

NATIONAL POWER CORPORATION

SUPPLEMENTAL /BID BULLETIN NO. 1

to the Bid Documents for the

SUPPLY, DELIVERY, INSTALLATION, TEST AND COMMISSIONING OF FOUR (4) UNITS OF MODULAR DIESEL GENSETS, ASSOCIATED ELECTRICAL EQUIPMENT & BALANCE OF PLANT FOR BABUYAN CLARO AND DIBAY-DILAM DPP UNDER ELECTRIFICATION OF NEW AREAS IN CAGAYAN (PACKAGE 23) (PR NO. HO-PIB21-015 / PB220118-HG00524)

14 February 2022

All prospective bidders and authorized copyholders of the terms of reference are hereby informed of the changes in:

SEE ATTACHED REVISED FILE FOR SECTION VI, PART II-TECHNICAL DATA SHEETS, MW-MECHANICAL WORKS for the following pages:

- p. III-BDS-2
- p. VI-TDS(MW)-i
- p. VI-TDS(MW)-ii
- p. VI-TDS(MW)-1 to 21
- p. VIII- BIDDING FORMS (3/3)

All other terms and conditions shall remain the same.

For the information and guidance of all authorized copyholders of the Terms of Reference (TOR) and prospective bidders.

For the Bids and Awards Committee:

ATTY. ROGEL 7, TEVES Vice President, Power Engineering Services and Chairman, Bids and Awards Committee



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SUPPLY, DELIVERY, INSTALLATION, TEST, AND COMMISSIONING OF FOUR (4) UNITS OF MODULAR DIESEL GENSETS, ASSOCIATED ELECTRICAL EQUIPMENT AND BALANCE OF PLANT FOR BABUYAN CLARO AND DIBAY-DILAM DPP UNDER ELECTRIFICATION OF NEW AREAS IN CAGAYAN (PACKAGE 23) REV 01

SECTION III - BID DATA SHEET

10.5	 The prospective bidders shall declare its Joint Venture partner during the purchase of bid/tender documents. Any single bidder/s who already procured/secured the bidding documents but want to avail the Joint Venture Agreement (JVA) shall inform the BAC in writing prior to the bid opening for records and documentation purposes. Failure to do so shall be a ground for disqualification/non-acceptance of its bid. Bidders shall also submit the following requirements in their first envelope, Eligibility and Technical Component of their bid: 1. Drawings & Documents to be submitted with the Proposal as specified in Sections M-1.0, M-2.0, Annexes A.1 to A.3 for Mechanical Works and Sections E-1.0 and E-2.0 for Electrical Works, Section VI – Part II Technical Data Sheets. Manufacturer's brochures, manuals and other supporting documents of equipment, materials, hardware and tools proposed by the bidders must comply with the technical specifications of such equipment, materials, hardware and tools if the submitted brochures, manuals and other supporting with the specifications during the contract implementation.
	Equipment, materials, hardware and tools proposed by the winning bidder to be supplied, which were evaluated to be complying with the technical specifications, shall not be replaced and must be the same items to be delivered/installed/used during the contract implementation. Any proposed changes/replacement of said items may be allowed on meritorious reasons subject to validation and prior approval by NPC.
	2. Complete eligibility documents of the proposed sub-contractor, if any
12	The price of the Goods shall be quoted DDP Project Site or the applicable International Commercial Terms (INCOTERMS) for this Project.
14.1	The bid security shall be in the form of a Bid Securing Declaration, or any of the following forms and amounts:
	 a) The amount of not less two percent (2%) of ABC, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; or
	 b) The amount of not less than five percent (5%) of ABC, if bid security is in Surety Bond.



SECTION VIII - BIDDING FORMS

SUPPLY, DELIVERY, INSTALLATION, TEST, AND COMMISSIONING OF FOUR (4) UNITS OF MODULAR DIESEL GENSETS, ASSOCIATED ELECTRICAL EQUIPMENT AND BALANCE OF PLANT FOR BABUYAN CLARO AND DIBAY-DILAM DPP UNDER ELECTRIFICATION OF NEW AREAS IN CAGAYAN (PACKAGE 23) REV 01

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Standard Form No: NPCSF-GOODS-01

- For Joint-Venture, a resolution, duly signed by all the joint-venture partners granting full powers to the authorized signatory
- Drawings & Documents to be submitted with the Bid, Sections M-1.0, M-2.0, Annexes A.1 to A.3 for Mechanical Works and Sections E-1.0 and E-2.0 for Electrical Works, Section VI – Part II Technical Data Sheets;
- Complete eligibility documents of the proposed subcontractor, if any

