

 BHARAT HEAVY ELECTRICAL LIMITED Piping Center, Chennai		Enquiry No. :	X20100050E / 24.12.2010
		Due Date :	06.01.2011
		Supplier Qtn. No.:	
		Date :	
PART-A: QUALIFYING CONDITION: The Supplier should meet the Qualifying Condition mentioned below for consideration of their offer.			
NAME & ADDRESS OF THE SUPPLIER :			
TELEPHONE NOS.:			
FAX NOS.:			
E-MAIL ADDRESS :			
1.0 QUALIFYING CONDITIONS :			
1.1	“Only those vendors, who have supplied and commissioned at least one 250 KVA or higher capacity, 3 Phase Diesel Generator Set within the past 2 years should only quote . Presently the DG Set should be working satisfactorily for minimum one year after commissioning. However, if such DG Set has/had been supplied to BHEL, then the same should be presently working satisfactorily for minimum six months after its commissioning and acceptance in BHEL. The following information should be submitted by the vendor about the company where such DG Set has been supplied. This is required from all the vendors for qualification of their offer	Vendor to confirm and furnish details	
1.2	Name of the customer / company where the DG Set is installed.	Vendor to furnish details	
1.3	Complete postal address of the customer.	Vendor to furnish details	
1.4	Year of commissioning.	Vendor to furnish details	
1.5	KVA Rating of the DG Set	Vendor to furnish details	
1.6	Name and designation of the contact person of the customer.	Vendor to furnish details	
1.7	Contact details of the end customer.	Vendor to furnish details	
1.8	Along with the offer, the supplier has to get One Performance certificate for satisfactory performance, from the customer to whom such DG Set was supplied. (Original Certificate or through E-mail directly from the customer). The original performance certificate may be returned after verification by BHEL, if required by vendor.	Vendor to provide	

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		Date :	
PART-B: SPECIFICATION CUM COMPLIANCE CERTIFICATE 250 KVA DIESEL GENERATOR SET			
1. The "Offer" Column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Vendor and submitted 2. The offer and all documents enclosed with offer should be in English language only.			
NAME & ADDRESS OF THE SUPPLIER :			
TELEPHONE NOS.:			
FAX NOS.:			
E-MAIL ADDRESS :			
SCOPE: SUPPLY, ERECTION & COMMISSIONING OF 250KVA DIESEL GENERATOR SET			
SNO	DESCRIPTION FOR BHEL REQUIREMENT	OFFER	DEVIATIONS
1.0	SCOPE: Vendor to Confirm		REMARKS

