.
7	Plot plan NFL Bhatinda	Dwg No. PC136-0000-0003	NA	Pipe racks	Symbols for existing pipe racks and new pipe racks are indicated as same. Hence, we understand pipe racks indicated outside bidder's area are not in bidder's scope. Please confirm.	As per NIT
8	Plot plan NFL Panipat	Dwg No. PC135-0000-0001	NA	Pipe racks	Symbols for existing pipe racks and new pipe racks are indicated as same. Hence, we understand pipe racks indicated outside bidder's area are not in bidder's scope. Please confirm.	Bidder scope

REFERENCE OF BIDDING DOCUMENT					Bidder's Query	OWNER'S/PMC REPLY
Sl. No.	Part No./ Volume	Page no. (PDF)	Clause No.	Subject		
C&I						
1	PNMM/PC135...136/E-601/P-II/Sec.-5.4	3 of 7 (727 of 1897 of overall spec)	4.1	Type of JB's for Weather proof & Ex proof area	There is a contradictory statement as per referred in clauses i.e. whether JB should be weather proof or explosion proof. It is requested to kindly clarify. As per satutory requirement, weather proof JB shall be for all Intrinsic safe/ weather proof instruments and Explosion proof JB for Exproof. Kindly confirm the above philosophy.	Hazardous Area Classification shall be zone 1, II A / IIB, T-3, for Instrumentation JB shall be as per clause 5.2 , Section 5.5 only.
		PNPM/PC-135..136//E-601/P-II/5.5	12 of 126 (907 of 1897 of overall spec)	5.2		
2	PNPM/PC-135..136//E-601/P-II/5.5	14 of 126 (909 of 1897 of overall spec)	7.1	Infrared configurators for liquid analysers.	We understand that infrared configurator is required for SWAS analysers . However, as per our market survey, such infrared configuration facility is available with one vendor i.e. M/s Emerson for only pH and conductivity analysers. Whereas the Co-gen plant required other analysers like Silica, Sodium etc which are not available with infrared configuration facility. Hence Customer/Consultant is requested to elaborate the requirement and provide additional vendors for the same.	Infrared configurators are optional. Analyzer must be atleast HART compatible.
3	PNPM/PC-135..136//E-601/P-II/5.5	14 of 126 (909 of 1897 of overall spec)	7.1	Tuning of liquid analyser with Infrared configurators without opening the covers of Electronics unit in hazardous area	It is understood that that Infrared configuration facility for liquid analysers is required only if they are mounted in in hazardous area. Please confirm above understanding.	
4	PNPM/PC-135..136//E-601/P-II/5.5	47 of 126 (942 of 1897 of overall spec)	22.5	Temperature Transmitters (TT) for Bearing and winding RTD	As per referred clause, Temperature transmitters shall be provided for all temperature elements in closed loops and loops connected to PLC/Interlocks. It may be noted that Bearing and winding RTDs for each motor/pumps are approx 6/8 nos for pump tripping. Please clarify whether TT has to be provided for such large quantity RTDs for bearing and winding temperature measurement.. It is proposed to connect these RTDs to DCS & contact shall be wired to PLC. Please review above proposal.	

REFERENCE OF BIDDING DOCUMENT					Bidder's Query	OWNER'S/PMC REPLY
Sl. No.	Part No./ Volume	Page no. (PDF)	Clause No.	Subject		
5	PNPM/PC-135..136//E-601/P-II/5.5	56 of 126 (951 of 1897 of overall spec)	25	No interfacing is required through Modbus/Serial link between new DCS & existing DCS of Ammonia & SGP. Only one dedicated view only station is required at each existing DCS room.	Conflict in the requirement as per referred clause. Kindly clarify whether is there any interfacing with existing DCS or only one dedicated station is required in existing control room?.	No software communication is required between existing DCS systems (Ammonia & SGP) with new systems for GTG & HRSG. One view only station for monitoring of both GTG & HRSG shall be required in Ammonia Control room.Second view only stayion to monitor both GTG & HRSG shall also be required in SGP control room.
	PNPM/PC-135..136//E-601/P-II/5.5	56 of 126 (951 of 1897 of overall spec)	25	Hardware required for the communication with the existing DCS in the service Boiler control room and Ammonia control Room shall be in the scope of the Bidder.		Hardware required for view only stations is being mentioned.
6	PNPM/PC-135..136//E-601/P-II/5.5	89 & 90 of 126 (984 & 985 of 1897 of overall spec)	27.1.2 & 27.1.13 (e)	i) FRLS cable? ii)Only 12 pair multipair cable shall be used.	i) Bidder shall provide PVC inner sheath and FRLS (Fire resitant low smoke) PVC outersheath cable. ii) Bidder propose to use 6 pair and 12 pair multipair cable. As it may be possible that 9 or 10 signal may not be grouped everywhere in plant. So it will be very cost effective and resources optimized solution to have 6 pair and 12 pair cable. However wherever possible, Bidder shall use 12 pair cable. Kindly confirm.	(i) Noted (ii) NIT to be followed.

REFERENCE OF BIDDING DOCUMENT					Bidder's Query	OWNER'S/PMC REPLY
Sl. No.	Part No./ Volume	Page no. (PDF)	Clause No.	Subject		
7	PNPM/PC-135..136//E-601/P-II/5.5	72 of 126 (967 of 1897 of overall spec)	25.4	All outdoor field instruments shall be provided with SS sheet Canopy.	Conflict in the referred clause. Kindly clarify, whether canopies required for outdoor field instruments or all field instruments.	All outdoor field Instrumentation including push buttons. Sensors etc. shall be with SS sheet canopy.
	PNPM/PC-135..136//E-601/P-II/5.5	95 of 126 (990 of 1897 of overall spec)	27.6	SS sheet canopies shall be used along with all field instruments		
8	General	-	-	Transmitter Housing	Kindly confirm the transmitter enclosure material whether it is Die cast aluminium or SS?	Die cast Aluminium is acceptable.

REFRENECE OF BIDDING DOCUMENT					Bidder's Query	OWNER'S/PMC REPLY
Sl. No.	Part No./ Volume	Page no.	Clause No.	Subject		
CIVIL						
1	PNMM/PC135.136/E-601/P-II/SEC-5.6, NIT FOR GTG & HRSG PROJECT NFL, PANIPAT & BATHINDA DESIGN PHILOSOPHYCIVIL & STRUCTURAL WORKS	page 1025 of 1897	1.1	Construction of new building for control room or renovation of the existing control room building of old ammonia plant.	Please furnisth detailed drawings such as plan, sectional details, foundation detais, architectural detail drawings of the existing control room building of old ammonia plant.	As per NIT (New Control Room)
2	General	-	-	Demolishing the existing Structures if any.	Please furnisth detailed drawings such as plan, sectional details, foundation detais, architectural detail drawings etc of the the structures to be dismantled.	Kindly refer amendment & submit Declaration Form for Site Clearance and Site specific Piling related issues.
3	General	-	-	Site grading& levelling	Site is assumed to be levelled and no grading is required. Micrograding of ± 300 mm is only in bidder's scope. Please Confirm . Or else Kindly furnish the topography survey showing contour level & FGL of proposed area.	As per NIT & in Bidder's scope

Sl. No.	Document No.	Clause No.	Page No.	Description	Query	OWNER'S/PMC REPLY
1	NIT for GT & HRSG project PNMM/PC135..136 /E-601/P-I/Sec.-2.0	1.0	4 of 89	The scope of work includes (but shall not be limited to) supply of basic design, detailed engineering, procurement, supply, fabrication, inspection by third party inspection agency (TPI) as applicable	Third party inspection is not applicable for control systems under this proposal, pls confirm.	Applicable, As per NIT
2	PNPM/PC-135..136/E-601/P-II/5.5	25.1 25.3	58 of 126 59 of 126	Over-speed trip (OST) system shall be TMR based & SIL-3 compliant. 3 nos. speed probes used for OST shall be separate from the 2 nos. probes used for governor speed control. Gas Turbine Generator (GTG) Control Philosophy General: •The offered control system shall be supplied having a classified SIL 3 levels for Plant and Personnel Safety.	GT Mark VIe controls are offered as per BHEL/GE standard design. Panel wiring, construction, painting etc will be as per OEM standards.	Deviations if any may be clearly highlighted.
3	VENDOR LIST PNMM/PC135..136 /E-601/P-II/Sec.-10.0	4.41	34 of 38	Distributed Control System	BHEL make Valmet DNA (former name was Metso DNA) based controls are proposed for control, monitoring & protection for GTG-HRSG Package . This system is manufactured by BHEL at Electronics Division, Bangalore under collaboration with Valmet Automation, Finland. The offered DCS system (Valmet DNA) is well proven in various power plant ratings of upto 800MW for different control applications such as boiler controls, turbine controls, Station C&I, electrical controls/SCADA, Hydro plant controls and so on. Reference installation details & other credentials can be furnished for the same alongwith technical offer. Please confirm the acceptance.	NIT vendor list to be followed.
4	PNPM/PC-135..136/E-601/P-II/5.5	25	56 of 126	No interfacing is required through Modbus/Serial link between new DCS & existing DCS of Ammonia & SGP. Only one dedicated view only station is required at each existing DCS room.	We undersatand that One no. dedicated operator station is required at existing DCS room at each location i.e. Bhatinda and Panipat Please confirm.	One view only station for monitoring of both GTG & HRSG shall be required in Ammonia Control room.Second view only stayion to monitor both GTG & HRSG shall also be required in SGP control room. Total four view only station for Panipat & Bathinda (each) shall be required as per NIT for each location.

SI. No.	Reference of Bidding Document				Bidder's query	Owner's / PMC reply
	Part/Sec	Page No.	Clause No.	Subject		
1	Master Index	1 of 3	NA	1 X 20 MW GTG (GAS TURBO GENERATOR) ,WITH BLACK START OPERATION	We understand for three site the capacity requirement of 20 MW at site rated condition is NET basis which means gas turbine shall be capable of generating 20MW+ Plant Aux consumption. Please confirm.	As per NIT
2	ITB	19/1527	8.1.1.1 III	GTG unit must be in satisfactory operation at least from 01.03.2016 to date of issue of ITB	We understand that the proposed Gas turbine must have 8600 continous fired hours or more in a single installation in a commercial fertilizer plant COGEN application to be qualified to quote for the current offer. Please confirm.	As per NIT
3	ITB	19/1527	8.1.1.1 III	GTG unit must be in satisfactory operation at least from 01.03.2016 to date of issue of ITB	Please confirm that experience gathered on field validation engine shall not be considered for Gas Turbine-generator PTR	Noted.
4	ITB	19/1527	8.1.1.1 III	The bidder shall also submit documentary evidence to the effect that the proposed GTG manufacturer for the subject tender must have supplied at least 1 no. GTG of minimum capacity 25 MW (ISO, Industrial Heavy Duty)	As per our understanding of degrdation due to temperature, elevation etc, gas turbine of ISO capacity 30 MW or higher will be required to meet the 20 MW capacity required at site rated condition (46C, 81% RH, more than 220 m elevation). Please clarify the basis for 25 MW ISO capacity. We understand Water/steam injection for power augmentation is not allowed as Dry Low Nox (DLN) system is required.	As per NIT
5	Schedule of Prices	216/1527	PNMM/PC140/E-601/P-I/Annx-1.2	GCV of Natural gas - Bidder to provide	There can be varaiation in calculation method for GCV that will lead to variation in final GCV value and works cost. GE requested owner to provide the composition of guarantee gas and corresponding GCV.	Work cost shall be based on NCV .Refer amendment to Schedule of Prices Annexure-1.2
6	Technical, Section 2.0	289/1527	1.1	..Industrial Heavy duty..	Please clarify the features necessary to be qualified as "Industrial heavy Duty" gas turbine.	As per NIT.
7	Technical, Section 2.0	289/1527	1.1	..Industrial Heavy duty..	Aeroderivative gas turbines are industrial turbines. Is their lack of experience in Indian Fertilizer Plant Cogen application can be a reason for their ineligibility?	As per NIT.
8	Section 4.1 TECHNICAL SPECIFICATIONS GAS TURBINE	Page 3 of 17	3.0 xvii	Gas Turbine manufacturer's standard Control and Monitoring System.	Different OEM has different level of redundancy for unit control panel - Triple Modular redundancy is industry wide accepted as the best option. However, if there is a control system offer with dual modular redundancy, we understand there will be a penalty to ensure equality of treatment to all OEM. The penalty will be as per established industry practice.	As per NIT.

SL.NO	REFERENCE OF BIDDING DOCUMENT				BIDDER'S COMMENT'S	OWNER / PMC Reply
	Part / sec	Page No.	Clause Reference	Subject (Clause Description)		
1	Technical Specificatins - Gas Turbine	13 of 17	Sec. - 4.1 6.12.16	All instruments including junction boxes provided in the GTG enclosure shall be provided with explosion proof enclosure and certified for the applicable area classification.	Inside GTG is classified as non hazardous area by supplying fresh ventilation air. Redundant ventilation fans will be furnished to provide ventilation air with high reliability. The ventilation fans will always be running when the gas is introduced to the GTG, so the instruments and electrical components inside GTG are not required to be explosion proof. This concept is widely accepted by others like EIL , ONGC etc	Hazardous Area Classification shall be zone 1, II A / IIB, T-3,
2		15 of 17	Sec. - 4.1 7.1	After pre-commissioning checks, system is checked out and response calibrated, the following loading procedure, or reasonable agreed alternate, will be followed for the unit. iii. Increase load to approx. 50% of design load and run for 30 min. - Reject load in one step. - Re-apply load in one step. vi. Re-apply load to 110% of design load and run for 30 min.	Test procedures are proprietary of GTG suppliers and have their own laid procedures and process. This to be discussed mutually during detailed engineering .	Shall be as per Section 12 of NIT and PTC 22.
3	Design Philosophy - Gas Turbine	10 of 21	Sec. - 5.2 5.3.4	Baseplate(s) shall be provided with drip containment and low point drains.	All baseplates are not fully self draining. Not all equipment is covered by the baseplate, so oil retaining wall should be provided around the equipment,	As per NIT
4		12 of 21	Sec. - 5.2 5.6.7	Regardless of the area classification and grouping specified in the requisition, the acoustic enclosure surrounding a gas turbine shall be regarded as a Zone 1 area in accordance with the IP code, or Class I Division 1 in accordance with the National Electrical Code NFPA 70 (latest editions, as applicable) when the ventilation system is inactive.	Same as SL. NO.1. Should the ventilation system is inactive, GTG shall be shutdown due to the lack of the cooling air, and the gas shall be stopped at outside the GTG. Therefore, the inside GTG will have no potential gas leak when the ventilation fans are not running.	Hazardous Area Classification shall be zone 1, II A / IIB, T-3,

S No.	Part /Section	Page No	Clause No	Subject	Tender Clause Description	Bidders Query	OWNER / PMS Reply
1	PNMM/PC135..136/E-601/P-II/Sec.-2A & PC-135/136/E-601/PII/ 5.4	Page 14 of 21	3.2.iv (b) & 6.3	Frequency variation	As per clause no. 3.2.iv (b), The Frequency variation from rated value by $\pm 6\%$ in all modes of operation. As per clause no. 6.3, frequency variation shall be 50Hz $\pm 5\%$	Please clarify & confirm the desired frequency variation.	Since the GTG is to be run in Synchronism with State Grid and Frequency variation in State grid is in range of $\pm 6\%$, GTG shall also be suitable for Frequency Variation of $\pm 6\%$ whereas all distribution equipments shall be suitable for frequency variation of $\pm 5\%$.
2	PNMM/PC135..136/E-601/P-II/Sec.-2A	Page 14 of 21	3.2.iv	Chemical filter	Chemical filter is to be provided to prevent entry of hazardous gas (particularly ammonia gas) in substation.	Please provide the details of chemical filter.	Bidder to design ensuring that No hazardous gases to enter in control room, CCR and other facilities
3	PC-135/136/E-601/PII/ 5.4	Page 29 of 39 & Page 3 of 14	8.15.1 & 4.2	Type of charger	As per clause 8.15.1, Each Rectifier-Cum-Battery Charger shall consist of two float cum load chargers and one separate boost charger. Whereas as per clause 4.2 There shall be 2 nos 100 % redundant Float cum load cum Boost chargers are required.	Please clarify & confirm the requirement.	There shall be 2 separate 110 V D.C. systems : One for GTG auxiliaries and other for switchgear control supply. Each DC system shall have 2 nos. independent battery banks. Each battery bank shall be provided with IGBT controlled automatic rectifier cum charger panel which shall consist of load cum float, standby load cum float and boost charger.
4	PC-135/136/E-601/PII/ 5.4	Page 33 of 39	10.2.7	Cable Tray	The cable racks shall be ladder type, pre-fabricated from suitable aluminium alloy of minimum thickness 4mm.	We propose to provide the cable trays having a minimum thickness 3mm.	As per NIT.
5	PC-135/136/E-601/PII/ 5.4	Page 4 of 39	-	General		Please provide the Single Line Diagram for complete electrical system.	Bidder shall collect during site visit.
6	PNMM/PC-135..136/E-601/P-II/Sec.- 4.1	Page 14of 17	SCHEDULE OF PRICES : PART II- SECTION- 4.1 TECHNICAL SPECIFICATIONS – GAS TURBINE, Clause 7.00	Inspection notification	Contractor/GT manufacturer shall submit the schedule of witnessed tests well in advance. The Owner shall be informed for the provisional test date at least 30 days in advance of the schedule test date and the final test date at least 15 days prior to tests.	In view of ambitious project schedule, the notice period of 02 days may be considered for final test date	As per NIT.
7	PNMM/ PC135..136/E-601/P-II/Sec.-5.1	Page 11of 16	PART-II: TECHNICAL SECTION - 5.1 DESIGN PHILOSOPHY-STATIC EQUIPMENT, Clause no 5.1	TPIA	Equipment shall be inspected by TPIA (Lloyds/BV/TUV).	We understand that the names of TPIAs given in the document are only for illustration and other reputed & proficient TPIA shall also be considered. Please confirm	As per NIT.
8	PNMM/ PC135..136/E-601/P-II/Sec.-5.1	Page 12of 16	PART-II: TECHNICAL SECTION - 5.1 DESIGN PHILOSOPHY-STATIC EQUIPMENT, Clause no 5.5	N2 Filling	Equipment shall be dispatched with N2 filling.	N2 capping is applicable only for critical equipment. Please confirm.	As per NIT.
9	PNMM/ PC135..136/E-601/P-II/Sec.-5.1	Page 12of 16	PART-II: TECHNICAL SECTION - 5.1 DESIGN PHILOSOPHY-STATIC EQUIPMENT, Clause no 5.7	DM water for HYDRO Test	DM Water shall be used for hydro test.	Hydro Test with DM water shall be conducted only for items which require such special treatment. For Example Boiler Coils, Steam Drum etc. Please confirm.	As per NIT.