B. THE 2ND ENVELOPE (FINANCIAL COMPONENT) SHALL CONTAIN THE FOLLOWING:

- Duly signed Bid Letter indicating the total bid amount in accordance with the prescribed form (NPCSF-GOODS-08)
- Duly signed and completely filled-out Schedule of Requirement (Section VII) indicating the unit and total prices per item and the total amount in the prescribed Price Schedule form.
- For Domestic Bidder claiming for domestic preference:
 - Letter address to the BAC claiming for preference
 - Certification from DTI as Domestic Bidder in accordance with the prescribed forms provided

CONDITIONS:

- Each Bidder shall submit one copy of the first and second components of its Bid. NPC may request additional hard copies and/or electronic copies of the Bid. However, failure of the Bidders to comply with the said request shall not be a ground for disqualification.
- 2. For Joint Venture, each partner of a joint venture agreement shall submit the document required in ITB Clause 12.1(a)(i). Submission of other documents required under ITB Clause 12.1 by any of the joint venture partners constitutes compliance.
- 3. In the case of foreign bidders, the eligibility requirements under Class "A" Documents (except for Tax Clearance) may be substituted by the appropriate equivalent documents, if any, issued by the country of the foreign bidder concerned. The eligibility requirements or statements, the bids, and all other documents to be submitted to the BAC must be in English. If the eligibility requirements or statements, the bids, and all other documents submitted to the BAC are in foreign language other than English, it must be accompanied by a translation of the documents in English. The documents shall be translated by the relevant foreign government agency, the foreign government agency authorized to translate documents, or a registered translator in the foreign bidder's country; and shall be authenticated by the appropriate Philippine foreign service establishment/post or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines.

These documents shall be accompanied by a Sworn Statement in a form prescribed by the GPPB stating that the documents submitted are complete and authentic copies of the original, and all statements and information provided therein are true and correct. Upon receipt of the said documents, the PhilGEPS shall process the same in accordance with the guidelines on the Government of the Philippines – Official Merchants Registry (GoP-OMR).

4. A Bidder not submitting bid for reason that his cost estimate is higher than the ABC, is required to submit his letter of non-participation/regret supported by corresponding detailed estimates. Failure to submit the two (2) documents shall be understood as acts that tend to defeat the purpose of public bidding without valid reason as stated under Section 69.1.(i) of the revised IRR of R.A. 9184.

SECTION VI - TECHNICAL SPECIFICATIONS

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PART II – TECHNICAL DATA SHEETS

MW – MECHANICAL WORKS

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SECTION	DESCRIPTION	PAGE		
DOCUMENTS TO BE SUBMITTED DURING BID OPENING				
M-1.0	Diesel Generating Set and Associated Equipment Data Summary	VI-TDS(MW)-2		
M-2.0	Fuel Consumption Form for Diesel Generator Sets	VI-TDS(MW)-4		
Annex A.1	Letter of Authorization and Guarantee Statement either from: 1) Original Equipment Manufacturer (OEM) or 2) Certification/Agreement from OEM as a Licensee or 3) Authorized Distributor/Dealer (accompanied by a Certificate of Authorized Distributorship/Dealership from the OEM/Licensee of the OEM). If from the Licensee, a Certification from the OEM as a Licensee or the Licensee agreement must also be submitted), for the 20 kW and 30 kW Prime Rated Power Diesel Generating Sets.	Attachment As Annex A.1		
Annex A.2	"Diesel Generating Set (Engine + AC Generator) Performance Curve" @ Reference Site Conditions issued by the Manufacturer/Assembler/Integrator (duly signed with full name) for each Diesel Generating Set Model/Type being offered.	Attachment As Annex A.2		
Annex A.3	"Engine Performance Curve" @ Reference Site Conditions issued by the Diesel Engine Manufacturer or Diesel Generating Set Manufacturer/Assembler/Integrator (duly signed with full name) for the Diesel Engine Model/Type being offered	Attachment As Annex A.3		
DOCU	MENTS TO BE SUBMITTED DURING POST QUALIFICATION LIMITED TO:	BUT NOT		
M-3.0	Diesel Engine	VI-TDS(MW)-6		
M-4.0	Spare Parts	VI-TDS(MW)-7		
M-4.1	Spare Parts per Unit of 30 kW DG Set During the Warranty Period	VI-TDS(MW)-7		
M-4.2	Spare Parts per Unit of 20 kW DG Set During the Warranty Period	VI-TDS(MW)-8		
M-4.3	Spare Parts for the Total Units of 30 kW DG Set Supplied and to be Delivered at Dibay-Dilam DPP	VI-TDS(MW)-9		
M-4.4	Spare Parts for the Total Units of 20 kW DG Set Supplied and to be Delivered at Babuyan Claro DPP	VI-TDS(MW)-10		
M-5.0	Standard/Special Tools and Miscellaneous Tools	VI-TDS(MW)-11		
M-5.1	Standard/Special Tools for the Total Units of 30 kW DG Set Supplied and Delivered at Dibay-Dilam DPP	VI-TDS(MW)-11		
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M-5.3	Supplied and Delivered at Babuyan Claro DPP Miscellaneous Tools to be Supplied and Delivered each at Dibay-			

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SECTION VI - TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS (Cont'd.....)