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SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
1.1	Design, Manufacture, Testing, Supply, Installation & Commissioning of 250KVA Outdoor type floor mounted Prime rating Diesel Generator Set comprising of the following: a) Four Stroke Diesel Engine suitable for operation on High Speed Diesel fuel b) 415 Volt Alternator coupled to the Diesel Engine c) Base Frame Mounted Fuel Tank d) Anti Vibration Mounts for Each DG set e) Common Base Frame for the DG Set and Fuel Tank for each DG Set f) Batteries with leads for starting for each DG Set g) Electrical Control Panel/Switch gear for each DG set h) Standard Accessories for Each DG set i) First Fill of Lube Oil & Coolant Oil for Each DG set j) Exhaust Chimney\Stack for each DG Set k) All mentioned Instrument and Electrical Control Panels for each DG Set l) Weather Proof Acoustic Enclosure for each DG set				
1.4	Cable	100 Metres			
1.5	Earth Pits	8 Nos			
1.6	Installation & Commissioning of All Equipments Supplied	Vendor to Confirm			
2.0	SPECIFICATION:				
2.1	GENERATOR SET:				
2.1.1	Standby Power Rating (KVA)	250			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
2.1.2	Output Voltage & Frequency	415 V, 50 Hz			
2.1.3	Voltage Regulation (around $\pm 1\%$)	Vendor to Specify			
2.1.4	Frequency Regulation	Vendor to Specify			
2.1.5	Power Factor	0.8 to 1.0			
2.1.6	No of Phases	3 Phase + Neutral			
2.1.7	Model	Vendor to Specify			
2.1.8	Make	Vendor to Specify			
2.2	DIESEL ENGINE:				
2.2.1	Prime Power Output (BHP)	Vendor to Specify			
2.2.2	Shaft Speed (around 1500 rpm)	Vendor to Specify			
2.2.3	Speed Stability	Vendor to Specify			
2.2.4	Direction of rotation	Vendor to Specify			
2.2.5	Make of Engine (Reputed make like Cummins, Perkins & Caterpillar only)	Vendor to Specify			
2.2.6	Model	Vendor to Specify			
2.2.7	Turbo Charged-After cooled Aspiration	Vendor to Confirm			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
2.2.8	Electronic Governor (Class A1)	Vendor to Specify			
2.2.9	Coolant/Water Cooled type Engine with Radiator	Vendor to Confirm			
2.2.10	No. of cylinders	Vendor to Specify			
2.2.11	Arrangement of Cylinder	Vendor to Specify			
2.2.12	Bore & Stroke (mm)	Vendor to Specify			
2.2.13	Displacement (litres)	Vendor to Specify			
2.2.14	Piston Speed (m/s)	Vendor to Specify			
2.2.15	Compression ratio	Vendor to Specify			
2.2.16	BMEP of the engine	Vendor to Specify			
2.2.17	Fuel	HSD			
2.2.18	Specific Gravity of Fuel	Vendor to Specify			
2.2.19	Fuel Consumption @ 75% load	Vendor to Specify			
2.2.20	Fuel Consumption @ 100% load	Vendor to Specify			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
2.2.21	Combustion Air Intake @ 100% load	Vendor to Specify			
2.2.22	Air Filter	Vendor to Specify			
2.2.23	Lube Oil Capacity	Vendor to Specify			
2.2.24	Lube Oil Grade	Vendor to Specify			
2.2.25	Lube Oil Consumption at Full Load	Vendor to Specify			
2.2.26	Lube Oil Cooling System	Vendor to Specify			
2.2.27	Lube Oil Filter	Vendor to Specify			
2.2.28	Coolant	Vendor to Specify			
2.2.29	Coolant Capacity (Engine & Radiator) (litres)	Vendor to Specify			
2.2.30	Exhaust Temperature (deg C)	Vendor to Specify			
2.2.31	Aftercooler- Type & Location	Vendor to Specify			
2.2.32	Starting	Electric & Battery Self Starting			
2.2.33	Length (Engine Alone) (mm)	Vendor to Specify			

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SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
2.2.34	Width (Engine Alone) (mm)	Vendor to Specify			
2.2.35	Height (Engine Alone) (mm)	Vendor to Specify			
2.2.36	Weight (Engine, radiator and fan)	Vendor to Specify			
2.3	ALTERNATOR:				
2.3.1	Design Maximum Rating (KVA)	Vendor to Specify			
2.3.2	Max Continuous Rating (KVA)	Vendor to Specify			
2.3.3	Rated Full Load Current (Amps)	Vendor to Specify			
2.3.4	Type	Brushless			
2.3.5	Excitation	Separately excited, self-regulated			
2.3.6	Field	Salient Pole revolving field			
2.3.7	AVR (Details to be furnished by Vendor)	Vendor to Specify			
2.3.8	Voltage Regulation (%)- no load to full load	Vendor to Specify			
2.3.9	Insulation	Class H			

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SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
2.3.10	Stator Winding	Vendor to Specify			
2.3.11	Rotor should be dynamically balanced	Vendor to Confirm			
2.3.12	Bearing for Rotor	Double Bearing			
2.3.13	Enclosure	Acoustic Enclosure-outdoor type			
2.3.14	Telephone Interference Factor	Vendor to Specify			
2.3.15	Total Harmonic Factor	Vendor to Specify			
2.3.16	Waveform Distortion (%) a) at no load b) at balanced load	Vendor to Specify			
2.3.17	Bearing Temperature Sensors (1 No per Bearing) (To be quoted as an optional item)	Vendor to Confirm			
2.3.18	Winding Temperature Sensors in each phase for monitoring the temperature (2 nos. of RTD's per phase). (To be quoted as an optional item)	Vendor to Confirm			
2.3.19	Make of Alternator (Stamford, Leroy-Somer only)	Vendor to Specify			
2.3.20	Model	Vendor to Specify			
2.3.21	Weight (Kgs)	Vendor to Specify			
2.4	FUEL TANK:				