SL. NO.	REFERENCE OF BIDDING DOCUMENT				BIDDER'S QUERY	OWNER'S / PMC REPLY
	Part/ Sec	Page No.	Clause No.	Subject		
Mechanical - General						
1	P-II/Sec.- 5.2	SHEET 18 of 21	6.3.5	The requirements of API shall be met before the mechanical running test of the gas turbine (combined Gas generator & power turbine) is performed.	Based on bidder's accumulated manufacturing and operating experience,mechanical running test for Gas turbine generator is not necessary.It will only comprise of schedule and cost implications. Please confirm whether this is acceptable.	As per NIT
2	-	-	-	Gas Turbine Power Output	As per bidder's understanding, gas turbines unable to provide 20MW net power output at Site ambient temperature of 46 degC and 81% RH shall not be considered for evaluation. Please confirm.	As per NIT
3	-	-	-	Fuel Gas Pool Price	Kindly provide the fuel gas pool price (per mmbtu) which will be considered for evaluation of works cost .	As per NIT
4	-	-	-	Fuel Gas Price Escalation	Kindly clarify whether any escalation will be considered for fuel price in order to evaluate works cost (by NPV method over a period of 15 years).	As per NIT
Mechanical - GTG						
5	P-II/Sec.-10.0	Page 3 of 38			Supplier's standardized sub-vendor that has proven operating experience would be used in addition to the vendor list included in the NIT and the same would be submitted to purchaser for approval.	As per NIT
6	P-II/Sec.- 4.1	SHEET 10 of 16	6.11.3	explosion proof electric motor driven fans, designed to preclude build up of a hazardous atmosphere and to maintain the temperature inside the enclosure at 60°C or lower.	(1) Gas turbine ventilation fan motors are non-explosion proof because motor itself is located in non-hazardous area. (2) It is difficult to maintain the turbine inside temperature below 60 degC. The maximum ambient temperature itself is 46 Deg C, so it is very difficult to keep the temperature below 60 Deg C. If we increase the fan capacity more to keep the enclosure temperature within 60 Deg C, it may create changes in the ventilation air flow pattern (from inlet to outlet), so the Gas turbine casing may not get cooled uniformly.	As per NIT

SL. NO.	REFERENCE OF BIDDING DOCUMENT				BIDDER'S QUERY	OWNER'S / PMC REPLY
	Part/ Sec	Page No.	Clause No.	Subject		
7	P-II/Sec. 2.0	Page 20 of 21	5	Inert Gas flooding system or any latest extinguishing system for Gas Turbine as generator fire fighting with alarms and trip interlocks. Ultra Violet detectors as well as heat detectors are to be provided for Fire detection. 2 out of 3 voting logic of fire and gas detection system is to be considered for tripping of gas turbine generator.	- As generator does not have any sources for fire, firefighting system for generator is not needed. - Also, total flooding type CO2 (or Inert Gas) Fire Fighting systems shall be provided for closed enclosure only. But, proposed GT Generator does not have any additional enclosure, it comes with cover only. So, Inert/CO2 FF system for Generator area is not needed. - UV detector is not recommended for high temperature applications. So, as per GT OEM standard, heat detector with 2oo3 logic will be provided.	As per NIT
8	P-II/Sec.- 4.1	SHEET 10 of 16	6.11.3	ENCLOSURE The enclosure shall be maintained at a positive pressure of 5mm WG with only one ventilation fan operating. Fan shall be sized for 125% of design air flow.	By the Supplier's standard practice, induced draft fan would be used. Pressure inside of the turbine package and accessory package is at a negative pressure of around 50mm WG. Fan size is 100% of the design air flow as per GT OEM standard.	As per NIT
9	P-II/Sec.- 5.2	SHEET 12 of 21	5.7.1	Corrosion protection of the filter housing and elements, ducting and silencer is required. Unless otherwise specified all metallic air path components shall be of Type 304 stainless steel.	As per GT OEM standard , material of the air path of the filter housing and inlet ducting is carbon steel with painting. Perforated plate for the inlet silencer shall be 304 SS.	As per NIT
10	P-II/Sec.- 5.2	SHEET 16 of 21	5.8.11	d) Enclosure shall be furnished with enclosure air temperatures indicators, differential pressure indicators, and alarm & trip switches for high enclosure air temperature and abnormal enclosure pressure.	Enclosure air temperatures indicators, differential pressure indicators, and alarm & trip switches for high enclosure air temperature and abnormal enclosure pressure are not provided as per GT OEM standard.	As per NIT
11	P-II/Sec.- 1A	SHEET 5 of 5	6.3.11	Gas Turbine Generator (GTG) with black start operation	Availability of plant utility during black start would be clarified.	Please refer clause No. 1.2 of Design Philosophy Electrical (Section 5.4). Diesel Engine of suitable rating shall be provided for black start of GTG since no power shall be made available from existing facilities for cold start up of GTG HRSG. Only Diesel Engine shall be considered for black starting and even DC Motor is not acceptable.
12	P-II/Sec.- 2A	SHEET 3 of 21	1.2.1	1.2.1. Power Generation Characteristics Generation Voltage : 11 KV Primary Distribution Voltage : 11 KV Generation frequency : 50 HZ Voltage variation : + 10% Frequency variation : + 6%	Frequency variation shall be less than +/- 5%.	Since the GTG is to be run in Synchronism with State Grid and Frequency variation in State grid is in range of ± 6%, GTG shall also be suitable for Frequency Variation of ± 6%.
13	-	-	-	Gas Turbine Power Output at all ambient temperature	Please advise the required Gas Turbine Output for all ambient temperature range	As per NIT

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14	P-II/Sec.- 2A	SHEET 7 of 21	1.6	Fuel Gas Quality	Please verify the Rich gas properties since it deviates from Operating range. Our dew point calculation of Rich gas shows 6 degC at 40 kg/cm2a. It is essential for fuel gas line/Combustor design.	As per NIT
15	P-II/Sec.- 2A	SHEET 8 of 21	1.7	Cooling Water [Panipat] Inlet temperature : 35 degC Outlet temperature : 45 degC Note: Allowable del T for design of exchangers/Generator system is 8 degC	Bidder's understanding as per inlet CW (Cooling water) temperature (35 degC) and outlet CW temperature (45 degC) is that the allowable del T for heat exchanger design of Panipat Project can be 10 degC . Please confirm.	As per NIT
Mechanical - HRSG						
16	Sec 1.0A & 1.0B	3 of 5	1.4	Existing de-aerator will cater to the total HP BFW requirement.	Existing Deaerator and BFP shall be used and NFL shall provide required quantity of feed water at specified parameter at the terminal point.	As per NIT
	Sec 5.1	17 of 17	4.0 Datasheet (14.0)	Deaerator datasheet to be filled by bidder		NA
17	Sec 2.0A	15 of 21	3.3	MCR shall be achieved considering one burner under cleaning / maintenance.	We consider the duct burner made by certain number of element /nozzles. The system will be designed considering N-1 requirement, where N is the number of element.	As per NIT
	Sec 2.0B	15 of 20				As per NIT
18	Sec 2.0A	15 of 21	3.3	Bidder shall also indicate the percentage load of GTG (MW) at which HRSG shall produce the design quality and quantity of steam without supplementary firing.	As per the specification requirement, HRSG design capacity of steam shall be 70TPH @ 102kg/cm2(g) and 500 °C at hook up point. This cannot be achieved at any GT load without supplementary firing.	As per NIT
	Sec 2.0B	15 of 20				As per NIT
19	Sec 4.3	2 of 17	3.1.3	HRSG shall also be designed for GTG full load when no steam is generated (dry run condition)	To meet the fresh air firing, Gas bypass system (Diverter damper / Bypass stack) shall be provided. Since Bypass stack is included, dry run capability for HRSG is not necessary. Owner to confirm.	Noted. However, sufficient water volume to provided in boiler drum after Low Low level trip/any other scheme to avoid any dry run of HRSG to protect HRSG and accessories during transient changeover of divertor, In case divertor damper is passing/not closed. Submit backup calculation for this.
	Sec 4.3	7 of 17	3.6.1	The superheater sections shall be of drainable type and shall permit dry running during HRSG startup and transient conditions.		As per NIT
20	Sec 2.0A	15 of 21	3.3	Continuous online GT exhaust and stack monitoring system shall consisting of sampling probes, piping, analyzers, etc for the analysis of Nox, CO and unburnt hydrocarbon and Sox, Nox, O2, CO2 and CO respectively shall be provided on GT exhaust and Main stack.	Please clarify this requirement is for Continuous Emission Monitoring System (CEMS) at Bypass stack and Main stack.	As per NIT
	Sec 2.0B	15 of 20				As per NIT
	Sec 2.0A	6 of 21	1.4	pH, Conductivity, Silica, etc – For BFW, Blowdown and For Super Heated Steam	Since the NIT is having less detail about SWAS, We propose to consider the following analyzers. Please confirm. a) pH Analyser each one no for drum water, feed water and Super heated steam	As per NIT
	Sec 2.0B	6 of 20				As per NIT

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21	Sec 4.3	11 of 17	3.13.2	Provision for on-line analyzers for superheated steam and CBD for measuring pH, silica & conductivity should be made.	b) Silica Analyser each one for drum water and Super heated steam c) Specific conductivity analyser each one for drum water and feed water d) Cation conductivity analyser one no common for saturated steam and superheated steam. Please clarify.	As per NIT
22	Sec 2.0A	16 of 21	3.3	All volatile treatment	All volatile treatment in drum will cause FAC in evaporators & raisers. Hence it is not recommended. Instead we will follow HRSG OEM standard.	As per NIT
	Sec 2.0B	16 of 20				As per NIT
23	Sec-4.3	3 of 21	3.1.8	The HRSG will be completely insulated for minimum heat loss and personnel protection and externally clad with Aluminium sheet cladding in case of externally insulated	The main HRSG is designed with internal insulation with carbon steel casing. Kindly confirm	Noted
24	Sec 4.3	4 of 17	3.1.20	The supplementary firing chamber shall be provided with refractory lining.	The internal insulation and liner material at duct burner zone is as per HRSG OEM standard. It shall be either compressed ceramic block without liner or internally insulated (mineral wool) and SS liner of High temperature resistant material (like AISI 321, SS 310 etc).	To be supplied as per HRSG OEM proven standards.
25	Sec 4.3	7 of 17	3.7.1	The stack shall be of self supporting steel stack, thermally insulated throughout the length of the stack to prevent condensation inside the chimney.	As the fuel is Natural Gas having maximum of 10 ppm sulphur, internal insulation for the Main stack is not required. We propose to apply corrosion resistant paint at main stack internal for top 9m instead of internal lining. Corrosion resistant paint is more maintenance friendly solution. In addition, we propose external insulation with Aluminium cladding throughout the length of the main stack.	NIT Conditions to be followed.
		8 of 17	3.7.2	The inner lining of the top 9m should be of acid resisting materials.		Noted.
		9 of 17	3.11.6	The main stack shall be internally insulated.		NIT Conditions to be followed.
26	Sec 4.3	8 of 17	3.7.6	Both the stacks shall be suitably refractory lined from inside.	Bypass stack shall be provided with Internal Insulation and SS liner material. For main stack, external insulation shall be provided.	By pass stack shall be internally insulated with ceramic wool & SS liner. However ,main stack shall be externally insulated with mineral wool of suitable thickness alongwith aluminium cladding
27	Sec 5.6	20 of 22	6.6	Roofing : 1.22 mm thick Aluminium Industrial troughed sheets shall be provided along with accessories in roofing work	Metaploy sheet of 0.7 mm thickness shall be provided.	As per NIT
Mechanical - Piping						
28	Sec 5.3	Pg no 3 of 16	1.3.1	The calculation of wall thickness required for pipelines subject to internal and/or external pressure shall be based on the formulae and recommendations as given in ASME B31.1, B31.3 & IBR as applicable. In any case a minimum corrosion allowance of 1.5 mm shall be considered while selecting the thickness.	All pipes wall thickness shall be calculated as per ASME B31.1. For IBR approval Pipes thickness check will be done based on IBR requirement.	As per NIT
29	Sec 5.3	Pg no 3 of 16	1.3.1		0mm Corrosion allowance will be applied for Stain less Steel pipe.	Noted

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30	Sec 5.3	Pg no 4 of 16	1.4.1	Stress analysis/pipe support modification of existing piping along with hook up with existing lines shall be in Bidders scope.	Existing drawing / Isometrics and Analysis files shall be made available to bidder for the stress analysis at hook up location.	Analysis files for the existing piping system are not available, being older installation. So the bidder to collect data / drawing from site for their engineering.
31	Sec 5.3	Pg. no 13 of 16	DATA SHEET – A.1 SPECIFIC REQUIREMENTS FOR PIPING	Pipe, fittings, flange, gasket material & lines joint for various service with pipe size indicated as follows, NB 50MM & ABOVE NB 40MM & BELOW ----- -----	Pipe size of 50NB and below is considered as small bore pipe and with size of 65NB & above will be large bore pipe. Accordingly pipe size and Valve size for material, line joint, valve end etc. mentioned in the data sheet A1 and A2 shall be as follows, NB 65MM & ABOVE NB 50MM & BELOW	As per NIT
32	Sec 5.3	Pg no 6 of 16	1.5.5	All piping interconnection from/to B.L of the GT-HRSG package to tie in points for all lines as marked in P&ID's and piping GAD's shall be in the Scope of BIDDER.	All Interface pipes shall be routed till battery limits only.	As per NIT
33	Sec 5.3	Pg. no 8 of 16	1.5.9 (a)	All steam vessels, de-aerators & steam piping shall have double isolation valves.	Double isolation valves shall be provided for steam lines with pressure greater than 40 bar.	As per NIT
34	Sec 5.3	Pg. no 9 of 16	1.7.1	All pipes shall be hydro tested at shops for pressures as per standards and all erected piping shall be tested as per the requirement indicated in ASME B31.1 and IBR	All pipes shall be hydro tested at site only upon erection.	All testings for supply & erection shall be complied as per NIT,
35	Sec 5.3	Pg. no 10 of 16	1.9.2	All gate/globe valves falling in the following categories shall be provided with integral bypass valve, Class 600 and over - 150 mm and larger Class 300 & 150 - 350 mm and larger	Integral Bypass will be provided only for steam lines and feed water lines for categories mentioned in the CI No. 1.9.2.	As per NIT
36	Sec 5.3	Pg no 10 of 16	1.9.5	All carbon steel valves of ANSI pressure rating upto class 150 and 300 shall have stainless steel trim (13% Cr) unless otherwise specified in Data Sheet	Seat, disc and other trim material shall be selected based on the service and manufacturer recommendation.	As per NIT
37	Sec 5.3	Pg. no 10 of 16	1.9.5	ANSI pressure rating class 600 and above shall have Stellite trim.	As per standard, we would like to propose as follows, 1. Class 600 & below or less than 370 deg C - Seat 2. Class 900 & above or more than 370 deg C - Seat & disc.	As per NIT
38	Sec 5.3	Pg no 12 of 16	1.9.12 (f)	All valves except check valves shall be tested for seat tightness by air at a pressure of 6 kg/cm ² (g) on both sides of seat.	Seat tightness for all valves (except butterfly valve) shall be tested as per ASME B16.34 with water as test fluid. For butterfly valve both body and seat shall be hydro-tested as per AWWA C504.	As per NIT (Refer Datasheet A2 SPECIFIC REQUIREMENT FOR VALVES-Note-1 & 2).
39	Sec 5.3	Pg no 13 of 16	DATA SHEET – A.1 SPECIFIC REQUIREMENTS FOR PIPING	1.2 STEAM & BLOW-DOWN BELOW 400°C Pipe, fitting, flange material - A106 Gr.B / A234WPB/ A105	Carbon steel material shall be used for design temperature as allowed in IBR/ASME B31.1 standards.	As per NIT
40	Sec 5.3	Pg no 13 of 16	DATA SHEET – A.1 SPECIFIC REQUIREMENTS FOR PIPING	1.1 STEAM TEMP. 400°C TO 515° C Pipe, fitting, flange material - A335 P22, A234WP22, A182 F22	Following material shall be used for below mentioned design temperature, 454 to 525 deg C - A335 P11/A234 WP11/ A182 F11 shall be used for pipe, fitting, flanges and A217 Gr.WC-6 / A182 Gr.F-11 for valve body/bonnet materials as allowed in ASME B31.1 Above 525 deg C - A335 P22, A234WP22, A182 F22 shall be used for pipe, fitting, flanges and A217 Gr.WC-9 / A182 Gr.F-22 for valve body/bonnet materials as allowed in ASME B31.1.	As per NIT