SECTION	DESCRIPTION	PAGE		
DOCUME	DOCUMENTS TO BE SUBMITTED DURING PROJECT IMPLEMENTATION BUT NOT LIMITED TO:			
M-6.0	ISO 9001 Certificate of the Manufacturer/Assembler/Integrator or equivalent for each of the Diesel Generating Set			
M-7.0	 Standard Certification of the proposed offered model of Diesel Generating Set from any of the following internationally recognized certifying body/organization: a) Canadian Standard Association (CSA) b) Underwriter's Laboratories (UL) c) Japanese Industrial Standards (JIS) d) European Commission (CE) e) Lloyd's Register (LR) f) Germanischer Lloyd (GL) g) Niippon Kaiji Kyokai (NKK) h) American Bureau of Shipping (ABS) 			
M-8.0	Power Derate Curves and Details or Certificate/Statement from Diesel Generating Set's Manufacturer/Assembler/ Integrator that the proposed Diesel Engine-Generator Set have no deration at Reference Site Conditions.			
M-9.0	Manufacturer/Assembler/Integrator's General Data, Catalogue and Brochures of model/type of equipment offered and published as standard products for the Diesel Generating Set which contain the following information:a)Manufacturer/Assemblerb)Model/Typec)Prime Rated Powerd)Voltagee)Power Factorf)Frequencyg)Rated Speedh)Arrangement & Number of Cylinders			
M-10.0	Technical Data for Engine and Auxiliaries	See Attached Forms on page VI-TDS(MW)-17		
M-11.0	Supplier/Manufacturer/Assembler Drawings, Brochures, Instruction Manuals and other Documents as specified in Clause GW-6.3 and other relevant Clauses of the Technical Specifications			



SECTION VI - TECHNICAL SPECIFICATIONS

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PART II – TECHNICAL DATA SHEETS

MW – MECHANICAL WORKS

DOCUMENTS TO BE SUBMITTED DURING THE BID OPENING (Sections M-1.0, M-2.0, Annexes A.1, A.2 and A.3)

NOTES

- 1. The Bidder shall complete this technical data sheet and submit the filled-up forms with the technical proposal. The Bidder shall use additional sheets as necessary for any other additional information following the format shown herein or by reproducing the same.
- 2. The data required are technical features and characteristics of the Equipment to be provided by the bidder. Bidder's proposal shall at least be equal or superior to the requirements specified by NPC.
- 3. Deviation from the requirements indicated in the technical data sheets M-1.0, M-2.0 and non-submission of the required documents listed as Annexes A.1, A.2 and A.3 shall be ground for disqualification.
- 4. All data and information shall be in English language.



SECTION VI - TECHNICAL SPECIFICATIONS

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M-1.0 DIESEL GENERATING (DG) SET AND ASSOCIATED EQUIPMENT DATA SUMMARY

ITEM	DESCRIPTION	NPC	SUPPLIER'S DATA	
		REQUIREMENT	30 kW	20 kW
M-1.1	DG Set (Diesel Engine + AC Generator) (Prime Duty) *: 30 kW 20 kW	Designed, manufactured and tested in compliance with the latest version of the	Yell 1 11 11 11 11 11 11 11 11 11 11 11 11	
		standards [*] listed below, mounted on heavy duty steel base frame with anti- vibration pads contained in a sound attenuated & weatherproof enclosure		
M-1.1.1	Manufacturer/Assembler/Integrator of DG Set being offered	By Supplier		
M-1.1.2	Brand Name of DG Set being offered	By Supplier		
M-1.1.3	Model of DG Set being offered	By Supplier		
M-1.1.4	DG Set Manufacturer/Assembler/Integrator Experience, Year	5 (minimum)		
M-1.1.5	DG Set Guaranteed Prime Rated Power at Reference Site Conditions* & 0.8 Power Factor, kW	30 kW (minimum) 20 kW (minimum)		
M-1.1.6	DG Set Guaranteed Fuel Rate at Required DG Set Prime Power Output & Reference Site Conditions, 100 % Rated Load, li/kW-hr	0.34 (maximum)		
M-1.1.7	Voltage, V	480 (± 5%)		
M-1.1.8	Power factor	0.80 (minimum)		
M-1.1.9	Frequency, Hz	60		
M-1.1.10	No. of Phases, Ø	3		
M-1.1.11	Rated Speed, RPM	1800		
M-1.1.12	Governor	electronic		
M-1.1.13	Arrangement & Number of Cylinders	In- line & Multi-cylinder		
M-1.1.14	Maximum Sound Pressure Level @ 1-meter distance, dBA	85		
M-1.1.15	Maximum Permissible NOx, mg/Nm ³	2000 as NO ₂		
M.1.1.16	Maximum Permissible Sox, mg/Nm ³	700 as SO ₂		
M-1.1.17	Maximum Permissible CO, mg/Nm ³	500 as CO		
M-1.1.18	Particulates, mg/Nm ³	200		
M-1.1.19	Factory Acceptance Test	Yes		