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SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
2.4.1	Capacity (litres) - Fuel Tank with initial filling to be sized for continuous operation of DG for 8 hrs at Full Load	Vendor to Specify			
2.4.2	Location - To be located on the DG Base Frame	Vendor to Confirm			
2.4.3	Size (L mm x B mm x H mm)	Vendor to Specify			
2.4.4	Piping between fuel tank and engine are part of the scope of supply of vendor	Vendor to Confirm			
2.4.5	Fuel pipes, Overflow pipes, Drain valve for Fuel Tank, Vent connection for Fuel Tank with breather, Fill connection for Fuel Tank, Inspection & Cleaning Hole for Fuel Tank, Level Gauge and Level Indicator for the fuel tank should be provided	Vendor to Specify			
2.5	BATTERY CHARGER AND BATTERY				
2.5.1	Rating (AH)	Vendor to Specify			
2.5.2	Voltage	Vendor to Specify			
2.5.3	Type (preferably maintenance free)	Vendor to Specify			
2.5.4	Battery Make (reputed makes like Exide, Amaron & AMCO)	Vendor to Specify			
2.5.5	Scope of Supply includes battery leads	Vendor to Confirm			
2.5.6	No of Batteries	Vendor to Specify			
2.5.7	SMPS Based automatic Float cum Boost Battery Charger with DC Voltmeter & Ammeter, Selector Switch for Auto / Manual & Float / Boost				

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SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
2.5.8	No of Starts before re-charging	Vendor to Specify			
2.7	INSTRUMENT PANEL & PROTECTION (Alarm or Tripping):				
2.7.1	Coolant Temperature & High Coolant Temperature (Alarm & Trip)	Vendor to Specify			
2.7.2	Lube Oil Pressure & Low Lube Oil Pressure (Alarm & Trip)	Vendor to Specify			
2.7.3	Speed & Over Speed (Alarm & Trip)	Vendor to Specify			
2.7.4	Low Coolant Oil Level (Alarm & Trip)	Vendor to Specify			
2.7.5	Air Filter Choke Indicator	Vendor to Specify			
2.7.6	Starting Failure	Vendor to Specify			
2.7.7	Generator Overload (Alarm & Trip)	Vendor to Specify			
2.7.8	Battery Voltage Low	Vendor to Specify			
2.7.9	Others	Vendor to Specify			
2.8	ACOUSTIC ENCLOSURE:				
2.8.1	The maximum permissible sound pressure level shall not exceed 75 dB(A) at 1 metre from the enclosure surface.	Vendor to Confirm			
2.8.2	Enclosure should be provided with an "Emergency-off" Push Button	Vendor to Confirm			
2.8.3	Enclosure shall be of suitable gauge sheet steel and painted	Vendor to Confirm			
2.8.4	View Glass shall be provided	Vendor to Confirm			

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SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
2.8.5	Gauge of Steel Enclosure	Vendor to Specify			
2.8.6	Acoustic Material	Vendor to Specify			
2.8.7	Openings for pipe connections to be provided (Vendor to Furnish Details)	Vendor to Confirm			
2.8.8	Doors for easy access to the DG Set should be provided for easy inspection & maintenance	Vendor to Confirm			
2.8.9	Suitable acoustic insulation beading shall be provided for the doors	Vendor to Specify			
2.8.10	Suitable arrangement for fresh air inlet and hot air outlet shall be provided	Vendor to furnish details			
2.8.11	Sufficient fluorescent tube lamp lighting shall be provided inside the enclosure	Vendor to Confirm			
2.9	EXHAUST SYSTEM WITH STACK:				
2.9.1	Exhaust Connections	Flexible, Stainless Steel			
2.9.2	Vendor to provide exhaust piping, insulation & hangers and Support structure starting from engine to out side DG Room	Vendor to Confirm			
2.9.3	Exhaust Silencer should be provided	Vendor to Confirm			
2.9.4	Thermal insulation with aluminium sheet cladding for exhaust piping up to the stack is in the Scope of vendor	Vendor to Confirm			
2.9.5	Stack of required height as per pollution control norms (CPCB) should be provided and installed by the vendor for the DG Set.	Vendor to Confirm			
2.9.6	Stack Height (m)	Vendor to Specify			

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SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
2.9.7	The DG Set is proposed to be erected in open space 12 m (L) x 8 m (W) x 4.5 m(H)	Vendor to Note			
2.9.8	Emissions shall be within norms specified by Pollution Control Board (CPCB) and Environment Protection Rules.	Vendor to Confirm			
2.9.9	Emission Levels	Vendor to Specify			
3.0 ELECTRICAL PANEL					
3.1	Suitable isolator for DG of 4 pole 400 A MCCB	Vendor to Confirm			
3.2	Suitable 4 pole 400 Amps Change over switch at EB Mains	Vendor to Confirm			
3.3	Rating of Switchgear	Vendor to Specify			
3.4	Make of Switchgear (Shall be of reputed make like L&T, Area or any other reputable make acceptable to BHEL)	Vendor to Specify			
3.5	Over current & Earth Fault relay to be provided	Vendor to Confirm			
3.6	Indications for Over Current & Earth Fault	Vendor to Confirm			
3.7	KW & KWH Meter	Vendor to Confirm			
3.8	Power Factor Meter	Vendor to Confirm			
3.9	Instrument fuses duly wired	Vendor to Confirm			
3.10	Generator Voltage, Current & Frequency Monitoring & Display	Vendor to Confirm			