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41	Sec 5.3	Pg no 13 of 16	DATA SHEET – A.1 SPECIFIC REQUIREMENTS FOR PIPING	GASKET for Sl. No. 1.1, 1.2, 1.3 are mentioned as RTJ	Gasket Shall be provided as per bidders standard practice ,which is successfully applied in other projects.	RTJ flange for >=900#.
42	Sec 5.3	Pg no 14 of 16	DATA SHEET – A.1 SPECIFIC REQUIREMENTS FOR PIPING	All mandatory tests shall be carried out as per ASME Boiler & Pressure Vessel Code ASME Section-II.	All mandatory tests shall be carried out as per ASME B31.1.	As per NIT
43	Sec 5.3	Pg no 16 of 16	DATA SHEET – A.2 SPECIFIC REQUIREMENT FOR VALVES	Sl. No.6 NG pipelines from HRSG B.L. upto Tie-in point shall have minimum thickness as per SCH-XS schedule. The NG shall be aboveground/ underground (with proper wrapping coating as per applicable standards and codes).	NG pipeline thickness shall be as per the thickness calculation based on ASME B31.1.	As per NIT
44	Sec 5.3	Pg no 15 of 16	3.1	If demolition of any existing structure / underground pipelines etc. in existing plant and any new construction for any interconnection services such as pipe/ cable racks steel structure as well as RCC foundation etc., outside battery limit is required by the bidder, it shall be in the bidder's scope. Backfilling/ re-routing of pipelines & making good the area for use shall also be in the bidder's scope.	NFL to provide details of existing buried piping, Cable duct, foundations etc in the Proposed site area, if any.	As per NIT
Mechanical- HVAC and Fire fighting system						
45	PART-II: TECHNICAL SECTION - 2A DESIGN BASIS - NFL, PANIPAT	page 14 of 21 (page 324)	3.2.iv	RH shall be 60% for air-conditioned areas.	Bidder understand that Owner require that RH shall be Maximum 60% for air-conditioned areas. However such RH Control can be maintained only for rooms air-conditioned by Ductable Split AC. For small rooms air conditioned by wall mount Split AC / Ceiling Cassette type AC, RH cannot be controlled.	The substation and control room shall be fully air conditioned through HVAC System with redundant (1+1) system. The AC Unit shall be packaged type suitable for industrial use. (Refer clause No. 6.3.1 of Design Philosophy - Electrical , Section 5.4 of Part - II). Wall Mount Split A/c / Ceiling Cassette Type AC are not applicable.
46	PART-II: TECHNICAL SECTION - 2A DESIGN BASIS - NFL, PANIPAT	page 14 of 21 (page 324)	3.2.iv	GTG Control room shall be considered as air conditioned at temperature 25°C ±1°C.	As per standard practice followed in HVAC System, with Split air conditioners, it is difficult to maintain 25°C ± 1°C. So we propose that GTG Control Room area shall be maintained at 24°C ± 2°C.	As per NIT
47	PART-II: TECHNICAL SECTION - 2A DESIGN BASIS - NFL, PANIPAT	page 14 of 21 (page 324)	3.2.iv	For summer ambient temperature may be taken as 46°C to 24°C	Bidder understand that for summer ambient temperature may be taken as below: a) DBT (Dry Bulb Temp) - 46°C b) WBT (Wet Bulb Temperature) - 24°C	As per NIT
48	PART-II: TECHNICAL SECTION - 2B DESIGN BASIS - NFL, BATHINDA	page 14 of 20 (page 345)	3.2.iv	RH shall be 60% for air-conditioned areas.	Bidder understand that Owner require that RH shall be Maximum 60% for air-conditioned areas. However such RH Control can be maintained only for rooms air-conditioned by Ductable Split AC. For small rooms air conditioned by wall mount Split AC / Ceiling Cassette type AC, RH cannot be controlled.	The substation and control room shall be fully air conditioned through HVAC System with redundant (1+1) system. The AC Unit shall be packaged type suitable for industrial use. (Refer clause No. 6.3.1 of Design Philosophy - Electrical , Section 5.4 of Part - II). Wall Mount Split A/c / Ceiling Cassette Type AC are not applicable.

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49	PART-II: TECHNICAL SECTION - 2B DESIGN BASIS - NFL, BATHINDA	page 14 of 20 (page 345)	3.2.iv	GTG Control room shall be considered as air conditioned at temperature 25°C ±1°C.	As per standard practice followed in HVAC System, with Split air conditioners, it is difficult to maintain 25°C ± 1 °C. So we propose that GTG Control Room area shall be maintained at 24 °C ± 2 °C.	As per NIT
50	PART-II: TECHNICAL SECTION - 2B DESIGN BASIS - NFL, BATHINDA	page 14 of 20 (page 345)	3.2.iv	For summer ambient temperature may be taken as 48°C to 24°C	Bidder understand that for summer ambient temperature may be taken as below: a) DBT (Dry Bulb Temp) - 46°C b) WBT (Wet Bulb Temperature) - 24°C	As per NIT
51	PART-II: TECHNICAL SECTION 3.0 BIDDER'S SCOPE OF WORK	page 4 of 8 (page 355)	1.1. Scope of Supply	w. The proposed control system for GTG/HRSG shall be suitable for integration with vam (chilling) system, for installation at later stage.	Bidder understand that vam (chilling) system is not under the scope of Bidder.	As per NIT
52	SECTION 5.4 DESIGN PHILOSOPHY - ELECTRICAL	page 37 of 29 (page 508)	13.0. FIRE ALARM SYSTEM	13.9 The Fire Alarm System for GTG & HRSG Area shall be hooked-up with thy existing Fir Alarm System.	Please provide necessary details (e.g. exact location of existing fire station in the plot plan and details of the Fire alarm panel in the existing fire station where hooking up to be done).	As per NIT. However, Repeater panel shall be installed in Fire station control room
53	SECTION 5.7 DESIGN PHILOSOPHY - FIRE FIGHTING TECHNICAL SPECIFICATION FIRE DETECTION AND ALARM SYSTEM	page 2 of 9 (page 1045) page 4 of 23 (page 761)	1.1 FIRE FIGHTING SYSTEM FOR COMPLETE GTG/HRSG PACKAGE 2.0 CODES and STANDARDS	1.1The complete system shall be designed in compliance with NFPA standard and local statutory norms required for GTG/HRSG Package. Further, the design, engineering shall comply with the requirements of the latest editions of the codes & standards relevant to this specification. The layout shall be strictly in compliance with NFPA especially with regard to clearance of mains from buildings/ structures, spacing of hydrants etc. 2.1 The system and equipment shall comply with relevant BIS (Bureau of Indian Standards) and other Indian/ International standards, as applicable. In case Indian standards are not available for any equipment, standards issued by IEC/ BS/ VDE/ IEEE/ NEMAINFPA or equivalent agency shall be applicable.	We will provide all fire detection, alarm and protection system as per NFPA guidelines. Please confirm.	As per NIT
Electrical						
54	Part II/ Sec 4.2	Page 6 of 15	6.1.5	The excitation system shall have proper field suppression equipment with properly rated DC field breaker and field discharge facility.	The description below for Field Circuit Breaker and Discharge Facility will not be applicable, because of that the standardized AVR for proposed Gas Turbine Generator will have a PWM (i.e., Pulse Width Modulation) power converter including small discharge component, and use AC magnetic contactor for the field breaker properly for the required rating, but not using DC field breaker.	As per NIT

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55	Part II/ Sec 4.2	Page 4 of 15	5.4	The direction of rotation of the rotor of the machine as viewed from the turbine end shall be clockwise.	The generator rotation direction shall be counter clockwise view from the gas turbine side.	Noted
56	Part II/ Sec 4.2	Page 5 of 15	5.17	The complete assembled alternator vibrations must not exceed the limits specified in IS: 12075/IEC 60034, unless otherwise specified.	Vibration limit shall be as per ISO 7919-4 but not IS.	The generator shall not exceed vibration levels in IEC 60034-14, vibration grade A or B, whichever is more stringent.
57	Part II/ Sec 4.2	Page 6 of 15	6.1.7	The excitation cubicles shall be self standing and sheet metal enclosed provided with swing doors at front & rear.	The following control equipment for Gas turbine package will be installed in air conditioned Local Control Compartment (LCC). <ul style="list-style-type: none"> • Gas Turbine Control Panel (TCP) • Generator Protection Panel (GPP) • AVR cubicle (AVR) • Motor control center & Distribution Panel • Battery & Battery charger The design of the above panels does not require rear side access hence the modular design of LCC does not provide space for rear side access.	Location of all the control equipments shall be as under: <ul style="list-style-type: none"> • Gas Turbine Control Panel (TCP)- Control room • Generator Protection Panel (GPP)- Either in Substation or in Instrumentation rack room • AVR cubicle (AVR)- Either in Substation or in Instrumentation rack room • Motor control center & Distribution Panel-Substation • Battery & Battery charger -Substation
58	Part II/ Sec 4.2	Page 6 of 15	6.1.8	The system shall have high initial response to improve steady state and dynamic stability of the generator. The excitation system response time for static excitation system shall be less than 0.02 sec.	Bidder proposes to offer brushless excitation system with response time of 2 sec.	The excitation system response time shall be less than 0.02 sec, as per NIT.
59	Part II/ Sec 4.2	Page 7 of 15	6.2.1	Automatic Voltage Regulator shall be microprocessor based field programmable having proven state of art technology with following minimum features : <ul style="list-style-type: none"> - Field current limitation - Line voltage follower for rapid synchronisation.....separate remote manual control equipment shall also be provided for controlling from generator control panel. 	(1) Line voltage follower for rapid synchronization: This will be provided in Turbine Control Panel (TCP), so this requirement is functionally complied. (2) Thyristor units: FET based PWM power converter will be applied instead of Thyristor for this rating. (3) Separate remote manual control equipment: Proposal AVR will be a redundant system with two controllers which will have Auto and Manual mode in each controller respectively. Therefore, the required separate manual control equipment is not needed.	As per NIT.
60	Part II/ Sec 4.2	Page 7 of 15	6.2.6	The AVR panel shall be of minimum IP42 degree of protection	As per bidder's standard practice, AVR protection panel has IP20 protection.	AVR protection Panel shall have IP42 protection as per NIT.
61	Part II/ Sec 5.4	Page 5 of 39	1.1	The bidder's scope of supply of electrical system includes, but not limited to: c)including retrofitting at existing Emergency Switchboard	Please clarify the make and year of existing switchboard	Switchboards are L&T make, year 2012. However,shall be discussed during site visit by Bidder.
62	Part II/ Sec 5.4	Page 5 of 39	1.1	p) 11KV/3.3KV/415V Extension Panels & Retrofitting/ Modification in existing panels (if required).	Please clarify the make and year of existing switchboard	Switchboards are L&T make, year 2012. However,shall be discussed during site visit by Bidder.

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63	Part II/ Sec 5.4	Page 10 of 39	3	New OLTC control panel complete with AVR relay, tap position indicator, winding/oil temperature indicator, annunciator window, master/follower/independent selector switch, auto/manual selector switch, tap position raise/lower push button, emergency OFF push button, out of step relay, breaker and isolator semaphore indication etc. for OLTC of MT-1 and MT-2 (existing 11/132 kV Transformers) installed in existing 132kV CPP switchyard.	We understand that we have to provide two nos OLTC one each for MT 1 and MT-2. Please clarify the requirement of 11/132KV step up transformer.	11/132 kV Step-up Transformers are existing one.
64	Part II/ Sec 5.4	Page 10 of 39	3	All protections (Transformer Differential, Line Differential, Overcurrent, Earth Fault, REF, SBEF, WTI & OTI Alarm & Trip, Low Oil level alarm, Oil surge relay, etc.) of MT-1 & MT-2 (existing 11/132 kV Transformers) has to be included in 11 KV outgoing feeders in GTG Substation.	The necessary CTs for existing transformers shall be provided by the owner.	*For 11kV side CTs are to be provided by the bidder. * For 132kV side existing CTs installed in transformer bushing and 132kV switchyard shall be used. *Wire up of 132kV CTs from existing transformer and 132kV switchyard shall be in bidder's scope.
65	Part II/ Sec 5.4	Page 14 of 39	7.8	The layout of equipment shall be such that it shall have adequate space for installation, operation, maintenance and future expansion. The clearance of equipment from the walls/other equipment shall be adequate to ensure safety of working personnel. Generally the following norms shall be maintained for PMCC/Distribution Boards: a) A clear space of 1.5 M behind the single front switchboard. Double front switchboard is not acceptable. b) A clear space of 5 M between the two Boards facing each other. c) A clear space of 5 M on either side at entrance / exit d) A clear space of 2.5M between two boards in same line.	We recommend: a) A clear space of 1.0 M behind the single front switchboard. b) A clear space of 2.0 M between the two Boards facing each other. c) A clear space of 1.5 M on either side at entrance / exit.	Clear Space shall be as per NIT.
66	Part II/ Sec 5.4	Page 15 of 39	7.11	The switch room shall be having vitrified mat finished anti-skid glazed tiles and cable cellar with Kota stone flooring. Switch room along with offices shall have false ceiling.	it is Not recommended to have false ceiling in Switchroom	Switchroom alongwith offices and control room shall have false ceiling, as per NIT.
67	Part II/ Sec 5.4	Page 15 of 39	7.20	Also oil immersed transformers shall be located separately under RCC room adjacent to substation. The transformers shall be separated from each other by a fireproof wall. All the transformer bays shall be provided with oil collecting system. The transformer room shall be	Oil filled transformer shall be located outdoor not in a room.	Transformers shall not be located in outdoor but in RCC Room adjacent to Substation and covered on top & three sides and fourth side shall have metal wicket gates as per NIT.
68	Part II/ Sec 5.4	Page 17 of 39	8.1.2	The equipment to be installed in indoor plant area shall be enclosed in dust, damp and vermin proof enclosure equivalent to IP: 54 as per IS. Except switch boards, all other equipment installed in AC room shall have IP-42 degree of protection.	We infer the following from this statement, Switchboards and Distribution boardsshall be IP 54, UPS and DC system shall be IP 42, 11kV and 3.3kV shall be IP4X	Switchboards and Distribution boards with IP 54 protection; UPS and DC system with IP 42 protection and 11kV & 3.3kV switchboards with IP4X protection, as per NIT.

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	Part/ Sec	Page No.	Clause No.	Subject		
69	Part II/ Sec 5.4	Page 19 of 39	8.1.12	- HRC Fuses with short circuit release	Fuses does not come with release, shall be consider MCCB	Switch with HRC Fuse, electronic thermal overload relay and earth fault projection, as per NIT, shall be provided.
70	Part II/ Sec 5.4	Page 20 of 39	8.1.12	- Motors of rating 75 kW and above shall be fed from ACB.	What about 3.3kV motor should we use VCB or vacuum contactors	for 3.3 kV Motors, VCB shall be provided.
71	Part II/ Sec 5.4	Page 21 of 39	8.2	Metering	Where should we do tarrif metering	11KV Genertor incomer & outgoing feeder to 11/132 transformers(MT1 & MT2)
72	Part II/ Sec 5.4	Page 25 of 39	8.8.4	That Generator Isolation Transformer (with ONAN & forced cooling, ON load tap changer etc with Remote electrical operation at GTG control room.) & other requirement shall be as mentioned below -	Please clarify if generator isolation transformer is off load or on load tap changer CI 8.8.5 call for Off load tap changer	On load tap changer is required for Generator Isolation Transformer.
73	Part II/ Sec 5.4	Page 26 of 39	8.9.1	The GTG 11KV switchboard shall have minimum 750 MVA short-circuit rating for 3 secs & 3.3KV switch board shall have minimum 175 MVA short-circuit rating for 3 secs	Please change the short circuit rating to 1sec instead of 3 sec.	The switchboard shall be designed for fault withstand time of 3 seconds only as per NIT.
74	Part II/ Sec 5.4	Page 29 of 39	8.15.1	Each Rectifier-Cum-Battery Charger rating shall be minimum 2 times of the maximum load requirement.	Battery Charger for GT units would be suitable for 1 time of the total DC power requirement for GT safety shutdown.	Each Rectifier-Cum-Battery Charger rating shall be minimum 2 times of the maximum load requirement, as per NIT.
75	Part II/ Sec 5.4	Page 30 of 39	8.17	Battery Sets shall be rated to meet the total DC power requirement for 2 hour for switch gear battery & 4 hour for GTG auxiliaries battery after complete power failure.	Battery sets for GT units would be suitable of 1 hour of the total DC power requirement for GT safety shutdown.	As per NIT.
76	Part II/ Sec 5.4	Page 30 of 39	8.20	Bus bars shall be of electrolytic grade tinned copper with heat shrinkable sleeve	Please calrify if connnection from generator to transformer to switchgear should be isolated phase bus duct, please clarify if aluminium bus duct can be used for IPBD	Aluminium bus bars are not acceptable.
77	Part II/ Sec 5.4			SCHEMATIC DIAGRAMS WITH LEGEND FOR 11KV / 3.3KV SWITCH BOARD (Drg. No. PC135..136-1201)	Please furnish the existing SLD as it is very much essentail to connect the new generator to the existing system.	Existing SLDs are attached .
78	Part II/ Sec 5.5	Page 61 of 125	25.3	The GTG Control System shall have necessary control functions for KW Control, KW Import Control, KVAR/Power Factor Control, Heat Recovery Application Interface, and Unfired Waste Heat Recovery System Control.	The KVAR/Power Factor Control should be done by the AVR, not TCS. Limited interface to Heat Recovery and Unfired Waste Heat Recovery System is considered. KW import control will not be provided in TCS	As per NIT
79	Part II/ Sec 5.5	Page 60 of 125	25.3	115VAC 50 Hz shall be provided through UPS from two sources for control panel supply and rest all distribution shall be in bidder's scope. However for system reliability, additional built-in power supply shall take care for safe operation of the system.	Bidder's proposed control system is designed to operate on DC power supply for safer operation.	As per NIT
I&C						
80	Part II/ Sec 5.5	-	-	-	Bidder understands that, the proposed CCPP will be considered as safe area except the area where fuel will be handled. Hence bidder will consider Ex-proof equipments according to the area segregation during detail design stage.	As per NIT, to be discussed during detail engineering.