NOTES: 1. * IEC 60034, IEC 60085, IEC60529, ISO 9001, ISO 8528 and ISO 3046

2. Guaranteed Fuel Consumption which is more than the specified maximum value will be ground for rejection of the equipment being offered.

3. Experience less than what is required will be ground for rejection of the equipment being offered.



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SECTION VI - TECHNICAL SPECIFICATIONS

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M-1.0 DIESEL GENERATING (DG) SET AND ASSOCIATED EQUIPMENT DATA SUMMARY (Cont'd.....)

ITEM	DESCRIPTION	NPC REQUIREMENT	SUPPLIER'S DATA	
		REQUIREMIENT	30 kW	20 kW
M-1.1.20	"Diesel Generating Set (Engine + AC Generator) Performance Curve" @ Reference Site Conditions issued by the Manufacturer/Assembler/Integrator (duly signed with full name) of the Diesel Generating Set Model/Type being offered	To be Submitted/Attachment as Annex A.2		
M-1.2	Diesel Engine			
M-1.2.1	Manufacturer	By Supplier		
M-1.2.2	Manufacturer's Experience, years	10		·
M-1.2.3	Place of Manufacture	By Supplier		
M-1.2.4	Brand Name of Diesel Engine being offered	By Supplier		
M-1.2.5	Model/Type	By Supplier		
M-1.2.6	Engine Prime Brake Power Output at Reference Site Conditions, kWm or BHP	By Supplier		
M-1.2.7	"Engine Performance Curve" @ Reference Site Conditions issued by the Diesel Engine Manufacturer or Diesel Generating Set Manufacturer/Assembler/Integrator (duly signed with full name) for the Diesel Engine Model/Type being offered	To be Submitted/Attachment as Annex A.3		



SECTION VI - TECHNICAL SPECIFICATIONS

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M-2.0 FUEL CONSUMPTION FOR DG SETS

A	B**	С	D*	E
DG Set Guaranteed Prime Rated Power at Reference Site Conditions	DG Set Guaranteed Fuel Rate at Required Prime Rated Power & at Reference Site Conditions	Cost of Fuel	No. of operating hours per year	1-Year Cost of Fuel Consumption, (A x B x C x D)
(Minimum KW)	(liters/kilowatt-hour)	(PhP/ltr)	(hrs)	(PhP)
30		40.40	3,427	
20		40.40	3,427	

NOTES: * For evaluation Purposes: The estimated number of operating hours per year is based on 16 hrs/day operation, 25 days PMS, 10% Outages and assumed 70% Utilization Factor.

** Write the Guaranteed Fuel Rate in three decimal places, i.e. 0.270 L/kW-hr. If Fuel Rate is indicated in more than three decimal places, only the first three decimal numbers will be considered regardless of any number written in the fourth decimal number.



SECTION VI - TECHNICAL SPECIFICATIONS

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PART II – TECHNICAL DATA SHEETS

MW – MECHANICAL WORKS

DOCUMENTS TO BE SUBMITTED DURING POST-QUALIFICATION (Sections M-3.0 to M-5.3)

NOTES

- 1. The Bidder shall complete this technical data sheet and submit the filled-up forms during the post-qualification which shall only serve as reference for the review and approval of brochure/drawings during implementation stage. The Bidder shall use additional sheets as necessary for any other additional information following the format shown herein or by reproducing the same.
- 2. The data required are technical features and characteristics of the Equipment to be provided by the bidder which shall at least be equal or superior to the requirements specified by NPC.
- 3. The lists of Spares and Tools (Items M-4.1 to M-5.3) are preliminary and subject to changes to conform with the final design and model/brand of the proposed equipment (per manufacturer's standard).

The Bidder shall indicate "N/A" to the respective items in the said lists (Items M-4.1 to M-5.3) if found not applicable to the brand/model of the proposed equipment. However, NPC reserves the right to request the Supplier to provide the same or its equivalent if it is determined as "deemed necessary or standard tool/inherent part or optional item" during the evaluation, checking and review/approval of the final lists to be submitted by the Supplier during the Contract Stage at no cost to NPC.