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SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
3.11	Battery Voltage Sensing & Monitoring	Vendor to Confirm			
3.12	Push Buttons for Manual Start / Stop	Vendor to Confirm			
3.13	Annunciation, Alarm & Trip Features	Vendor to Specify			
3.14	Indications for DG "ON", Load on DG	Vendor to Confirm			
3.15	Indications for MAINS "ON", Load on Mains	Vendor to Confirm			
4.00	Civil/Electrical Installation				
4.10	Supply and laying of 3.5 core 185 sq.mm PVC insulated Aluminium Conductor Armoured Cable to a maximum length of 100 metres including required end termination and interconnection between DG, Electrical Panel and EB Main	Vendor to Confirm			
4.11	Supply, Fabrication and Fixing of Cable Tray with suitable Angle Iron Framework (Size - ISA 65 x 65 x 6 mm) on the wall as per the existing system to a length of 5 metre with painting including the existing cable tray structure	Vendor to Confirm			
4.12	Providing 8 Nos Earth Pit as per IS 3043 with supply of 50 mm die hot dip GI pipe Class "C" Pipe with copper earth plate 600 x 600 x 3 mm thickness including accessories and providing masonry enclosure with cover plate, measuring and painting.	Vendor to Confirm			
4.13	Supply and Laying of 25mm x 6 mm copper strip on the wall/floor including necessary connections to the earth electrode as required from DG set and Control Panel-length 30 M	Vendor to Confirm			

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SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
4.14	Preparation of Engg drawings and obtaining approval CEIG/CEA	Vendor to Confirm			
4.15	Providing suitable civil foundation approx 4Mx2M with 1.5 M depth to erect the 250 KVA DG set	vendor to confirm			
5.0	APPLICABLE CODES & STANDARDS:				
5.1	Rating Definition as per ISO 3046 / BS 5514	Vendor to Confirm			
5.2	IS 4722	Vendor to Confirm			
5.3	BS 5000	Vendor to Confirm			
5.4	IEC 34/1	Vendor to Confirm			
5.5	ISO 8528	Vendor to Confirm			
5.6	IS- 4889, 10000, 10002	Vendor to Confirm			
5.7	Pollution Control Board directives with regard to exhaust stack height	Vendor to Confirm			
5.8	Fuel conforming to IS 1460	Vendor to Confirm			
5.9	Fuel consumption tolerance as per BS 5514	Vendor to Confirm			
5.10	Environmental Protection Rules	Vendor to Confirm			
6.0	TOOLS FOR ERECTION, OPERATION & MAINTENANCE :				

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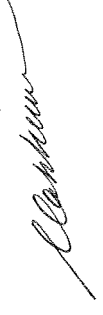
SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
6.1	Necessary tools like Torque Wrench, Spanners, Keys, grease guns etc. for operation and maintenance of the DG Set should be supplied. List of such tools should be submitted with offer	Vendor to Furnish			
7.0 SPARES:					
7.1	Itemised breakup of mechanical & Electrical spares in sufficient quantity as per recommendation of Vendor for 2 years of trouble free operation should be offered by vendor. (Unit Price of each item of spare should be offered)	Vendor to provide List			
7.2	Vendor to confirm that complete list of spares for DG Set and accessories, along with specification / type / model, and name & address of the spare supplier shall be furnished along with documentation to be supplied with the machine	Vendor to Confirm			
8.0 DOCUMENTATION :	Three sets of following documents (Hard copies) in English language should be supplied along with the machine	Vendor to Confirm			
8.1	Operating & Maintenance Manuals for the Diesel Engine	Vendor to Confirm			
8.2	Operating & Maintenance Manuals for the Alternator	Vendor to Confirm			
8.3	General arrangement plan of DG set.	Vendor to Confirm			
8.4	Chimney drawing.	Vendor to Confirm			
8.5	Complete Master List of parts used in the DG Set shall be submitted by the vendor.	Vendor to Confirm			