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81	Part II/ Sec 5.5	4 OF 125	2.2 f)	For measurements having interlock and control, the execution shall be 2003 only through use of three transmitters upto ESD system. The control shall be median control through hardwired repeat outputs from ESD marshaling cabinets.	Bidder understand that for same parameter which is used for protection and control, no separate sensors have to be used, the same signal connected to ESD can be repeated through AO and can be used in DCS for control. Employer to confirm.	Dual channel repeater shall have to be used in the marshalling for ESD. One output shall be fed to ESD for interlocking and second shall be fed to DCS for control.
82	Part II/ Sec 5.5	5 OF 125	3.0 a)	No Direct Process Switches (Pressure / Level/ Flow / Temp.) shall be used. However, if it's not possible to install transmitter for particular application online pressure/level switches (float type) may be used with specific approval of owner (NFL/PMC).	Bidder understand that for lube oil skids for pumps/fans installation of Pressure/level switches will be acceptable by employer.	Switches are not acceptable.NIT to be followed
83	Part II/ Sec 5.5	5 OF 125	3.0 c)	All field transmitters for pressure, d/p, level and flow shall be microprocessor based (dual compartment) SMART transmitters with "UNIVERSAL HART" protocol with latest revision.	Bidder will use the latest version of HART protocol, however the version number will be decides during detail engineering.	NOTED
84	Part II/ Sec 5.5	5 OF 125	3.0 d)	2003 SOV to be considered for all Trip solenoids, and configured and hooked up properly in such a way that failure of one solenoid doesn't initiate a false trip. Trip solenoids shall be normally in energised condition and shall be de-energised to initiate trip.	Bidder understand that this is not applicable for HRSG BMS. However Dual coil solenoid will be provided for HRSG BMS. Employer to confirm.	Dual Coil solenoid valves are not acceptable.NIT to be followed.
85	Part II/ Sec 5.5	12 OF 125	7.1	On-line gas analysers for the measurement of CO, O ₂ , SO _x , NO _x and UHC (Un-burnt Hydrocarbon), etc. shall be Ex-proof as per area classification.	Bidder understand that CEMS for measuring the following parameter will not fall under Hazardous area classification. Hence Ex-proof need not to be considered, Employer to clarify.	NIT to be followed.
86	Part II/ Sec 5.5	12 OF 125	7.1	All analysers shall be grouped area-wise and housed in a pressurised and air conditioned Analyser Shelterconforming to NAMUR recommendations.	Bidder understand that all CEMS analyzers will be placed in common CEMS shelter. And this is the bidder standard practice. Employer to confirm whether this is acceptable.	We requires & under stand that bidder shall be placing all analysers in HVAC shelter as per NIT.Deviation if any may be clearly highlighted.
87	Part II/ Sec 5.5	13 OF 125	7.1 Infrared configurators are also envisaged to enable the tuning of parameters in the field without opening the covers of Electronics unit in hazardous area.	Bidder understand that infrared configurators are optional. Analyzer can only be HART compatible.	Noted,Acceptable.

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88	Part II/ Sec 5.5	14 OF 125	7.1	Connectivity of these Analysers with CPCB/PPCB/HPCB portal shall be in bidder's scope. Bidder shall supply of required hardware for connecting these Analyser to the CPCB/PPCB/	Bidder understand that CEMS with necessary hardware to connect with CPCB will be in bidder's scope, however employer will provide the PLANT LAN with Internet to connect with CPCB.	Noted
89	Part II/ Sec 5.5	23 OF 125	9	DILUTION SYSTEM FOR SOx/NOx ANALYSERS	Bidder request employer to consider Hot wet extractive (non-dilution) type and insutive analysis also as option.	NIT to be followed.
90	Part II/ Sec 5.5	32 OF 125	17.1	No flow switches shall be used. The same shall be achieved through flow transmitters, which shall be directly connected as analog input to DCS/PLC.	Bidder understand that flow switches can be used where ever the flow measurement is not possible by other means as mentioned by employer's spec, for example for lube oil cooler cooling water flow low	Can be considered in detail engineering provided no other method prescribed elsewhere in the NIT is feasible.
91	Part II/ Sec 5.5	49 OF 125	23	I/P convertors are not required. All controls valves shall be equipped with SMART Electro-pneumatic positioned (Siemens make) with latest HART protocol,.....	Bidder requests employer to also consider other alternative vendors/makes.	NIT to be followed.
92	Part II/ Sec 5.5	51 OF 125	23.1	Two numbers of Hand Held Communicator shall be provided for smart positioners in addition to those provided along with smart transmitters (Model Emerson 475 or latest).	Bidder requests employer to also consider other alternative vendors/makes.	NIT to be followed.
93	Part II/ Sec 5.5	53 OF 125	23.24.3	All trip solenoid valves shall be 2oo3 with diagnostics.	Bidder's proposed HRSG BMS safety valve will be double coil solenoid valve. Please confirm whether this is acceptable.	Double coil solenoid valve shall not be acceptable.NIT to be followed.
94	Part II/ Sec 5.5	53 OF 125	23.24.4	All Solenoid Valves used in the whole plant shall be of HERION make only.	Bidder requests employer to also consider other alternative vendors/makes.	NIT to be followed.
95	Part II/ Sec 5.5	55 OF 125	25	New CR should be sufficiently adequate to accommodate Instrumentation & Control for GTG & HRSG Control System like.....	Bidder's standard practice is to provide GT control System in GT control compartment located near the GT (field), however a remote operator desk will be provided at the Control room for remote operation and monitoring.	Placing remote monitor in the CCR shall be acceptable, however control room shall be adequate to accommodate all Instrumentation of GTG & HRSG.

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96	Part II/ Sec 5.5	55 OF 125	25	...No interfacing is required through Modbus/Serial link between new DCS & existing DCS of Ammonia & SGP. Only one dedicated view only station is required at each existing DCS GTG control system and HRSG control system shall communicate with each other. No interfacing is required through Modbus/Serial link between new DCS & existing DCS of Ammonia & SGP. Only one dedicated view only station is required at each existing DCS room.	Bidder understand that, there is no requirement of interface with existing unit DCS, however a remote desk for only monitoring of HRSG and GT to be provided in old ammonia control room. Employer to provide tentative distance between the new and existing CR.	One view only station for monitoring of both GTG & HRSG shall be required in Ammonia Control room. Second view only station to monitor both GTG & HRSG shall also be required in SGP control room. The tentative distance of both control rooms shall be approx. 700 trs.
97	Part II/ Sec 5.5	55 OF 125	25	Hardware required for the communication with the existing DCS in the service Boiler control room and Ammonia control Room shall be in the scope of the Bidder.	This clause is contradicting with the above clause employer to confirm.	Hardware required for View only Stations only.
98	Part II/ Sec 5.5	55 OF 125	25	Online GTG and HRSG Block Efficiency monitoring and Control system shall be provided.	Bidder understand that, a program to be implemented in DCS logic to calculate the efficiency of HRSG online and display the same in Operator screen.	NIT ask for specialised software programme meant to evaluate efficiency of both GTG & HRSG to be provided and run.
99	Part II/ Sec 5.5	58 OF 125	25.2	The master clock shall drive the slave display units.	Bidder request employer to provide the number of Slave display units required and approx. Location.	Will be decided during detail engineering.
100	Part II/ Sec 5.5	58 OF 125	25.2	Outputs shall be Digital pulse, Analog & Ethernet. It should also have provision to synchronize with external system or synchronized with external system.	Bidder request employer to provide the detail of source of external system.	Ammonia DCS, SGP DCS & Urea DCS system.
101	Part II/ Sec 5.5	58 OF 125	25.2	There shall be time synchronization facility available in DCS for diff. other sub-systems like ESD, etc. In this case DCS clock shall remain a MASTER clock and it will synchronize all other sub systems of the plant.	Bidder recommends time synchronization by a reliable and common source such as GPS based master clock system.	Noted, Acceptable.
102	Part II/ Sec 5.5	59 OF 125	25.3	Latest Bently Nevada make Vibration Monitoring System (3500) along with sensors, monitors, cables, connectors etc. shall be supplied by the bidder. All instruments shall be highly reliable and shall conform to API 670.	Bidder will provide field proven Vibration monitoring system which will be equivalent to Bentley Nevada conforming to API 670, employer to confirm.	NIT to be followed.

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103	Part II/ Sec 5.5	59 OF 125	25.3	GTG shall have control panels installed in the main control room.....	Bidder's standard practice to provide GT control System in GT control compartment located near the GT (field), however a remote operator desk will be provided at the Control room for remote operation and monitoring.	As per 95 above.
104	Part II/ Sec 5.5	59 OF 125	25.3	115VAC 50 Hz shall be provided through UPS from two sources for control panel supply and rest all distribution shall be in bidder's scope.	GT control system shall have a dedicated UPS. The GT UPS related alarm will be communicated to DCS via MOSBUS TCP/IP between GT control system and HRSG/BOP control system.	Noted,UPS for both GTG & HRSG shall be required.
105	Part II/ Sec 5.5	59 OF 125	25.3	Provision of View only stations at AFCP and Boiler control room is envisaged.	Please refer to point no.95.	Refer 96 above.
106	Part II/ Sec 5.5	60 OF 125	25.3Also Control System shall have the provision of CCTV Cameras & associated equipment for Live Video Monitoring of Rack-room, Engg. Room, MCC, other important locations inside CR/ Sub-station area and on important drives & Field Locations etc. subject to Max. of 32 Points.....	CCTV Cameras will not have any interface with the GT Control system, however CCTV system with cameras in multiple location will be provided and a dedicated CCTV monitor will be provided in control room for monitoring	Noted
107	Part II/ Sec 5.5	61 OF 125	25.3	The gas turbine generator shall be provided with an electronic governor with hydraulic actuator for governor valves for controlling the shaft speed. I/H Converter of VOITH make and Electronic governor of Woodward make shall be used.....	Bidder will provide GT OEM standard hydraulic actuator and electronic governor	NIT to be followed.
108	Part II/ Sec 5.5	61 OF 125	25.3The metering station installation shall comply with the relevant ISO/ASME/API/ AGA Standards or better. Fuel Metering System shall be minimum 4-path Ultrasonic Flow-Meter having accuracy of 0.25%.....	Bidder proposes a common Ultrasonic Flow meter at the terminal point and individual flow meter for control purpose in GT and HRSG will be provided using orifice.	Not acceptable. NIT to be followed.
109	Part II/ Sec 5.5	64 OF 125	25.3	Similarly, MMI between operator and Generator Protection & control, Transformer & Switchyard control shall be through operating station/keyboard and mouse and touch screens with a provision of touch screen masking.....	Bidder does not envisage any touch screen for GT or HRSG operator station. Employer to confirm.	NIT to be followed.

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110	Part II/ Sec 5.5	65 OF 125	25.3	For bypassing the field inputs for operational and maintenance requirements, common Key-operated hardwired enable switch located on hardwired console shall be provided. Individual bypasses shall be implemented through graphics on operator consoles. Bypassing shall be event recorded.	Bidder do not recommend any key-operated hardwired bypass switch for GT or HRSG operations. Employer to confirm.	NIT to be followed.
111	Part II/ Sec 5.5	66 OF 125	25.3	The GTG control system Monitors shall be installed in flush in the console as shall be applicable for DCS /PLC consoles for aesthetic look.	Bidder propose control system monitors are installed as stand alone and not a panel. Hence flush mount is not applicable.	Noted,Acceptable.
112	Part II/ Sec 5.5	66 OF 125	25.4	All the panels and cards of the systems shall have corrosive environment protection coating as per G3 of ISAS 71.04.	Bidder understand that there will be no corrosive environment inside the control building and GT compartment, Hence G3 coating as per ISAS 71.04 is not required, employer to confirm.	NIT to be followed.
113	Part II/ Sec 5.5	67 OF 125	25.4	2 Nos. Server-Grade Engineering Stations with RAID 5 Configuration, in redundant mode, recommended for HRSG Control.	Bidder propose 1nos Engineering station will be enough for HRSG control. Employer to confirm.	NIT to be followed.
114	Part II/ Sec 5.5	68 OF 125	25.4	All Field instrument shall be intrinsically safe as per area classification.	Bidder understand only instrument located in hazardous area as per the plant area classification will be intrinsically safe.	NIT to be followed.
115	Part II/ Sec 5.5	68 OF 125	25.4	DCS & ESD system for HRSG shall be from the same vendor.	Bidder request employer to relax on the selection of ESD PLC as per OEM recommendation.	NIT to be followed.
116	Part II/ Sec 5.5	71 OF 125	25.4	JB shall be as per area classification and minimum IP 65, Instrument cable trays shall be Aluminum.	Bidder propose to provide all cable tray made of GI (hot dip galvanized)	NIT to be followed.
117	Part II/ Sec 5.5	72 OF 125	25.4	...All the system hardware of DCS shall have ISA G3 level corrosion protection....	Bidder understand that there will be no corrosive environment inside the control building and GT compartment, Hence G3 coating as per ISAS 71.04 is not required, employer to confirm.	NIT to be followed.
118	Part II/ Sec 5.5	72 OF 125	26.3	LVS shall be such that it can be used for continuous viewing (24 hours). LVS with wireless mouse/keyboard/HDMI cable upto 50 meters shall be provided.	Bidder propose LVS with KVM switch instead of wireless mouse/keyboard/HDMI.	Not acceptable. NIT to be followed.

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119	Part II/ Sec 5.5	74 OF 125	26.9	100% fault tolerance and dual redundancy in DCS shall be for Controller cards, all communication cards and buses, all control buses, all type of common cards in the system, all power supply modules, all I/O modules for closed loops and interlock I/Os, buses, Ethernet modules.	Bidder understand that DCS will have dual controller with (1) one working and (1) one hot-standby.	NIT to be followed.
120	Part II/ Sec 5.5	75 OF 125	26.13.2	All digital output from DCS and ESD shall drive interposing relays of OMRON make	The bidder will follow the specification for interposing relay however we request employer to provide choice on relay make.	NIT to be followed.
121	Part II/ Sec 5.5	75 OF 125	26.13.5	Client-server Architecture is NOT acceptable.	Bidder request employer to accept client-server architecture also as many DCS vendor offer client-server architecture.	NIT to be followed.
122	Part II/ Sec 5.5	78 OF 125	26.22	The system shall be microprocessor based programmable logic control (PLC) with fault tolerant redundant processors based on TMR/QMR technology.	TMR will be applied for GT control system, however for HRSG BMS SIL3 dual redundant Safety System will be applied, employer to confirm	HRSG BMS shall be realised in ESD system with specoification as per NIT.
123	Part II/ Sec 5.5	98 OF 125	27.14.2	The resistance to earth is to be less than 1 ohms. To achieve this an array of parallel electrodes may be used.	Bidder understand that the earthing resistance requirement shall be met as recommended DCS OEM.	Noted, However earthing resistance shall be on lower most range limit of DCs manufacturer recommandations.
124	Part II/ Sec 5.5	99 OF 125	28	Vibration monitoring system shall be Bentley Nevada make 3500 series only.	Bidder request Employer to add few more vendors or allow bidder to offer VMS equalent to Bentley Nevada.	NIT to be followed.
Civil						
125	P-II/Sec. 5.6	4 of 38	1.1	Dismantling and disposal of existing RCC/PCC flooring/pavement, existing RCC foundation and backfilling of the same with good soil and site grading,if required as per site conditions.	Please give the exact scope of dismantling. (For example :what would be the quantity of dismantling , and what is the lead distance for disposal ?)	Refer Amendment being issued & Bidder has to submit the declaration form regarding Site Clearance and Piling related issues

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126	P-II/Sec. 5.6	4 of 38	1.1	The good soil required for back filling after dismantling and disposal of existing RCC foundations shall be arranged from outside of NFL Boundary area.	Please clarify regarding the scope of identification of good soil, lead distance.	Bidder shall explore the availability of good soil nearby plant (Outside the NFL Complex Area.)
127	P-II/Sec. 5.6	4 of 38	1.1	Walls facing plant side should be blast proof.	Please clarify regarding the dimension of wall.	Shall be as per Code
128	P-II/Sec. 5.6	9 of 38	2.2.1. (a)	Special considerations	Please explain bundle pull forces	Shall be as per equipment vendor drawing.
129	P-II/Sec. 5.6	14 of 38	3.3	Foundations shall be so designed that natural frequency of the foundation system shall not resonate with the following c) 2 x Operating speed of the machine d) Critical speed of the machine (for centrifugal machines)	As per IS 2974 For the design of dynamic equipment foundations, Check for 2 x Operating speed and check for critical speed of the machine is not indicated.	Shall be as per NIT.
130	P-II/Sec. 5.6	17 of 38	4.7.4	All underground structures including top surface of foundation shall be painted with two coats of cold bitumen	It is not a standard practice to paint top surface of foundation.	Shall be as per NIT.
131	-	-	-	[BATHINDA PLANT] Feasibility of using existing piling	For a new plant using the existing piles are very difficult and not recommended for the following reasons : 1. The exact location where we need the piling as per our pile layout will be different from the location of existing piling 2. The load carrying capacity of these existing pile is not known 3. These piles will also pose problems for new piles by interfering in certain locations	Use of existing piles to the extent feasible for the new construction shall be done.