4. Non submission of the above documents shall be a ground for disqualification.



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SECTION VI - TECHNICAL SPECIFICATIONS

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M-3.0 DIESEL ENGINE

ITEM	DESCRIPTION	NPC	SUPPLIER'S DATA	
	· ·	REQUIREMENT	30 kW	20 kW
M-3.1	DIESEL ENGINE			
M-3.1.1	1. Manufacturer/Assembler	By Supplier		
	2. Manufacturer's Experience, Year	10		
M-3.1.2	Place of Manufacture	By Supplier		
M-3.1.3	Model/Type	By Supplier		
M-3.1.4	Engine Prime Rated Brake Power at Reference Site Conditions, kWm or BHP	By Supplier		
M-3.1.5	Number of Cylinders	By Supplier		
M-3.1.6	Bore and Stroke, mm	By Supplier		
M-3.1.7	Piston Displacement, L	By Supplier		
M-3.1.8	Piston Speed, m/s	By Supplier		
M-3.1.9	Engine Mean Effective Pressure, kg/cm ²	By Supplier		
M-3.1.10	Compression Ratio	By Supplier		
M-3.1.11	Overall Dimension of Complete Unit, L x W x H, m	By Supplier		
M-3.1.12	Maximum Weight of Diesel Engine Generator Set on Skid, kg	By Supplier		
M-3.1.13	Heat Dissipation including (Generating set), kJ/hr	By Supplier		



BID DOCUMENTS

SUPPLY, DELIVERY, INSTALLATION, TEST AND COMMISSIONING OF FOUR (4) UNITS OF MODULAR DIESEL GENSETS, ASSOCIATED ELECTRICAL EQUIPMENT AND BALANCE OF PLANT FOR BABUYAN CLARO AND DIBAY-DILAM DPP UNDER ELECTRIFICATION OF NEW AREAS IN CAGAYAN (PACKAGE 23) REV 01

SECTION VI - TECHNICAL SPECIFICATIONS

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M-4.0 SPARE PARTS

M-4.1 SPARE PARTS PER UNIT OF 30 KW DG SET DURING THE WARRANTY PERIOD (Minimum Requirements as Specified in the Technical Specifications and Manufacturer's Standard and Recommended Spare Parts) *

ITEM	DESCRIPTION	PART NO.	MINIMUM QUANTITY**	SUPPLIERS DATA
M-4.1a	Air Filter Element		6 pcs/size	
M-4.1b	Lube Oil Filter Element		30 pcs/size	
M-4.1c	Fuel Filter Element		15 pcs/size	
M-4.1d	Water Filter Element		6 pcs/size	
M-4.1e	Fan Belt	-	3 pcs/size	
M-4.1f	Alternator Belt		3 pcs/size	
M-4.1g	Coolant	· · · · ·	4 gallons	
M-4.1h	Expected spares to be consumed during the performance test		1 lot	
M-4.1i	Other spare parts recommended by Manufacturer		1 lot	
M-4.1i.1				
M-4.1i.2				
M-4.1i.3				
M-4.1i.4				
M-4.1i.5				
M-4.1i.6				
M-4.1i.7				
M-4.1i.8				
M-4.1i.9			<u> </u>	
M-4.1i.10				

NOTES:

- * The above list is preliminary which is subject to changes to conform with the final design and model/brand of the proposed equipment (per manufacturer's standard). NOTE #3 of page VI-TDS (MW)-4.
- ** Quantities may be increased depending on manufacturer's required replacement intervals.



SECTION VI - TECHNICAL SPECIFICATIONS

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M-4.2 SPARE PARTS PER UNIT OF 20 KW DG SET DURING THE WARRANTY PERIOD (Minimum Requirements as Specified in the Technical Specifications and Manufacturer's Standard and Recommended Spare Parts) *

ITEM	DESCRIPTION	PART NO.	MINIMUM QUANTITY**	SUPPLIERS DATA
M-4.2a	Air Filter Element		6 pcs/size	
M-4.2b	Lube Oil Filter Element		30 pcs/size	
M-4.2c	Fuel Filter Element		15 pcs/size	
M-4.2d	Water Filter Element		6 pcs/size	
M-4.2e	Fan Belt		3 pcs/size	
M-4.2f	Alternator Belt		3 pcs/size	
M-4.2g	Cooiant		4 gallons	· · · · ·
M-4.2h	Expected spares to be consumed during the performance test		1 lot	· · · · · · · · · · · · · · · · · · ·
M-4.2i	Other spare parts recommended by Manufacturer		1 lot	
M-4.2i.1				
M-4.2i.2				
M-4.2i.3				
M-4.2i.4				
M-4.2i.5				
M-4.2i.6				
M-4.2i.7				
_M-4.2i.8		· · · · · · · · · · · · · · · · · · ·	ļ	
M-4.2i.9				
M-4.2i.10				

NOTES:

- * The above list is preliminary which is subject to changes to conform with the final design and model/brand of the proposed equipment (per manufacturer's standard). NOTE #3 of page VI-TDS (MW)-4.
- ** Quantities may be increased depending on manufacturer's required replacement intervals.