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SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
8.6	One additional set of all the above documentation on CD ROM.	Vendor to Confirm			
9.0	ERECTION & COMMISSIONING				
9.1	Supplier shall be responsible for carrying out the erection, start up, testing and commissioning of the DG Set with Electrical panel. Required technical personnel and labour required for the same shall be provided by the vendor. Tools, tackles, required for the same shall be arranged for by the vendor. Crane, if required, will be in the scope of the vendor. Service requirement like power, air & water shall be provided by BHEL at only one point	Vendor to confirm			
9.2	All required cable laying with trays, end connection termination and interconnection with EB Mains.	Vendor to confirm			
9.3	Erection of the Stack and thermal insulation of the exhaust system is also the responsibility of the vendor	Vendor to confirm			
9.4	Duration, terms & conditions for E&C should be furnished in detail separately by vendor along with offer. Charges for the same should be indicated in the price bid	Vendor to furnish			
9.5	Schedule of Erection and Commissioning shall be submitted after placement of order	Vendor to confirm			
10.0	OPERATING CONDITIONS :				
10.1	The DG Set should work trouble free and efficiently under following operating conditions: Height above MSL: -- m (PC to Specify) Ambient Conditions: Temperature = 20 to 45 degree Celsius Relative Humidity = 95% max.	Vendor to Confirm			

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SNO	DESCRIPTION FOR BHEL REQUIREMENT	BHEL SPEC	OFFER	DEVIATIONS	REMARKS
10.2	Weather conditions are tropical, Atmosphere may be dust laden during some part of the year.	Vendor to confirm			
11.0	MACHINE ACCEPTANCE: (Tests/Activities to be performed by Vendor)	Should be accepted & confirmed by Vendor			
11.1	Tests/Activities to be carried out at supplier's works in the presence of BHEL Engineers before dispatch :	Vendor to Confirm			
11.2	Physical Inspection of all components of the DG Set	Vendor to Confirm			
11.3	Verification of Original test certificates for engine, alternator, acoustic enclosure, and all other bought out items.	Vendor to Confirm			
11.4	Run test of DG Set	Vendor to Confirm			
11.5	Test/ Activities to be carried out at BHEL works while commissioning the DG Set :				
11.6	8 hours Run Test with load	Vendor to Confirm			
11.7	Operation of protective devices.	Vendor to Confirm			
12.0	PACKING:				
12.1	Sea worthy / Road Worthy & rigid packing for the DG Set and accessories to avoid any damage/loss in transit.	Vendor to confirm			
13.0	GUARANTEE :				
13.1	24 months from the date of commissioning of the DG Set.	Vendor to confirm			



IMPORTANT INFORMATION TO BIDDERS

REF: ENQUIRY NO. X20100050E

Date 24.12.2010

**SUB: Supply and Installation of 2 Nos. of 250 KVA DG Set at BHEL/ Piping Centre
Office- 80 G.N. Road, T. Nagar, Chennai.17.**

- 1) This tender is in **TWO PART Bid**,
- 2) Part – I is **Techno – Commercial Bid**,
- 3) Part – II is **Price Bid**.

The above bids shall be sent in a sealed cover separately and the outer envelope should be duly superscribed Enquiry no: **X20100050E** dt.**24.12.2010**, Tender opening date **06.01.2011**.

To

AGM / MM
Bharat Heavy Electricals Limited,
Piping Centre,
80, G.N. Road, T. Nagar,
Chennai – 600 017.
Phone: 2816 1331.

- (A) Techno-Commercial bid: Suppliers are requested to send back the Annexure (Price Format) duly filled in without quoting the price. Techno commercial bids contains your acceptance to our technical specification.
- (B) The validity of the offer should be minimum of 60 days.
- (C) **Payment Terms:** 90% payment on supply of DG set and 10% after installation within 45 days from the date of installation with 10% PBG.
- (D) **Warranty :** 2 Years.
- 4) Last date of submission of offer **06.01.2011 – 14.00hrs.**
 - 5) The Techno – Commercial bid opening date **06.01.2011 – 14.30hrs.**
 - 6) The price bid of those vendors who qualify the techno-commercial conditions will only be considered.
 - 7) You are Requested to Quote Brand wise
 - 8) **L.D. Clause :** Min 0.5 % to Max 15% Per Week of Delay
 - 9) **Delivery Period :** With in 6 Weeks From the date LOI / PO
 - 10) **Delivery Terms :** F O R Site (at the above Address)
 - 11) No Advance Payment will be given to Vendor.
 - 12) Performance BG is must on the Total Cost of DG Set(Including Installation) for a Period of ONE YEAR from the date of Commissioning.
 - 13) Price is All Inclusive (Transportation and other Charges)
 - 14) Order will be placed on the L1 vendor for the NET CASH Outflow to BHEL