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1	4.1	2	3.0.iii	Permanent mounted Oil Centrifuge with purifier (water removal) & clarifier mode (sediment/soil material removal).	This type of equipment is not required for the operation of GTG package.	As per NIT
2	4.1	2	3.0.iv	Motor driven hydraulic ratchet / gear turning device.	This is equipped with an electric VSD start motor also used for turning the Gas Generator rotor.	Noted. System Details to be provided by the Bidder.
3	4.1	3	3.0.vi	Intake air system including cleanable filters, cleaning system, expansion joints, ducting and insulations.	The combustion air intake filters can be supplied as pulse cleaning type (mainly in desert areas) or static type with disposable filter elements, i.e. not cleanable.	As per NIT .
4	4.1	3	3.0.viii	Acoustic enclosures for the Gas turbine, Load Gear Box and electric generator.	Acoustic enclosures are required for GT and Gear box. Electric generator does not require any enclosure and is suitable for outdoor installation.	As per NIT . Electrical Generator shall also be provided with enclosure. Complete system excluding HRSG shall be inside shed with suitable capacity EOT crane.
5	4.1	3	3.0.xiv	Local Gauge Boards and Local panels as listed elsewhere.	The package is intended for automatic remote operation without Local Gauge Boards and Local Panels.	As per NIT. Local Gauge Board wherever required by process shall be included.
6	4.1	8	6.5.1	The lubricating oil tanks shall be of SS.	Siemens recommendation is to use a CS lube oil tank. This is the standard solution, which is used in the vast majority of the projects. An tank in SS will increase the price considerably with minimal technical advantages.	As per NIT
7	4.1	8	6.7.4	...minimum three RTD's/ duplex thermocouples per bearing.	All main bearings have two duplex RTD's per bearing	As per NIT
8	4.1	10	6.11.1	The enclosure must be quickly detachable and equipped with lifting lugs for easy removal.	The enclosure is fixed once installed at site. The walls are equipped with large hinged doors for easy maintenance and GG roll-out.	As per NIT
9	4.1	10	6.11.3	...temperature inside the enclosure at 60°C or lower...	Temperature inside the enclosure can be higher than 60°C. All equipment is suitable for use in the actual temperature.	As per NIT.
10	4.1	11	6.12.1	The gas turbine generator shall be provided with an electronic governor with hydraulic actuator for governor valves for controlling the shaft speed.	The GTG is provided with an electronic digital governor with servo-motor gas fuel valves for controlling the shaft speed.	As per NIT.
11	4.1	13	6.12.16	All instruments including junction boxes provided in the GTG enclosure shall be provided with explosion proof enclosure and certified for the applicable area classification.	This clause is in conflict with clause 6.11.4 "All instrument & electrical items, which are energised before start of pressurisation or remain energised after loss of pressurisation, shall be suitable for area classification". The area inside the GT enclosure is considered to be safe area, hence only equipment specified in 6.11.4 is suitable for hazardous area.	As per NIT. All instrument shall be suitable for hazardous area classification as per standard practice.
12	4.2	4	5.4	The direction of rotation of the rotor of the machine as viewed from the turbine end shall be clockwise.	The direction of rotation of the generator rotor is counter-clockwise at drive end, facing shaft end.	Noted.

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13	4.2	5	5.16	The machines shall be provided with suitable fire detection system for the windings & moisture detection.	As the generator is located outdoors without an enclosure, no fire protection system is included.	As per NIT.
14	4.2	5	5.17	The complete assembled alternator vibrations must not exceed the limits specified in IS: 12075/IEC 60034, unless otherwise specified.	The generator fulfills vibration levels in IEC 60034-14, vibration grade A.	The generator shall fulfill vibration levels in IEC 60034-14, vibration grade A or B, whichever is more stringent.
15	4.2	5	5.19	The generator shall be outdoor type installed in fully enclosed shed from all sides. Overhead EOT Crane capable to lift the rotor of both Generator and turbine shall be provided.	Crane not included, proposed generator is suitable for outdoor installation without enclosure.	In addition outdoor type generator, shed shall also be provided. Moreover, EOT Cranes capable to lift the rotor of both Generator and turbine shall also be provided.
16	4.2	5	6.1.4	Redundancy of Rotating diode bridge	Rotating diode bridge not redundant, diode fault protection included.	As per NIT.
17	4.2	5	6.1.6	Excitation cubicle shall be provided with cooling arrangement such as cooling fans of nonmetallic type along with air filters. Cooling fan shall be of redundant type.	Cooling of excitation cabinet according to manufacturers standard design.	As per NIT.
18	4.2	5	6.1.7	The excitation cubicles shall be self standing....	Excitation cabinet located on directly on the generator	As per NIT.
19	4.2	6	6.3.6	Cooling tube shall be mounted on the side of the generator (Shall not be top mounted).	Siemens well-proven standard is top mounted coolers.	As per NIT.
20	4.2	9	6.5.2	The rotor windings shall be of high silver bearing copper & of VPI (vacuum impregnated).	Rotor winding is not VPI, as salient pole design is applied.	As per NIT.
21	4.2	9	6.6.4	Flame / Heat and smoke detectors...	Not applicable since no enclosure is required.	As per NIT.
22	4.2	10	6.8.9 6.8.11	Stator (line) Terminal Box Neutral terminal Box	Neutral terminal Box and Stator (line) Terminal Box are combined in one large box including CT's, PT's, surge arrester and NGR (10A).	As per NIT.
23	4.2	11	6.9.3	The star point of the generator shall be connected to earth through neutral grounding resistor (NGR) so that the maximum earth fault current through the resistor & stator winding is limited to full load current of generator	Generator suppliers strongly recommend high-resistance grounding. The standard maximum earth fault current is 10 A (10 s).	As per NIT.

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24	5.2	15	5.8.5	(5.7.3.4) Addition: Three gas sensors shall be provided at each of the following locations: a) ventilation air inlet b) ventilation air outlet. c) Combustion air inlet. The set point for alarm shall be at 20% of lower flammable level (LFL) and shut down at 60% of LFL.	Being a safe area installation, Siemens wellproven standard using two gas detectors in the ventilation air outlet is applied. The set point for alarm is 5% of LFL and shut down at 10% of LFL.	As per NIT
25	General				What gas composition should be used for performance calculations/guarantee ?	Please refer Amendment of Annexure-1.2 specifying the NCV to be considered for guaranteed NG consumption.
26	General				Reference ambient conditions for performance calculation is 46°C RH 81% ? @46°C only 33% RH is possible due to that relative humidity is defined as the ratio of the partial pressure of water vapor in a gaseous mixture of air and water vapor to the saturated vapor pressure of water at a given temperature. The possible relative humidity decreases with higher ambient temperatures. The relative humidity is based on a wet bulb temperature of 30.7 °C, which is the highest measured wet bulb temperature in the world (according to Munters). This occur a couple of hours per year in Al-Manamah, Bahrain. What RH should be used?	Bidder to note that as specified in NIT, inlet air temp & RH are to be considered individually while calculating Power output of GTG at site conditions wrt ISO conditions . For calculating Guaranteed Power output of GTG excluding all internal consumptions , corrections shall be based on all applicable site conditions wrt ISO conditions ie inlet air temp 46 deg C ,81 % RH , inlet / outlet duct pressure losses , ambient pressure etc. Bidder to furnish in their Bid calculations for tha same with supportive docs & internal consumptions details.
27				General Query	Can a bidder (EPC) quote with multiple sub suppliers (GTG) and put more than 1 bid. In other words, is there a restriction for a bidder to put up only one bid or they can put more than 1 bid with alternative sub-supplier (GTG). Please clarify	Please refer Clause 17 of section 1.0 of Part-1 of NIT.

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3	1	DESIGN BASIS-PANIPAT SECTION – 2A	330/1897	6	GTG shall be provided suitable for outdoor installation. Ventilation system for GTG enclosure shall be as per latest IS/IEC.	Bidder understands that GTG suitable outdoor installtion means no additional shed shall be provided for GTG & Auxilliaries. PDIL/NFL to confirm	The generator shall be outdoor type provided with acoustic enclosure and sheds (refer clause 6.3.1 of Technical Specification - Generator , Section 4.2 of Part - II).
4	2	DESIGN BASIS-PANIPAT SECTION – 2A	330/1897	7	All required utilities & NG shall be supplied at the battery limit (i.e. Hook up point) of GTG/HRSG by client. Bidder to take hook-up from all Utilities & NG. Process steam NG & all utilities shall be provided with double block and bleed arrangement with Fig-8 type arrangement for positive isolation at GTG/HRSG B.L. by Bidder. All tie-ins may be taken up in shutdown prior to Hook up Shut down.	Bidder understands that for all utilities, NG & Process steam double isolation valves with bleed arrangment & spectacle blind must be provided. PDIL / NFL to confirm if this understanding is correct. Bidder further requests PDIL / NFL to give the type of block & Bleed arrangment required for each utility due to different piping specifications for each utility, NG, process steam & superheated steam at battery limit.	As per NIT.
5	3	DESIGN BASIS-Bhatinda SECTION – 2B	351/1897	6	GTG shall be provided suitable for outdoor installation. Ventilation system for GTG enclosure shall be as per latest IS/IEC.	Bidder understands that GTG suitable outdoor installtion means no additional shed shall be provided for GTG & Auxilliaries. PDIL/NFL to confirm	In addition, outdoor type generator , shed shall also be provided (refer clause 5.19 of Technical Specifications - Generator, Section 4.2 of Part - II).
6	4	DESIGN BASIS-Bhatinda SECTION – 2B	351/1897	7	All required Utilities & NG shall be supplied at the battery limit (i.e. Hook up point) of GTG/HRSG by client, Bidder to take hook-up from all Utilities & NG. Process steam, NG & all utilities shall be provided with double block and bleed arrangement with Fig-8 type arrangement for positive isolation at GTG/HRSG B.L. by Bidder. All tie-ins may be taken up in shutdown prior to Hook Up Shut down.	Bidder understands that for all utilities, NG & Process steam double isolation valves with bleed arrangment & spectacle blind must be provided. PDIL / NFL to confirm if this understanding is correct. Bidder further requests PDIL / NFL to give the type of block & Bleed arrangment required for each utility due to different piping specifications for each utility, NG, process steam & superheated steam at battery limit.	As per NIT . Complete system excluding HRSG shall be supplied with enclosure inside the shed with suitable capacity EOT crane.
7	5	BIDDER'S SCOPE OF WORK	354/1897	1.1 c	Gas turbine's exhaust gas system consisting of internally insulated duct with necessary expansion joint to HRSG.	As per good engineering practice Gas turbine's exhaust system is externally insulated with necessary expansion joint to HRSG. PDIL/NFL to confirm the same is acceptable.	As per NIT

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8	6	BIDDER'S SCOPE OF WORK	357/1897	2.0 k	Site clearing including removal/utilization of existing foundations and cleaning	As per site visit, there are existing foundations/rafts /Building(Panipat) at the locations where GTG-HRSG & its auxiliaries to be installed. PDIL / NFL to share the detailed civil drawings, for estimation of the removal work / civil work required.	As per NIT, Also,Refer Amendment being issued, bidder has to submit signed declaration form for plot suitability for installation of GTG-HRSG.
9	7	BIDDER'S SCOPE OF WORK	356/1897	2.0 a	System engineering, preparation of heat and mass balance diagrams across all items along with calculations, system wise Design Criteria document, PFD, P&ID, Utility Balance Diagram, system interlock logic diagram with its description, Line list, Load List, Hazardous area classification diagram, All equipments and instrument data sheets, Precommissioning, Commissioning operation & maintenance manual, Sensitivity Study, Plot Plan etc.	PDIL/NFL to confirm the Hazardous area classification zone for proposed GTG-HRSG plot.	Bidder to furnish Hazardous Area Classification Drawing in conformity with BIS 5572 Latest Edition.
10	8	DESIGN BASIS - BATHINDA	346/1897	3.3	HRSG shall be designed as per the applicable codes/standards. In addition all requirements of IBR (Indian Boiler Regulation) Latest Edition must be complied with. HRSG shall be of horizontal type	Bidder clarifies that HRSG may be Horizontal or Vertical	As per NIT
11	9	DESIGN BASIS - BATHINDA			Boiler blow down shall be sent to existing ETP plant for further treatment	PDIL/ NFL to share the overall plant layout in ACAD form	Details can be collected during site visit
12	10	DESIGN BASIS - BATHINDA	347/1897	3.3	Oily water system shall be provided by Bidder and deoiled water shall be sent to existing ETP plant further.	PDIL/ NFL to share the overall plant layout in ACAD form	Details can be collected during site visit
13	11	Master Index	1 of 3	NA	1 X 20 MW GTG (GAS TURBO GENERATOR) ,WITH BLACK START OPERATION	We understand for three site the capacity requirement of 20 MW at site rated condition is NET basis which means gas turbine shall be capable of generating 20MW+ Plant Aux consumption. Please confirm.	As per NIT
14	12	ITB	19/1527	8.1.1.1 III	GTG unit must be in satisfactory operation at least from 01.03.2016 to date of issue of ITB	Bidder understands that the proposed Gas turbine must have 8600 continuous fired hours or more in a single installation in a commercial fertilizer plant COGEN application to be qualified to quote for the current offer. Please confirm.	As per NIT

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15	13	ITB	19/1527	8.1.1.1 III	GTG unit must be in satisfactory operation at least from 01.03.2016 to date of issue of ITB	Please confirm that experience gathered on field validation engine shall not be considered for Gas Turbine-generator PTR	As per NIT

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16	14	ITB	19/1527	8.1.1.1 III	The bidder shall also submit documentary evidence to the effect that the proposed GTG manufacturer for the subject tender must have supplied at least 1 no. GTG of minimum capacity 25 MW (ISO, Industrial Heavy Duty)	As per our understanding of degradation due to temperature, elevation etc, gas turbine of ISO capacity 30 MW or higher will be required to meet the 20 MW capacity required at site rated condition (46C, 81% RH, more than 220 m elevation). Please clarify the basis for 25 MW ISO capacity. We understand Water/steam injection for power augmentation is not allowed as Dry Low Nox (DLN) system is required.	As per NIT
17	15	Schedule of Prices	216/1527	PNMM/PC 140/E-601/P-I/Annx-1.2	GCV of Natural gas - Bidder to provide	There can be variation in calculation method for GCV that will lead to variation in final GCV value and works cost. Bidder requests PDIL/NFL to provide the composition of guarantee gas and corresponding GCV.	Please refer Amendment of Annexure-1.2 specifying the NCV to be considered for guaranteed NG consumption.
18	16	Technical, Section 2.0	313/1897	1.1	..Industrial Heavy duty..	Please clarify the features necessary to be qualified as "Industrial heavy Duty" gas turbine.	As per NIT
19	17	Technical, Section 2.0	321/1897	2.1	..Industrial Heavy duty..	Aeroderivative gas turbines are industrial turbines. Is their lack of experience in Indian Fertilizer Plant Cogen application can be a reason for their ineligibility?	As per NIT
20	18	Section 4.1 TECHNICAL SPECIFICATIONS GAS TURBINE	Page 3 of 17	3.0 xvii	Gas Turbine manufacturer's standard Control and Monitoring System.	Different OEM has different level of redundancy for unit control panel - Triple Modular redundancy is industry wide accepted as the best option. However, if there is a control system offer with dual modular redundancy, we understand there will be a penalty to ensure equality of treatment to all OEM. The penalty will be as per established industry practice.	As per NIT
21	19	SECTION – 2.0A/ DESIGN BASIS- PANIPAT	7 of 21	1.6	Fuel gas quality	We request PDIL/NFL to clarify the supplementary fuel case to be guaranteed for PG test	As per NIT
22	20	SECTION – 2.0B/ DESIGN BASIS- BHATINDA	7 of 20	1.6	Fuel gas quality	We request PDIL/NFL to clarify the supplementary fuel case to be guaranteed for PG test	As per NIT
23	21	SECTION – 2.0A/ DESIGN BASIS- PANIPAT	8 of 21	1.7	Boiler blow down shall be routed to be connected to CW return header through pump connected with collection Pit. Blow down tank and connection of blow down water to CW header shall be in scope of Bidder.	Kindly clarify this point and inform us the requirement of HRSG blow down water terminal point connection ,also inform us the required blow down water temperature at terminal point.	Boiler blow down water shall be sent to Cooling water return header after cooling to less than 50 deg.C through pump
24			16 of 21	3.3	Boiler blow down shall be sent to cooling water header		

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25	22	SECTION – 2.0B/ DESIGN BASIS- BHATINDA	8 of 20	1.7	Boiler blow down shall be routed to be existing ETP.	Kindly clarify this point and inform us the requirement of HRSG blow down water terminal point connection, also inform us the required blow down water temperature at terminal point.	Boiler blow down water shall be sent to ETP after cooling to less than 50 deg.C through pump .
26			16 of 20	3.3	Boiler blow down shall be sent to existing ETP plant for further treatment.		

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27	23	SECTION – 2.0A/ DESIGN BASIS- PANIPAT	16 of 21	3.3	The desire stack temperature should be below 120°C	Achieving stack temperature of below 120°C without using Make up water heater will not be thermodynamically possible as the minimum BFP water temperature at inlet of Economiser for Panipat is 205°C. Kindly clarify	As per NIT.
28	24	SECTION – 2.0B/ DESIGN BASIS- BHATINDA	15 of 20	3.3	The desire stack temperature should be below 120°C	Achieving stack temperature of below 120°C without using Make up water heater will not be thermodynamically possible as the minimum BFP water temperature at inlet of Economiser for Bhatinda is 190°C. Kindly clarify	As per NIT.
29	25	SECTION – 2.0A/ DESIGN BASIS- PANIPAT	19 of 21	4.3	SO2 from gas fired boiler	Kindly clarify this point and inform us the requirement of SOX (ppm) in HRSG stack.	As per NIT.
30	26	SECTION – 2.0B/ DESIGN BASIS- BHATINDA	19 of 20	4.3	SO2 from gas fired boiler		As per NIT.
31	27	SECTION – 2.0A/ DESIGN BASIS- PANIPAT	19 of 21	4.3	Pollution control	Kindly confirm reference O2% level (dry) emission to be guaranteed.	As per NIT.
32	28	SECTION – 2.0B/ DESIGN BASIS- BHATINDA	19 of 20	4.3	Pollution control	Kindly confirm reference O2% level (dry) emission to be guaranteed.	As per NIT.
33	29	SECTION – 2.0A/ DESIGN BASIS- PANIPAT	20 of 21	4.4	Noise generated shall not exceed 85 dBA at 1 m distance from the source of Individual equipment under normal range of operating conditions.	The noise level for superheater safety valve & start up vent valve will be 110 dBA at 10 m distance.	As per NIT.
34	30	SECTION – 2.0B/ DESIGN BASIS- BHATINDA	19 of 20	4.4	Noise generated shall not exceed 85 dBA at 1 m distance from the source of Individual equipment under normal range of operating conditions.	The noise level for superheater safety valve & start up vent valve will be 110 dBA at 10 m distance.	As per NIT.
35	31	SECTION – 2.0A/ DESIGN BASIS- PANIPAT	20 of 21	5	FIRE FIGHTING SYSTEM	Bidder understands that extension of Fire Hydrant system for GTG -HRSG plot in Bidder's scope. No Fi-Fi system is considered.. Kindly confirm.	As per NIT.
36	32	SECTION – 2.0B/ DESIGN BASIS- BHATINDA	19 of 20	5	FIRE FIGHTING SYSTEM	Bidder understands that extension of Fire Hydrant system for GTG -HRSG plot in Bidder's scope. No Fi-Fi system is considered.. Kindly confirm.	As per NIT.
37	33	SECTION – 4.3 / TECHNICAL SPECIFICATION - HRSG	19 of 21	3.1.8	The HRSG will be completely insulated for minimum heat loss and personnel protection and externally cladded with Aluminum sheet cladding in case of externally insulated.	The main HRSG & ducting is designed with internal insulation with carbon steel casing. Kindly confirm	Noted.