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SECTION VI - TECHNICAL SPECIFICATIONS

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M-4.3 SPARE PARTS FOR THE TOTAL UNITS OF 30 KW DG SET SUPPLIED AND DELIVERED AT DIBAY-DILAM DPP*

ITEM	DESCRIPTION	PART NO.	MINIMUM QUANTITY**	SUPPLIERS DATA
M-4.3a	Fuel Injector Assembly		2 pcs	
M-4.3b	Top Overhauling Kit		1 set	
M-4.3c	Actuator		1 set	
M-4.3d	Jacket Water Pump Repair Kit		1 set	
M-4.3e	Lube Oil Pump Repair Kit		1 set	
M-4.3f	Fan Adaptor & Accessories including Bearings		2 sets	
M-4.3g	Rocker Gear Cover Gasket	<u>.</u>	12 pcs	
M-4.3h	Thermostat		1 set	
M-4.3i	Lub Oil Pump Switch		1 set	······································
M-4.3j	Hot Water Temp. Switch		1 set	
M-4.3k	Turbocharger Repair Kit		1 set	
M-4.3I	Exhaust Manifold Bellow		1 set	
M-4.3m	Magnetic Pick-up		1 pc	
M-4.3n	Other spare parts recommended by Manufacturer		1 Lot	
M-4.3ก.1				
M-4.3n.2				
M-4.3n.3				
M-4.3n.4				
M-4.3n.5				

NOTES:

- * The list is preliminary which is subject to changes to conform with the final design and model/brand of the proposed equipment (per manufacturer's standard). NOTE #3 of page VI-TD S(MW)-4.
- ** Quantities may be increased depending on manufacturer's required replacement intervals.



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SUPPLY, DELIVERY, INSTALLATION, TEST AND COMMISSIONING OF FOUR (4) UNITS OF MODULAR DIESEL GENSETS, ASSOCIATED ELECTRICAL EQUIPMENT AND BALANCE OF PLANT FOR BABUYAN CLARO AND DIBAY-DILAM DPP UNDER ELECTRIFICATION OF NEW AREAS IN CAGAYAN (PACKAGE 23) REV 01

SECTION VI - TECHNICAL SPECIFICATIONS

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M-4.4 SPARE PARTS FOR THE TOTAL UNITS OF 20 KW DG SET SUPPLIED AND DELIVERED AT BABUYAN CLARO DPP*

ITEM	DESCRIPTION	PART NO.	MINIMUM QUANTITY**	SUPPLIERS DATA
M-4.4a	Fuel Injector Assembly		2 pcs	
M-4.4b	Top Overhauling Kit		1 set	
M-4.4c	Actuator		1 set	
M-4.4d	Jacket Water Pump Repair Kit		1 set	
M-4.4e	Lube Oil Pump Repair Kit		1 set	
M-4.4f	Fan Adaptor & Accessories including Bearings		2 sets	
M-4.4g	Rocker Gear Cover Gasket		12 pcs	
M-4.4h	Thermostat		1 set	
M-4.4i	Lub Oil Pump Switch		1 set	
M-4.4j	Hot Water Temp. Switch		1 set	· · · · ·
M-4.4k	Turbocharger Repair Kit		1 set	
M-4.41	Exhaust Manifold Bellow		1 set	
M-4.4m	Magnetic Pick-up		1 pc	
M-4.4n	Other spare parts recommended by Manufacturer		1 Lot	
M-4.4n.1				
M-4.4n.2				
M-4.4n.3				
M-4.4n.4				
M-4.4n.5				

NOTES:

- * The list is preliminary which is subject to changes to conform with the final design and model/brand of the proposed equipment (per manufacturer's standard). NOTE #3 of page VI-TD S(MW)-4.
- ** Quantities may be increased depending on manufacturer's required replacement intervals.



SECTION VI - TECHNICAL SPECIFICATIONS

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M-5.0 STANDARD/SPECIAL TOOLS/MISCELLANEOUS TOOLS

M-5.1 STANDARD/SPECIAL TOOLS FOR THE TOTAL UNITS OF 30 KW DG SET SUPPLIED AND DELIVERED AT DIBAY-DILAM DPP (Minimum Requirements as Specified in the Technical Specifications &

Manufacturer's Standard/Recommended Tools)