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38	34	SECTION – 4.3 / TECHNICAL SPECIFICATION - HRSG	4 of 17	3.1.20	Supplementary firing chamber shall be provided with refractory lining.	As per our design guidelines refractory lining is recommended if the temperature of exhaust gas goes beyond 850°C otherwise Ceramic wool insulation with SS liner shall be sufficient. Kindly confirm	As per NIT.
39	35	SECTION – 4.3 / TECHNICAL SPECIFICATION - HRSG	8 of 17	3.7.1	The stack shall be of self supporting steel stack, thermally insulated throughout the length of the stack to prevent condensation inside the chimney.	Kindly clarify this point both are contracting	By pass stack shall be internally insulated with ceramic wool & SS liner.However ,main stack shall be externally insulated with mineral wool of suitable thickness alongwith aluminium cladding.
40			8 of 17	3.7.6	Both stack shall be suitable refractory lined from inside.		
41			9 of 17	3.11.6	The main stack shall be internally insulated.		
42	36	Annexure -3B Block diagram of PANIPAT	Drg.No PC138-0000-0020		HRSG generated super heated steam existing pipe line spec 20"-SX-2001-F2D	Kindly clarify the MOC.Piping material specification is not available for all lines	As per piping specs attached with the NIT.

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43	37	PNPM/PC-135..136//E-601/P-II/5.5 DESIGN PHILOSOPHY - INSTRUMENTATION	SHEET 12 OF 126	5	The Hazardous Areas are Zone 2, and all Instruments shall conform to Exd or Exia, Gr.IIB+H2 Temp class T4 to CENELEC EN 50018, & 50020	Shall be as per approved Hazardous area layout.	All instrumentation shall be strictly suitable for hazardous area zone-2 & shall confirm requirement of NIT.
44	38	DESIGN PHILOSOPHY – INSTRUMENTATION	Page 15 of 126		Silica analyser shall be of HACH make only	Silica analyser is part of SWAS.But requirement given under CEMS specs. Client to clarify	SWAS is OK. Separate analysis point for laboratory is required.
45	39	DESIGN PHILOSOPHY – INSTRUMENTATION	Page 23 of 125		Continuous measurement of SOx by UV fluorescent absorption method	Shall be as approved vendor Standard	As per NIT
46	40	DESIGN PHILOSOPHY – INSTRUMENTATION	Page 23 of 125		The NOx Analyser shall be based on chemiluminescence's principle	Shall be as approved vendor Standard	As per NIT
47	41	PNMM/PC140/E-601/P-II/ SEC 5.4	31 OF 39	6.12.3	All 415V motors shall be minimum IE3 as per latest edition of IS:12615	There are discrepancy in tender which mentions both IE2 & IE3 motors. We have envisaged IE2 motors only. Kindly confirm	There is no discrepancy i.e. IE2 and IE3 motors. All 415V motors shall be IE3 as per latest edition of IS: 12615
48	42	PNMM/PC140/E-601/P-II/ SEC 5.4	8 of 15	5.4.1	The starting current i.e breakaway current of 415V motor shall not exceed the values indicating in IS 12615.	Starting current shall be limited to IS 12615 standard exclusive applicable tolerance. Kindly confirm	Starting current indicated in IS 12615 shall be inclusive of applicable tolerances. No further tolerance shall be applicable.
49	43	GENERATOR	345/1897	3.2-iv	The Frequency variation from rated value by $\pm 6\%$ in all modes of operation.	We request you to make frequency variation 5%	Since the GTG is to be run in Synchronism with State Grid and Frequency variation in State grid is in range of $\pm 6\%$, GTG shall also be suitable for Frequency Variation of
50	44	TECHNICAL SPECIFICATION GENERATOR	379/1897	1.0	Rating of Generator on continuous basis at site conditions shall be equal to or more than ISO rating of turbine.	Bidder is considering the generator rating as per ISO rating.	As per NIT.
51	45	TECHNICAL SPECIFICATION GENERATOR	382/1897	5.19	The generator shall be outdoor type installed in fully enclosed shed from all sides. Overhead EOT Crane capable to lift the rotor of both Generator and turbine shall be provided.	Please confirm whether bidder has to provide complete shed for GTG with EOT crane arrangement or GTG should be outdoor installation with internal crane arrangement inside the enclosure.	In addition outdoor type generator , shed shall also be provided. Moreover, EOT Cranes capable to lift the rotor of both Generator and turbine shall also be provided.

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52	46	TECHNICAL SPECIFICATION GENERATOR	384/1897	6.3.1	The generator shall be outdoor type installed in fully enclosed shed from all sides. The generator degree of protection shall be IP-55. The generator shall be provided with acoustic enclosure.	Please confirm whether bidder has to provide complete shed or GTG should be outdoor installation.	The generator shall be outdoor type installed in fully enclosed shed from all sides.
53	47	DESIGN PHILOSOPHY (ELECTRICAL)	478/1897	1.8	The bidder has to perform the system study keeping in view the integration/ hook-up of new electrical power system of GTG & HRSG with existing electrical power distribution system and synchronisation of GTG with State Electricity Board grid power to be done at 132 KV switchyard bus. Based on these studies in all conditions of parallel/ synchronised operation of all sources of power, if fault level happens to be more than the existing fault level of the plant, bidder to consider fault current limiting devices etc to limit the fault within the existing level. Electrical Power System Study shall be in two stages i.e. preliminary and final. NFL Comments, if any on the Study Report shall also be considered and supply / modification in any equipment shall be done accordingly without any price implication.	Bidder will conduct the study during detail engineering after award. It is difficult to estimate the cost & rating of fault limiting device which requires to limit the new fault level after adding new GTG within the existing level. We request PDIL/NFL to pay this cost at actuals after award.	Bidder to access requirement of fault limiting device at this stage only and include cost of the same, if applicable in their lumpsum price. . Any cost towards fault limiting device shall not be payable extra at any stage.

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54	48	DESIGN PHILOSOPHY (ELECTRICAL)	479/1897	2.4	Transformer sizing shall be done considering all the motors with DOL starting	Bidder understands the auxiliary transformer sizing should be done for normal running auxiliary load & power transformers kindly provide the large motor specifications.	Auxiliary Transformer Sizing shall be decided considering loads of GTG-HRSG package and design philosophy. However, for complete system design, starting of synchronous motor rated 2.2MW, 11KV or induction motor rated 1780KW, 11KV DOL mode shall be considered.
55	49	DESIGN PHILOSOPHY (ELECTRICAL)	480/1897	2.5-I	All the Transformers, Switchgears, MCCs, PCCs etc. shall have capacity for future requirements. The Margin shall be as follows: a. HV Transformer: 30% is added to the Maximum Normal Running Load	Bidder understands this requirement is for auxiliary transformer only.	Margin in Transformers shall be as per clause No. 8.8.2 i.e. HV Transformer: 25% on Maximum Normal Running Load and LV Transformer: 30% on Maximum Normal Running Load. The ONAN rating of Generator Isolation Transformer shall be 25% more than that of Generator rating at specified maximum ambient temperature, as per clause No. 8.8.5.
56	50	DESIGN PHILOSOPHY (ELECTRICAL)	481/1897	3.0	For display of these electrical parameters a repeater PC Monitor of SCADA shall be provided in Existing Central Shift Office in AFCP Substation.	Kindly provide the Control System architecture.	Control System Architecture is to be submitted with Bid, in line with NIT requirement.
57	51	DESIGN PHILOSOPHY (ELECTRICAL)	492/1897	8.3	Control & Monitoring All electrical panels and equipment shall be connected to new SCADA system. The SCADA system shall be installed in new control room.		
58	52	DESIGN PHILOSOPHY (ELECTRICAL)	481/1897	3.0	New OLTC control panel complete with AVR relay, tap position indicator, winding/oil temperature indicator, annunciator window, master/follower/independent selector switch, auto/manual selector switch, tap position raise/lower push button, emergency OFF push button, out of step relay, breaker and isolator semaphore indication etc. for OLTC of MT-1 and MT-2 (existing 11/132 kV Transformers) installed in existing 132kV CPP switchyard	Kindly provide existing transformers technical specifications	Existing Transformer Specifications shall be provided to successful bidder.

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59	53	DESIGN PHILOSOPHY (ELECTRICAL)	483/1897	6.3	11 KV \pm 10%, 50 Hz, +5%, 3 Ph,3 W with resistance earthed neutral & 3.3 KV \pm 10%, 50 Hz, +5%, 3 Ph,3 W with resistance earthed neutral	Please confirm whether all distribution equipments shall be designed for as per Generation frequency +/- 6% or +/-5%	All distribution equipment shall be designed as per NIT i.e. \pm 5%.
60	54	DESIGN PHILOSOPHY (ELECTRICAL)	485/1897	6.6.4	Tapping of power supply from existing Emergency Switchboard (415 V) for Emergency Load of GTG HRSG Package (for Emergency power supply) including retrofitting at existing Emergency Switchboard (including supply of all required material)	Kindly provide details of type of retrofitting required.	Retrofitting required may be accessed by Site Visit.
61	55	DESIGN PHILOSOPHY (ELECTRICAL)	491/1897	8.1.12-g	Motors of rating 75 kW and above shall be fed from ACB.	Bidder understands 415V all motor having rating up to 15kW & above shall be designed as per 415V,50kA, Type-2 coordination	All 415 V Motor below 75 kW feeders shall have components as per Type-2 Coordination as well as Fault level 50 KA for 1 Sec.
62	56	DESIGN PHILOSOPHY (ELECTRICAL)	495/1897	8.5.1	Bidder shall carry out power system study for new islanding and load shedding for new 11kV GTG switchboard considering various running/ operating conditions of GTG.	Kindly provide the detail SLD.	SLDs of Existing System are attached.

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63	57	DESIGN PHILOSOPHY (ELECTRICAL)	495/1897	8.8.2	The rating of power transformers shall be selected on the basis of load and future load growth. For future load growth the following provision shall be made :- - 25% spare capacity in HV transformers - 30% spare capacity in LV transformers	Please confirm the future margins on transformers because on both clauses 2.5-1 & 8.8.2 it is mentioned reverse.	Margin in Transformers shall be as per clause No. 8.8.2 i.e. HV Transformer: 25% on Maximum Normal Running Load and LV Transformer: 30% on Maximum Normal Running Load.
64	58	DESIGN PHILOSOPHY (ELECTRICAL)	480/1897	2.5-1	All the Transformers, Switchgears, MCCs, PCCs etc. shall have capacity for future requirements. The Margin shall be as follows: a. HV Transformer: 30% is added to the Maximum Normal Running Load		
65	59	DESIGN PHILOSOPHY (ELECTRICAL)	496/1897	8.8.5	The ONAN rating of Generator Isolation Transformer shall be 25% more than that of Generator rating at specified maximum ambient temperature.	On page no. 397 & clause no.1.0 it is mention that rating of Generator on continuous basis at site conditions shall be equal to or more than ISO rating of turbine. Kindly confirm.	Clauses 8.8.5 of Design Philosophy - Electrical and 1.0 of Technical Specification - Generator shall be applicable for rating of Generator Isolation Transformer and rating of Generator respectively.
66	60	DESIGN PHILOSOPHY (ELECTRICAL)	498/1897	8.9.3-j	The 415V motors having rating 75 KW & above shall be controlled through air circuit breakers with combined motor protection relay.	Bidder understands 415V all motor having rating up to 15kW & above shall be designed as per 415V,50kA, Type-2 coordination.	All 415 V Motor below 75 kW feeders shall have components as per Type-2 Coordination as well as Fault level 50 KA for 1 Sec. 415 V Motors of rating 75 kW and above shall be controlled through ACB with motor protection relay.
67	61	DESIGN PHILOSOPHY (ELECTRICAL)	502/1897	9.0	The bidder shall ensure that the power factor remains minimum 0.92 lag (inductive). If required a suitable capacitor bank shall be provided.	Please share current power factor of existing power system.	Current power factor for connected load when running only on state electricity grid is 0.82
68	62	DESIGN PHILOSOPHY (ELECTRICAL)	505/1897	11.10	LED Luminaries shall be suitable for single phase 230V+ 10%, 50Hz+ 10% AC input	Generator frequency is +/-6% & LED luminaires frequency requirement is mentioned +/-10%. Request you to make +/-5%	LED luminaries shall be suitable for ± 5% frequency variation.
69	63	SPECIFICATION SHEET 415V SWITCHBOARDS	580/1897	SYSTEM DETAILS	Rated Frequency with Variation 50 Hz ± 10 %	Bidder clarifies that frequency variation will be as per generator frequency variation +/-6%. Request to make it +/-5%.	415V Switchboards shall be suitable for ± 5% frequency variation.
70	64	SPECIFICATION SHEET HIGH VOLTAGE SWITCHBOARDS	600/1897	SYSTEM DETAILS	Rated Frequency with Variation 50 Hz ± 5 %	Generator specification sheet Generator frequency variation in mentioned +/-6% & in VCB specification it is +/-5%. Request to make it +/-5%.	HT Switchboards shall be suitable for ± 5% frequency variation.

	A	B	C	D	E	F	G
1	Sr. No	REFERENCE OF BIDDING DOCUMENT			BIDDERS QUERY		OWNER's / PMC REPLY
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71	65	TECHNICAL SPECIFICATION BUS DUCT (TS-0807)	609/1897	5.7	Clearances and Creepage Distance The clearances and creepage distance shall not be lower than the values specified below for any part of the bus duct. i) Minimum clearance between two live parts - 25 mm ii) Minimum clearance between a live part and accidentally dangerous part - 25 mm iii) Creepage distance - 30 mm	Biider clarifies that this is applicable for LV busduct only not for 11kV busduct	Applicable for 415 Bus duct only. Clearance in 11 kV busduct shall be as per relevant IS standards.
72	66	PNMM/PC135..136/E-601/P-I/Sec.-2.0	Page 120 of 1897	56.5.2 (iii)	The cost of mobilisation including but not limited to mobilisation of vehicles, movements, machinery, equipment, gear, tools, tackle, consumables and other items and goods and personnel necessary for or to perform the WORKS contemplated under the CONTRACT, preparation and erection of work yards and other work places and facilities necessary for or to perform the WORKS contemplated under the CONTRACT and/or to supply the material included within the scope of supplies including all work, labour, inputs, goods, EQUIPMENT, and other items and things whatsoever necessary for the performance of the WORKS, dismantling and/or removal of the same and restoration of the site, lifting the materials and transporting them to CONTRACTOR's stock piles/work yard, job sites and loading, stacking and/or storing the same.	1. Bidder understands that the space required for Fabrication yard/material store will be provided within the NFL plant as per bidder's requirement without any cost. 2. Disposal of Debris of dismantled civil foundations (within the GTG-HRSG plot) to be done within the NFL plant. Kindly specify the distance from the GTG-HRSG plot to disposal area.	As per NIT.

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1	PNMM/PC135..136/E-601/P-I/Annx-1.2 A	16 of 19	GCV of Natural Gas (BTU/SM3) (A): Bidder to provide	Kindly furnish GCV to be considered for Guarantee condition. Also confirm composition of natural gas for that GCV, density, pressure and temperature to be considered for Guarantee condition.	Please refer Amendment of Annexure-1.2 specifying the NCV to be considered for guaranteed NG consumption.
2	PNMM/PC135..136/E-601/P-II/Sec.-1A	5 of 5	Gas Turbine Generator (GTG) with black start operation : 1 x 20 MW at Site Condition i.e. 46 0C & 81% RH	Kindly confirm barometric pressure to be considered for guarantee condition and for design condition.	Refer NIT & design condition to be considered
3	PNMM/PC135..136/E-601/P-II/Sec.-1A	5 of 5	OWS (Oily Water Separation)	Kindly confirm oil firing is not applicable to offered GTG, also elaborate requirement of OWS system.	Spliage Oil / Floor washing oil within the battery limit to be collected in a Pit and after Oil removal by Oil Skimmer, deoiled water to be pumped to existing ETP.
4	PNMM/PC135..136/E-601/P-II/Sec.-1B	5 of 5	Gas Turbine Generator (GTG) with black start operation 1 x 20 MW at Site Condition i.e. 46 0C & 81% RH	Kindly confirm barometric pressure to be considered for guarantee condition and for design condition.	Refer NIT & design condition to be considered
5	PNMM/PC135..136/E-601/P-II/Sec.-1B	5 of 5	OWS (Oily Water Separation)	Kindly confirm oil firing is not applicable to offered GTG, also elaborate requirement of OWS system.	Spliage Oil / Floor washing oil within the battery limit to be collected in a Pit and after Oil removal by Oil Skimmer, deoiled water to be pumped to existing ETP.
6	PNMM/PC135..136/E-601/P-II/Sec.-2A	5 of 21	BOILER FEED WATER (BFW) QUALITY AT HOOK-UP POINT	Kindly confirm Pressure & Temperature of BFW water for guarantee condition. Min temperature of feed water is indicated as 45 deg C, kindly confirm whether HRSG is to be designed for 45 deg C as feed water.	Please refer the amendment being issued for BFW temperature. However, for cold start-up, BFW temperature shall be 45 deg C as feed water.
7	PNMM/PC135..136/E-601/P-II/Sec.-2A	5 of 21	LP STEAM PARAMETERS (AT HOOK-UP POINT):-	Kindly clarify LP steam system in proposed GTG-HRSG project.	Blowdown steam to be connected existing LP header
8	PNMM/PC135..136/E-601/P-II/Sec.-2A	7 of 21	FUEL GAS QUALITY	Kindly confirm fuel GCV for Lean & rich gas in BTU/Sm3. Also confirm gas composition (Lean or rich) , Density & GCV of fuel to be considered for guarantee condition. Kindly confirm Natural gas pressure and temperature & density to be considered for guarantee condition. Kindly confirm that gas is suitable to burn in GTG & HRSG, no impurities are present in gas. No need of Gas conditioning skid is required. Only required pressure reduction station for natural gas shall be provided.	As per NIT Gas conditioning skid is to be provided.
9	PNMM/PC135..136/E-601/P-II/Sec.-2A	9 of 21	Boiler blow-down shall be routed to be connected to CW return header through Pump connected with collection Pit .Blow-down tank and connection of blow down water to CW header shall be in scope of Bidder	Kindly clarify blowdown & blowdown quenching water battery limits.	Boiler blow down water shall be sent to Cooling water return header after cooling to less than 50 deg.C through pump

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10	PNMM/PC135..136/E-601/P-II/Sec.-2A	9 of 21	1.8. Instrument/Service Air shall be available at following conditions:	We request to provide instrument air at minimum pressure of 6 kg/cm2 g	As per NIT
11	PNMM/PC135..136/E-601/P-II/Sec.-2A	17 of 21	Site Elevation	Kindly furnish elevations	Details can be collected during site visit
12	PNMM/PC135..136/E-601/P-II/Sec.-2A	17 of 21	Atmospheric Pressure, mbar Design: 971 mbar	Kindly confirm design pressure for guarantee condition.	As per NIT
13	PNMM/PC135..136/E-601/P-II/Sec.-2A	21 of 21	Incoming Natural Gas, Instrument Air, Cooling water, BFW, Saturated Steam and outgoing HP saturated steam (HRSG generated), LP steam & Superheated steam shall be provided with DCS indication of Pressure, Temperature & Flow at GTG/HRSG Battery Limit (Hook-up point).	Kindly clarify saturated steam and LP steam requirements in GTG-HRSG project.	Incoming Natural Gas, Instrument Air, Cooling water, BFW , LP steam & Superheated steam (HRSG generated), Nitrogen etc.shall be provided with DCS indication of Pressure, Temperature & Flow at GTG/HRSG Battery Limit (Hook-up point) by Bidder.

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14	PNMM/PC135..136/E-601/P-II/Sec.-2B	7 of 20	FUEL GAS QUALITY	<p>Kindly confirm fuel GCV for Lean & rich gas in BTU/Sm³. Also confirm gas composition (Lean or rich) , Density & GCV of fuel to be considered for guarantee condition.</p> <p>Kindly confirm Natural gas pressure and temperature & density to be considered for guarantee condition.</p> <p>Kindly confirm that gas is suitable to burn in GTG & HRSG, no impurities are present in gas. No need of Gas conditioning skid is required.</p> <p>Only required pressure reduction station for natural</p>	<p>As per NIT</p> <p>Gas conditioning skid is to be provided.</p>
15	PNMM/PC135..136/E-601/P-II/Sec.-2B	9 of 20	1.8. Instrument/Service Air shall be available at following conditions:	We request to provide instrument air at minimum pressure of 6 kg/cm ² g	As per NIT
16	PNMM/PC135..136/E-601/P-II/Sec.-2B	16 of 20	Site Elevation	Kindly furnish elevations	Details can be collected during site visit
17	PNMM/PC135..136/E-601/P-II/Sec.-2B	20 of 20	Incoming Natural Gas, Instrument Air, Cooling water, BFW, Saturated Steam and outgoing HP saturated steam (HRSG generated), LP steam & Superheated steam shall be provided with DCS indication of Pressure, Temperature & Flow at GTG/HRSG Battery Limit (Hook-up point).	Kindly clarify saturated steam and LP steam requirements in GTG-HRSG project.	Incoming Natural Gas, Instrument Air, Cooling water, BFW , LP steam & Superheated steam (HRSG generated), Nitrogen etc. shall be provided with DCS indication of Pressure, Temperature & Flow at GTG/HRSG Battery Limit (Hook-up point) by Bidder.
18	PNMM/PC135..136/E-601/P-II/Sec.-3.0	5 of 8	Bidder must check site specific Air quality , Natural gas fuel quality and Site Particulate matter in view of Existing Coal fired boilers and all protections to be taken care for offered GTG-HRSG system	We request to provide air pollutant values to be considered for filter design.	Details can be collected during site visit
19	PNMM/PC135..136/E-601/P-II/Sec.-3.0	7 of 8	EOT/Overhead Crane/ equivalent lifting machines/tools of suitable capacity for carrying out future maintenance work of GTG	Kindly confirm GTG shall be outdoor installation.	GTG shall be under shed and EOT/Overhead Crane/ equivalent lifting machines/tools of suitable capacity for carrying out future maintenance work of GTG shall be in Bidder's scope.
20	PNMM/PC135..136/E-601/P-II/Sec.-3.0	7 of 8	Access road damaged during plant revamp will be repaired fully to the satisfaction of owner	Kindly confirm scope for revamping	NIT conditions shall be followed.
21	PNMM/PC135..136/E-601/P-II/Sec.-2B	5 of 20	BFW Supply Temperature,	Kindly confirm Pressure & Temperature of BFW water for guarantee condition. Min temperature of feed water is indicated as 130 deg C, kindly confirm whether HRSG is to be designed for 130 deg C as feed water.	Normal Pressure & temp. of BFW to be considered.
22	General point			Existing piperacks shall be utilized for routing all utilities, kindly confirm. Also confirm existing piperack will be used for routing 6.6 kV cables to existing transformers.	Bidder to collect details during site visit.

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1	PNMM/PC135..136/E-601/P-II/Sec.-2A	1.3	MOC / line size / Pressure rating of Existing Line - Refer Interface P&ID	Interface P&ID has piping class for various pipings. These piping class are not mentioned in piping design basis document. Please clarify whether piping design basis document is to be followed for piping design. Else, provide piping class to be considered.	Bidder to follow piping design basis regarding pipe class based on design pressure and temperature
2	PNMM/PC135..136/E-601/P-II/Sec.-2A	1.3	Mechanical Design : 130 kg/cm2g	The mechanical design pressure shall be as per IBR requirements. The HRSG shall be designed only for normal pressure at battery limit i.e. 102 kg/cm2(g).	Shall be as per NIT
3	PNMM/PC135..136/E-601/P-II/Sec.-2A	1.3	Mechanical Design : 545 deg C	As the steam temperature is 500 deg C. the design temperature of main steam line shall be 505 deg C	Shall be as per NIT
4	PNMM/PC135..136/E-601/P-II/Sec.-2A	1.3	Silica in steam - 0.011	Silica in steam will be maintained at 0.02 ppm which is same as feed water silica	Shall be as per NIT
5	PNMM/PC135..136/E-601/P-II/Sec.-2A	1.4	Boiler feed water conductivity - 10 to 25	Boiler feed water conductivity shall be provided 0.2 Micro mhos/cm	Shall be as per NIT
6	PNMM/PC135..136/E-601/P-II/Sec.-2A	3.3	HRSG shall be designed to run normally at 45 TPH with provision to ramp up to rated capacity of 70 TPH in 2 minute,	Ramp up rate is 10% MCR/min within burner turndown range. So from 45 TPH to 70 TPH shall be achieved in 3.6 minutes (approx).	Shall be as per NIT
7	PNMM/PC135..136/E-601/P-II/Sec.-2A	3.3	HRSG shall be designed for a turndown of min. 30% of Rated capacity at normal GTG load without opening the start up vent. Bidder shall also indicate the percentage load of GTG (MW) at which HRSG shall produce the design quality & quantity of steam without supplementary firing.	Kindly confirm 17 MW at 46 deg C & 81% RH is GTG normal load.	Shall be as per NIT

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8	PNMM/PC135..136/E-601/P-II/Sec.-2A	3.3	Steam drums shall be designed for water storage time of minimum 3 minutes between normal water level and drum low level trip corresponding to MCR capacity	Steam Drum storage time shall be 1.5 minutes from NWL to LLT. This is typical for HRSG as the stand-by feed pump is usually capable of starting up and providing the desired head & flow within less than a minute.	Shall be as per NIT
9	PNMM/PC135..136/E-601/P-II/Sec.-2A	3.3	Since hot BFW is being supplied in place of DM water at amb. Temp. Bidder to design the system to recover heat from flue gas exhaust to get maximum efficiency and min. NG consumptions, Bidder shall furnish the detailed scheme along-with Bid documents. The desired stack temperature should be below 120°C.	Achieving minimum temperature of 120°C at stack will not be thermodynamically possible, as the minimum temperature at Economiser Inlet will be 205°C. Stack temp will always be higher than 205 degC. Kindly let us know if we can utilize available flue gas heat content to serve for your existing utilities.	Shall be as per NIT
10	PNMM/PC135..136/E-601/P-II/Sec.-2A	3.3	Boiler blow down shall be sent to cooling water header	Kindly provide quenching philosophy for blowdown water	Boiler blow down water shall be sent to Cooling water return header after cooling to less than 50 deg.C through pump
11	PNMM/PC135..136/E-601/P-II/Sec.-2A	4.3	Emissions as per Latest / proposed guidelines as per CPCB/HSPCB on date of bid opening	Please provide emission values to be considered	Shall be as per NIT
12	PNMM/PC135..136/E-601/P-II/Sec.-2A	4.4	Noise generated shall not exceed 85 dBA at 1 m distance from the source of individual equipment under normal range of operating conditions.	1.Continuous running equipment like FD fan, Control valve shall have noise level of 85 dBA at 1m. 2. Safety valve and startup vent being intermittent operated shall have noise level of 115 dBA at 1m. being intermittent operated. 3. Relief valve shall be without silencer and noise shall be as per vendor input.	Shall be as per NIT

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13	PNMM/PC135..136/E-601/P-II/Sec.-2B	1.3	MOC / line size / Pressure rating of Existing Line - Refer Interface P&ID	Interface P&ID has piping class for various pipings. These piping class are not mentioned in piping design basis document. Please clarify whether piping design basis document is to be followed for piping design. Else, provide piping class to be considered.	Bidder to follow piping design basis regarding pipe class based on design pressure and temperature
14	PNMM/PC135..136/E-601/P-II/Sec.-2B	1.3	Mechanical Design : 130 kg/cm2g	The mechanical design pressure shall be as per IBR requirements. The HRSG shall be designed only for normal pressure at battery limit i.e. 102 kg/cm2(g).	Shall be as per NIT
15	PNMM/PC135..136/E-601/P-II/Sec.-2B	1.3	Mechanical Design : 545 deg C	As the steam temperature is 500 deg C. the design temperature of main steam line shall be 505 deg C	Shall be as per NIT
16	PNMM/PC135..136/E-601/P-II/Sec.-2B	1.3	Silica in steam - 0.011	Silica in steam will be maintained at 0.02 ppm which is same as feed water silica	Shall be as per NIT
17	PNMM/PC135..136/E-601/P-II/Sec.-2B	1.4	Boiler feed water conductivity - 14 to 25	Boiler feed water conductivity shall be provided 0.2 Micro mhos/cm	Shall be as per NIT
18	PNMM/PC135..136/E-601/P-II/Sec.-2B	3.3	HRSG shall be designed to run normally at 45 TPH with provision to ramp up to rated capacity of 70 TPH in 2 minute,	Ramp up rate is 10% MCR/min within burner turndown range. So from 45 TPH to 70 TPH shall be achieved in 3.6 minutes (approx).	Shall be as per NIT
19	PNMM/PC135..136/E-601/P-II/Sec.-2B	3.3	Steam drums shall be designed for water storage time of minimum 3 minutes between normal water level and drum low level trip corresponding to MCR capacity	Steam Drum storage time shall be 1.5 minutes from NWL to LLT. This is typical for HRSG as the stand-by feed pump is usually capable of starting up and providing the desired head & flow within less than a minute.	Shall be as per NIT

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20	PNMM/PC135..136/E-601/P-II/Sec.-2B	3.3	Since hot BFW is being supplied in place of DM water at amb. Temp. Bidder to design the system to recover heat from flue gas exhaust to get maximum efficiency and min. NG consumptions, Bidder shall furnish the detailed scheme along-with Bid documents. The desired stack temperature should be below	The objective of achieving 120 Deg C at stack is an appreciable objective; and, the options for the same can be suitably explored within the fertilizer complex which can utilize the extracted energy in different forms. This needs to be studied and approved by you.	Shall be as per NIT
21	PNMM/PC135..136/E-601/P-II/Sec.-2B	3.3	Boiler blow down shall be sent to existing ETP plant for further treatment	Kindly provide quenching philosophy for blowdown water	Shall be as per NIT
22	PNMM/PC135..136/E-601/P-II/Sec.-2B	4.3	Emissions as per PPCB/CPCB norms	Please provide emission values to be considered	Shall be as per NIT
23	PNMM/PC135..136/E-601/P-II/Sec.-2B	4.4	Noise generated shall not exceed 85 dBA at 1 m distance from the source of individual equipment under normal range of operating conditions.	1.Continuous running equipment like FD fan, Control valve shall have noise level of 85 dBA at 1m. 2. Safety valve and startup vent being intermittent operated shall have noise level of 115 dBA at 1m. being intermittent operated. 3. Relief valve shall be without silencer and noise shall be as per vendor input.	Shall be as per NIT
24	PNMM/PC135...136/E-601/P-II/Sec.-4.3	3.1.2	The design of the HRSG module shall be based on field erected unit with as much equipment already pre-assembled as practical. The size and weight of modules shall be based on site transportation requirements and limits.	Please note that the HRSG shall be supplied in the form of Pressure part Harps to be assembled & erected at site. Please provide the transportation limits from nearest national highway to job site in terms of length, width, height & tonnage.	Noted for transportation limit Bidder to collect the data from Statutory bodies.
25	PNMM/PC135...136/E-601/P-II/Sec.-4.3	3.1.3	HRSG shall also be designed for GTG full load when no steam is generated (dry run condition)	HRSG is not designed for dry run condition. There shall be a diverter damper installed to enable GTG running in simple cycle.	Noted. However, sufficient water volume to provided in boiler drum after Low Low level trip/any other scheme to avoid any dry run of HRSG to protect HRSG and accessories during transient changeover of divertor, In case diverter damper is passing/not closed. Submit backup calculation for this.

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26	PNMM/PC135...136/ E-601/P-II/Sec.-4.3	3.1.4	HRSG shall be designed to produce the superheated steam at rated capacity with GTG shutdown. Required accessories along with FD fan shall be considered accordingly.	Noted. We shall consider 1x100% Fresh Air FD Fan for the same. Fans shall be non-API. Fan design and performance testing procedure shall be as per vendor standard.	NIT conditions shall be followed and Fan shall be API standards.
27	PNMM/PC135...136/ E-601/P-II/Sec.-4.3	3.1.8	The HRSG will be completely insulated for minimum heat loss and personnel protection and externally clad with Aluminum sheet cladding in case of externally insulated.	HRSG pressure part casing shall be internally insulated construction with insulation blankets, and SS or CS liner as per required design temperature. The outlet duct to stack shall be externally insulated with mineral wool and aluminium cladding.	Noted
28	PNMM/PC135...136/ E-601/P-II/Sec.-4.3	3.1.20	The supplementary firing chamber shall be provided with refractory lining.	In the transition duct of HRSG from burner downstream upto inlet of superheater we shall use compressed ceramic block which does not need liner material. Refractory is not needed and not used in our design.	To be supplied as per HRSG OEM proven standards.
29	PNMM/PC135...136/ E-601/P-II/Sec.-4.3	3.3.1	Sufficiently large clear spaces shall be left between the individual tube banks of all the heating surfaces to provide easy personnel access to the heating surfaces.	Space for personnel access will be provided between modules. Typically a module consists of 6-8 harps.	To be supplied as per HRSG OEM proven standards.
30	PNMM/PC135...136/ E-601/P-II/Sec.-4.3	3.6.1	The super heater sections shall be of drainable type and shall permit dry running during HRSG startup and transient conditions.	HRSG operation during startup and transient conditions shall be carried as per the procedure described in Operation & Maintenance Manual provided by Thermax. During initial cold/warm startup the diverter damper is modulated in order to maintain the metal temperature within the acceptable limits.	NIT conditions shall be followed.

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31	PNMM/PC135...136/ E-601/P-II/Sec.-4.3	3.6.2	The superheater section shall be designed and located in the HRSG such that the rated superheater outlet temperature is achieved at 100% MCR condition under specified site condition without recourse to desuperheating of steam.	This can be confirmed only after receipt of GT data and HRSG design evaluation.	NIT conditions shall be followed.
32	PNMM/PC135...136/ E-601/P-II/Sec.-4.3	3.7.6	Both the stacks shall be suitably refractory lined from inside.	Bypass stack shall be internally insulated with ceramic wool and liner. Main stack shall be externally insulated (for personnel protection) with mineral wool and aluminium cladding.	By pass stack shall be internally insulated with ceramic wool & SS liner. However ,main stack shall be externally insulated with mineral wool of suitable thickness alongwith aluminium cladding.
33	PNMM/PC135...136/ E-601/P-II/Sec.-4.3	3.11.7	Standard procedure for leak test at site shall be adopted and the details for the same shall be furnished before leak test, at site.	Please note, leak test is not required as HRSG casing is seal welded.	NIT conditions shall be followed.
34	PNMM/PC135...136/ E-601/P-II/Sec.-4.3	3.13.1	Adequate number of sampling points for saturated steam, superheated steam, drum water, feed water, etc. shall be provided by the Bidder. The sampling points shall be complete with nozzles, valves and connections. The sample piping shall be of stainless steel SS 304. All sample coolers shall be grouped and provided at ground level.	Steam and water analyser system (SWAS) has provision of grab (manual) sample as well. Hence, separate sample coolers are not required.	NIT conditions shall be followed.
35	PNPM/PC- 135..136/E-601/P- II/5.5	18.4	Bi-color level gauges may also be provided if indicated by Licensor.	Bi-color level gauges are typically suitable for high pressure application, hence, we shall consider bi-color level gauges for steam drum. Please confirm.	Noted and acceptable.