ITEM	DESCRIPTION	NPC REQUIREMENT	SUPPLIERS DATA
M-5.1a	Portable computer (Minimum of Intel I7 Processor, 16GB RAM, 500GB HDD, 2Ghz, 12"-13.3" screen size & with the latest pre-installed windows operating system compatible with manufacturer's/ Supplier's software) needed in programming the genset control setting (complete with licensed CD- ROM drive dongles of genset control system) and electronic/digital governing system including other digital components that require exclusive programs from the Manufacturer and/or Supplier with free update throughout the operating life of the genset	1 set	
M-5.1b	Puller, Cylinder Liner	1 set	
M-5.1c	Puller, Generator Bearing	1 set	
M-5.1d	Puller, Injector Sleeve	1 set	
M-5.1e	Extractor, Valve Seat	1 set	
M-5.1f	Extractor, Piston Ring	1 set	
M-5.1g	Extractor, Valve Guide	1 set	
<u>M-5.1h</u>	Extractor, Valve Spring	1 set	
M-5.1i	Expander, Injector Sleeve	1 set	
M-5.1j	Reamer, Injector Sleeve	1 set	
M-5.1k	Calibrator, Injector (Range 0-600 bars)	1 set	
M-5.1I	Feeler Gauge	1 set	
M-5.1m	Special tools for overhauling and re-assembly of turbocharger	1 set	
M-5.1n	Cleaning nozzle for cleaning of turbocharger	1 set	
M-5.1o	Special tools for maintenance and cleaning of radiators and fans	1 set	
M-5.1p	Mechanical Torque Wrench with click type or dial type torque measurement indicators for cylinder head, main and guide bearing, connecting rod and all engine components utilizing bolt and nut as locking medium	1 set	
M-5.1q	Injector timing gauge	1 pc.	
M-5.1r	Standard/special tools necessary for overhauling and re-assembly of engine which are not mentioned above	1 set	
M-5.1s	Other tools recommended by the Manufacturer	1 lot	

NOTES: + Minimum requirements but the Supplier shall provide/include in the list all the necessary/standard tools required in the performance of normal maintenance and overhaul. The above list is preliminary which is subject to changes to conform with the final design and model/brand of the proposed equipment (per manufacturer's standard). Refer also to NOTE #3 of page VI-TDS(MW)-4.

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SECTION VI - TECHNICAL SPECIFICATIONS

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M-5.2 STANDARD/SPECIAL TOOLS FOR THE TOTAL UNITS OF 20 KW DG SET SUPPLIED AND DELIVERED AT BABUYAN CLARO DPP (Minimum Requirements as Specified in the Technical

Specifications & Manufacturer's Standard/Recommended Tools)

ITEM	DESCRIPTION	NPC REQUIREMENT	SUPPLIERS DATA
M-5.2a	Portable computer (Minimum of Intel I7 Processor, 16GB RAM, 500GB HDD, 2Ghz, 12"-13.3" screen size & with the latest pre-installed windows operating system compatible with manufacturer's/ Supplier's software) needed in programming the genset control setting (complete with licensed CD- ROM drive dongles of genset control system) and electronic/digital governing system including other digital components that require exclusive programs from the Manufacturer and/or Supplier with free update throughout the operating life of the genset	1 set	
M-5.2b	Puller, Cylinder Liner	1 set	
M-5.2c	Puller, Generator Bearing	1 set	
M-5.2d	Puller, Injector Sleeve	1 set	
M-5.2e	Extractor, Valve Seat	1 set	
M-5.2f	Extractor, Piston Ring	1 set	<u> </u>
M-5.2g	Extractor, Valve Guide	1 set	
M-5.2h	Extractor, Valve Spring	1 set	
M-5.2i	Expander, Injector Sleeve	1 set	
M-5.2j	Reamer, Injector Sleeve	1 set	
M-5.2k	Calibrator, Injector (Range 0-600 bars)	1 set	
M-5.21	Feeler Gauge	1 set	
M-5.2m	Special tools for overhauling and re-assembly of turbocharger	1 set	
M-5.2n	Cleaning nozzle for cleaning of turbocharger	1 set	
M-5.20	Special tools for maintenance and cleaning of radiators and fans	1 set	
M-5.2p	Mechanical Torque Wrench with click type or dial type torque measurement indicators for cylinder head, main and guide bearing, connecting rod and all engine components utilizing bolt and nut as locking medium	1 set	
M-5.2q	Injector timing gauge	1 pc.	
M-5.2r	Standard/special tools necessary for overhauling and re-assembly of engine which are not mentioned above	1 set	
M-5.2s	Other tools recommended by the Manufacturer	1 lot	

NOTES: + Minimum requirements but the Supplier shall provide/include in the list all the necessary/standard tools required in the performance of normal maintenance and overhaul. The above list is preliminary which is subject to changes to conform with the final design and model/brand of the proposed equipment (per manufacturer's standard). Refer also to NOTE #3 of page VI-TDS(MW)-4.