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36	PNPM/PC-135..136//E-601/P-II/5.5	18.4	The visible range of level gauge shall be selected to cover the operating level or the operating range of level instruments provided for the vessel.	We shall select level gauge covering the operating level of the vessel.	NIT conditions shall be followed.
37	PNPM/PC-135..136//E-601/P-II/5.5	23.8	Bonnet shall be provided with cooling fins or extension when the fluid temperature is 230 C and more.	This shall be decided by the control valve vendor to meet the process requirement/ suitability.	NIT conditions shall be followed.
38	PNPM/PC-135..136//E-601/P-II/5.5	23.9	Valve packing shall be Glass filled Teflon for temperature below 180 C and graphite for steam services and temperatures above 180 C.	This shall be decided by the control valve vendor to meet the process requirement/ suitability.	shall be review during detail engineering.
39	PNMM/PC135..136/E-601/P-II/Sec.-3.0	2.0 d	The Bidder shall incorporate all the recommended safe guards of Hazop report.	Any addition as per HAZOP report shall be with additional cost implication.	NIT conditions shall be followed and no additional cost implication shall be considered.
40	PNMM/PC135..136/E-601/P-II/Sec.-12.0	2.6.1	The performance guarantee test shall be carried out by operating the units continuously for a minimum period of 120 hrs., out of which 72 hrs. of continuous period shall be considered for evaluation.	For performance test 72 hrs stable operation shall be observed out of which any 4 hrs data/ readings shall be considered for performance evaluation.	NIT conditions shall be followed.

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41	PNMM/PC135..136/E-601/P-II/Sec-5.3	1.5.9 a	All steam vessels, de-aerators & steam piping shall have double isolation valves.	Double isolation valves shall be provided for operating pressure greater than 40 kg/cm ² (g).	NIT conditions shall be followed.
42	PNMM/PC135..136/E-601/P-II/Sec-5.3	DATA SHEET – A.1; 1.6	AUXILIARY COOLING WATER AND SERVICE WATER SYSTEM (FRESH WATER APPLICATION), SERVICE AIR SYSTEM- EFSW PIPES TO ASTM A53 OR EQUIVALENT	We shall consider ASTM A106 Gr.B	NIT conditions shall be followed.
43	PNMM/PC135..136/E-601/P-II/Sec-5.3	DATA SHEET – A.2; 2	STEAM LINES (TEMP<400 OC), CONDENSATE BLOW DOWN, BOILER FEED SUCTION, DISCHARGE & RECIRCULATION- ≥50 NB- Flanged	In general all large bore valves above 900 class shall be butt welded.	NIT conditions shall be followed.
44	PNMM/PC135..136/E-601/P-II/Sec-5.3	DATA SHEET – A.2	Trim Combination Number	Trim combination number shall be selected as per process requirement.	NIT conditions shall be followed.
45	PNMM/PC135..136/E-601/P-II/Sec-5.3	DATA SHEET – A.2; Note 4	Ball valves or plug valves shall be provided for oil systems. All shut off valves on oil system shall have leakage ANSI B 16.104 class VI.	Please note oil firing is not applicable. As per EM184/E-1/P-II/2.0- Design Basis document HRSG supplementary firing fuel is only Natural gas. Hence, all clauses pertaining to oil firing/oil systems is not applicable for us and shall not be considered.	NIT conditions shall be followed.

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46	PNMM/ PC135..136/E-601/P- II/Sec.-5.1			This specification is not applicable for HRSG and not considered	Section 5.1 is to be considered wherever applicable.
47	PNPM/PC- 135..136//E-601/P- II/5.5	25.4	Air registers for each burner shall be provided with pneumatic cylinder for remote operation from the system and it shall be linked with oxygen trimming.	Air registers are not applicable for HRSG Duct burners. Hence O2 trim control is not envisaged.	Noted

SL. NO.	REFERENCE OF BIDDING DOCUMENT				BIDDER'S QUERY	OWNER'S / PMC REPLY
	Part/ Sec	Page No.	Clause No.	Subject		
1				Single Line Diagram	Please furnish the Single line Diagram for Bhatinda & Panitpat projects.	Existing Single line Diagram for Bhatinda & Panitpat shall be collected during site visit by Bidder.

SL. NO.	REFERENCE OF BIDDING DOCUMENT				BIDDER'S QUERY	OWNER'S / PMC REPLY
	Part/Sec	Page No.	Clause No.	Subject		
1	ANNEXURES TO PART II: TECHNICAL ANNEX.-2B	1885 of 1897		SOIL TEST REPORT FOR Panipat 8.00 Recommendations	Recommendations are specified for compression capacity of 45cm and 50cm bored cast in situ piles. Bidder requests following information : a) Compression capacity of 45cm & 50cm dia. Piles as achieved after load test at site. b) Tension capacity of 45cm & 50cm dia. Piles as achieved after load test at site. c) Latreal capacity of 45cm & 50cm dia. Piles as achieved after load test at site. d) Recommendations for Compression, Tension and Latreal capacity for 60cm & 75cm dia. Piles with varying lengths.	As per clause 3.1 attached soil report of nearby area is for reference only. The detailed geotech investigation work shall be carried out at the desired locations by the bidder.
2	ANNEXURES TO PART II: TECHNICAL ANNEX.-2B	1885 of 1897		SOIL TEST REPORT FOR Panipat 9.00 Conclusion	Recommendations are specified for safe bearing pressure for footing at 3.0m depth. Bidder requests recommendations for Net Safe Bearing Pressure at depths 3.5m, 4m, 4.5m and 5.0m for various sizes of footings.	As per clause 3.1 attached soil report of nearby area is for reference only. The detailed geotech investigation work shall be carried out at the desired locations by the bidder.
3	SECTION 5.6 - ENGINEERING DESIGN BASIS CIVIL, STRUCTURAL & ALLIED WORKS	1025 of 1897	1.1	Scope dismantling and disposal of existing RCC/ PCC flooring / Pavement, existing RCC foundations	Bidder assumes that superstructure dismantling is in customer's scope. Bidder requests detail drawings of "existing RCC/ PCC flooring / Pavement, existing RCC foundations" for assessment of work.	Existing drawings shall provide to bidder as per availability. Refer Amendment being issued. Bidder to submit the Declaration Form of plot suitability for installation of GTG-HRSG unit for each location.
4	SECTION 5.6 - ENGINEERING DESIGN BASIS CIVIL, STRUCTURAL & ALLIED WORKS	1025 of 1897	1.1		Disposal of debris and excess soil shall be done within plant premises. Kindly confirm the same.	Bidder to discuss same during site visit.
5	SECTION 5.6 - ENGINEERING DESIGN BASIS CIVIL, STRUCTURAL & ALLIED WORKS	1025 of 1897	1.1	Walls facing plant side should be blast proof.	the location of proposed control room is away from main plant. Hence, bidder proposes control room without any blast proof walls. In case it is required, kindly advise which side of building requires blast proof walls.	Plant facing wall of control room shall be blast proof as per ITB.
6	SECTION 5.6 - ENGINEERING DESIGN BASIS CIVIL, STRUCTURAL & ALLIED WORKS	1025 of 1897	1.1	The good soil required for back filling after dismantling and disposal of existing RCC foundations shall be arranged from outside of NFL Boundary area	Bidder requests for use of excavated soil for backfilling since its general soil.	Noted
7	SECTION 5.6 - ENGINEERING DESIGN BASIS CIVIL, STRUCTURAL & ALLIED WORKS	1025 of 1897	1.1	Shed shall be constructed over GTG and roofing shall be done with 1.22 mm thick Aluminium Industrial troughed sheets along with accessories	GTG shall be open installation, hence, not applicable.	NIT conditions shall be followed.
8	Special conditions of contract		(g)		Bidder assumes construction water and construction power as free issue by customer as per clause 2.8 Site Facilities. Kindly confirm	As per NIT.
9	Special conditions of contract			7.0 Labor and Staff	Space for labor colony shall be provided by customer as free issue within near plant premises.	As per NIT.
10	Special conditions of contract			7.0 Labor and Staff	Drinking water, service water and power for labour colony shall be free issue by customer in labour camp.	As per NIT.

SL. NO.	REFERENCE OF BIDDING DOCUMENT				BIDDER'S QUERY	OWNER'S / PMC REPLY
	Part/Sec	Page No.	Clause No.	Subject		
11	Special conditions of contract		2.8	Site facilities	Space for site office, site store, open store, fabricaion yard, etc. shall be provided free issue by customer within plant premises.	As per NIT.
12	General				Existing pipe rack shall be used for to and fro utility transfer. Kindly confirm.	Bidder may use existing piperack after checking of adequacy of existing piperack/structure.
13	General				Cooling water shall be routed above ground from terminal point.	Cooling Water shall be underground / aboveground based on site conditions.

SL. NO.	REFERENCE OF BIDDING DOCUMENT				BIDDER'S QUERY	OWNER'S / PMC REPLY
	Part/ Sec	Page No.	Clause No.	Subject		
1	ANNEXURES TO PART II: TECHNICAL ANNEX.-2B	1870 of 1897		SOIL TEST REPORT FOR BATHINDA	"Bore Logs and Figures" section is not available with tender. Bidder requests to provide the section "Bore Logs and Figures" and results of Plate load tests.	As per clause 3.1 attached soil report of nearby area is for reference only. The detailed geotech investigation work shall be carried out at the desired locations by the bidder.
2	ANNEXURES TO PART II: TECHNICAL ANNEX.-2B	1885 of 1897		SOIL TEST REPORT FOR BATHINDA 8.00 Recommendations	Recommendations are specified for compression capacity of 45cm and 50cm bored cast is situ piles. Bidder requests following information : a) Compression capacity of 45cm & 50cm dia. Piles as achieved after load test at site. b) Tension capacity of 45cm & 50cm dia. Piles as achieved after load test at site. c) Latreal capacity of 45cm & 50cm dia. Piles as achieved after load test at site. d) Recommendations for Compression, Tension and Latreal capacity for 60cm & 75cm dia. Piles with varrying lengths.	As per clause 3.1 attached soil report of nearby area is for reference only. The detailed geotech investigation work shall be carried out at the desired locations by the bidder.
3	ANNEXURES TO PART II: TECHNICAL ANNEX.-2B	1885 of 1897		SOIL TEST REPORT FOR BATHINDA 8.00 Recommendations	Recommendations are specified for compression capacity of 45cm and 50cm bored cast is situ piles. Bidder requests following information : a) Compression capacity of 45cm & 50cm dia. Piles as achieved after load test at site. b) Tension capacity of 45cm & 50cm dia. Piles as achieved after load test at site. c) Latreal capacity of 45cm & 50cm dia. Piles as achieved after load test at site. d) Recommendations for Compression, Tension and Latreal capacity for 60cm & 75cm dia. Piles with varrying lengths.	As per clause 3.1 attached soil report of nearby area is for reference only. The detailed geotech investigation work shall be carried out at the desired locations by the bidder.

SL. NO.	REFERENCE OF BIDDING DOCUMENT				BIDDER'S QUERY	OWNER'S / PMC REPLY
	Part/ Sec	Page No.	Clause No.	Subject		
4	ANNEXURES TO PART II: TECHNICAL ANNEX.-2B	1885 of 1897		SOIL TEST REPORT FOR BATHINDA 9.00 Conclusion	Recommendations are specified for safe bearing pressure for footing at 4.0m depth. Bidder requests recommendations for Net Safe Bearing Pressure at depths 4.5m, 5m, 5.5m and 6.0m for various sizes of footings	As per clause 3.1 attached soil report of nearby area is for reference only. The detailed geotech investigation work shall be carried out at the desired locations by the bidder.
5	SECTION 5.6 - ENGINEERING DESIGN BASIS CIVIL, STRUCTURAL & ALLIED WORKS	1025 of 1897	1.1	Scope dismantling and disposal of existing RCC/ PCC flooring / Pavement, existing RCC foundations	Bidder assumes that superstructure dismantling is in customer's scope. Bidder requests detail drawings of "existing RCC/ PCC flooring / Pavement, existing RCC foundations" for assessment of work.	All dismantling work is in Contractor's scope including superstructure (concrete). Existing drawings shall provide to bidder as per availability. Refer Amendment being issued. Bidder to submit the Declaration Form of plot suitability for installation of GTG-HRSG unit for each location.
6	SECTION 5.6 - ENGINEERING DESIGN BASIS CIVIL, STRUCTURAL & ALLIED WORKS	1025 of 1897	1.1		Disposal of debries and excess soil shall be done within plant premises. Kindly confirm the same.	confirmed
7	SECTION 5.6 - ENGINEERING DESIGN BASIS CIVIL, STRUCTURAL & ALLIED WORKS	1025 of 1897	1.1	Walls facing plant side should be blast proof.	the location of proposed control room is away from main plant. Hence, bidder proposes control room without any blast proof walls. In case it is required, kindly advice which side of building requires blast proof walls.	Walls facing plant side should be blast proof. Same as per NIT
8	SECTION 5.6 - ENGINEERING DESIGN BASIS CIVIL, STRUCTURAL & ALLIED WORKS	1025 of 1897	1.1	The good soil required for back filling after dismantling and disposal of existing RCC foundations shall be arranged from outside of NFL Boundary area	Bidder requests for use of excavated soil for backfilling since its general soil.	excavated good soil may be used for backfilling. Further good soil required for backfilling, shall be arranged from outside of NFL Boundary area
9	SECTION 5.6 - ENGINEERING DESIGN BASIS CIVIL, STRUCTURAL & ALLIED WORKS	1025 of 1897	1.1	Shed shall be constructed over GTG and roofing shall be done with 1.22 mm thick Aluminium Industrial troughed sheets along with accessories	GTG shall be open installation, hence, not applicale.	shall be provided as per NIT
10	Special conditions of contract				Bidder assumes construction water and construction power as free issue by customer as per clause 2.8 Site Facilities. Kindly confirm.	As per NIT.

SL. NO.	REFERENCE OF BIDDING DOCUMENT				BIDDER'S QUERY	OWNER'S / PMC REPLY
	Part/ Sec	Page No.	Clause No.	Subject		
11	Special conditions of contract			7.0 Labor and Staff	Space for labor colony shall be provided by customer as free issue within / near plant premises.	As per NIT.
12	Special conditions of contract			7.0 Labor and Staff	Drinking water, service water and power for labour colony shall be free issue by customer in labour camp.	As per NIT.
13	Special conditions of contract			Site facilities	Space for site office, site store, open store, fabricaion yard, etc. shall be provided free issue by customer within plant premises.	As per NIT.
14	General				Existing pipe rack shall be used for to and fro utility transfer. Kindly confirm.	Bidder may use existing piperack after checking of adequacy of existing piperack/structure.
15	General				Cooling water shall be routed above ground from terminal point.	Cooling Water shall be underground / aboveground based on site conditions.

SI No.	Clause No.	Clarification	Owner / PMC reply
1.	Sl.No. 6.3.2, Page 8 of 15, Doc. No. PNMM/PC-135...136/E-601/P-II/Sec.-4.2	The material of construction of tubes for Generator Air Cooler shall be welded SS (SA249 TP304) (Being High finned tubes with Al fins). Other parts shall be of Carbon steel.	MOC for heat exchangers tubes, tube sheets, Dome and fins shall be of SS 316.
2.	Sl.No. 6.3.5, Page 8 of 15, Doc. No. PNMM/PC-135...136/E-601/P-II/Sec.-4.2	Cooler shall be designed and constructed in N + 1 (N Working and 1 Standby) configuration instead of 2x100% configuration as per BHEL standard practice.	Coolers shall be designed & constructed in 2 x 100% configuration
3.	Sl. No 1.4, Page 6 of 21, Doc No. PNMM/PC135..136/E-601/P-II/Sec.-2A	We understand that Deaerator is not in bidder scope of supply. Pls confirm.	As per NIT, Deaerator not in Bidder's scope.

GENERAL:

In the absence of detailed specification for the heat exchangers in our scope of supply, Design basis for the heat exchangers being offered is as indicated below.

GT Package:**A. GT Oil Cooler**

- Design Code : TEMA 'C' & ASME Sec VIII Div I
Owner / PMC reply – As per NIT shall be TEMA 'R'
- Material of construction of tubes : Welded Stainless Steel (SA 249 TP 304)
- **Owner / PMC reply – As per NIT**
- Material of construction of rest part : Common quality Carbon Steel
Owner / PMC reply – As per NIT
- Tube Dimension : 15.875/19.05 mm x 18 BWG (OD x Thk)
Owner / PMC reply – During Detail Engineering
- Orientation : Horizontal
Owner / PMC reply – During Detail Engineering

B. GTG Air Cooler

- Material of construction of tubes : High finned Stainless Steel (SA249 TP304) with Al fin.
Owner / PMC reply – MOC of tubes shall be SS 316
- Orientation : Side mounted Horizontal
- **Owner / PMC reply – During Detail Engineering**
- Material of construction of rest part : Common quality Carbon Steel
- **Owner / PMC reply – MOC of rest part shall be As per NIT**
- Tube Dimension : 16 mm x 1 mm (OD x Thk)
- **Owner / PMC reply – During Detail Engineering**

NOTE: FOR TECHNICAL AMENDMENT PLEASE REFER PDIL/NFL WEBSITE.