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SECTION VI - TECHNICAL SPECIFICATIONS

M-5.3 MISCELLANEOUS TOOLS TO BE SUPPLIED AND DELIVERED EACH AT DIBAY-DILAM DPP AND BABUYAN CLARO⁺

ITEM	DESCRIPTION	NPC REQUIREMENT	SUPPLIERS DATA
M-5.3a	Hoist, hand chain, 2 tons capacity, 3 meters lift	1 unit	
M-5.3b	Wrench, combination, 13 pcs/set	1 set	
M-5.3c	Wrench, open, 8 pcs/set	1 set	
M-5.3d	Wrench box, 7 pcs/set	1 set	
M-5.3e	Wrench, socket, 17 pcs/set	1 set	
M-5.3f	Wrench, adjustable, chrome vanadium steel, drop forged, fine polished, heavy duty, sizes: 8, 10 & 12"	1 set	
M-5.3g	Wrench, pipe, forge steel, heavy duty, sizes: 12 & 14"	1 set	
M-5.3h	Wrench, torque, 0-500 Nm	1 pc.	
M-5.3i	Plier, combination, sizes: 6, 7 & 8"	1 set	
M-5.3j	Plier, long nose, sizes: 6 & 8"	1 set	
M-5.3k	Screw driver, 6 pcs/set	1 set	
M-5.3I	Vise, size 6" swivel type, pre drilled holes for mounting	1 pc.	
M-5.3m	Caliper, digimatic, measuring range: 0-150mm, accuracy: +/- 0.02mm	1 pc.	
M-5.3n	Micrometer, outside deviation within: +/- 0.01 mm, heavy duty	1 pc.	
M-5.30	Drill, Electric, 13mm hammer drill, 220 V, 60 Hz, 710 W, 3.2a, reversible, with hammer, lock- on button and kit box	1 pc.	
M-5.3p	Bit, drill, 70 pcs/set, includes 3 position ratcheting hand drive, brad point bits-wood, twist drill bits - metal/wood/plastic/masonry	1 set	
M-5.3q	Grinder, angle, heavy duty, 220 V, 60 Hz, 750 W, 1200 rpm, single phase, variable speed	1 set	
M-5.3r	Tester, Multi, Digital	1 pc.	
M-5.3s	Meter, Clamp, Digital	1 pc.	
M-5.3t	Tester, Megger (0-1000)	1 pc.	
M-5.3u	Allen Wrench	1 set	
M-5.3v	Hammer - ball & claw (2 pcs each type)	1 set	

NOTES: + Minimum requirements but the Supplier shall provide/include in the list all the necessary/standard tools required in the performance of normal maintenance and overhaul. The above list is preliminary which is subject to changes to conform with the final design and model/brand of the proposed equipment (per manufacturer's standard). Refer also to NOTE #3 of page VI-TDS(MW)-4.



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SECTION VI – TECHNICAL SPECIFICATIONS

M-5.3 MISCELLANEOUS TOOLS TO BE SUPPLIED AND DELIVERED EACH AT DIBAY-DILAM DPP AND BABUYAN CLARO (Cont'd.....)⁺

ITEM	DESCRIPTION	NPC REQUIREMENT	SUPPLIERS DATA
M-5.3w	Filter Wrench	1 pc.	
M-5.3x	Tongue & Grove Pliers (10")	1 pc.	
M-5.3y	Precision Screwdrivers (long type)	1 set	
M-5.3z	Grease gun	1 pc.	
M-5.3aa	Locker Cabinet with 6 compartment with lock keys and ball rollers	1 set	
M-5.3bb	Tool box, heavy duty, 535mm x 250mm x 238 mm (or as required to contain all the standard/special and miscellaneous Tools)	1 set	
M-5.3cc	Other tools recommended by the Manufacturer	1 lot	
M-5.3cc.1			
M-5.3cc.2			
M-5.3cc.3			
M-5.3cc.4		·····	
M-5.3cc.5			
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NOTES: + Minimum requirements but the Supplier shall provide/include in the list all the necessary/standard tools required in the performance of normal maintenance and overhaul. The above list is preliminary which is subject to changes to conform with the final design and model/brand of the proposed equipment (per manufacturer's standard). Refer also to NOTE #3 of page VI-TDS(MW)-4.



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SECTION VI - TECHNICAL SPECIFICATIONS

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PART II – TECHNICAL DATA SHEETS

MW – MECHANICAL WORKS

DOCUMENTS TO BE SUBMITTED DURING THE PROJECT IMPLEMENTATION BUT NOT LIMITED TO:

(Sections M-6.0 to M-11.0)

NOTES

- 1. The Bidder shall complete this technical data sheet/documents and submit the filledup forms during the project implementation (during contract stage). The Bidder shall use additional sheets as necessary for any other additional information following the format shown herein or by reproducing the same.
- 2. The data required are technical features and characteristics of the Equipment to be provided by the bidder. Bidder's proposal shall at least be equal or superior to the requirements specified by NPC. The data provided shall be used as basis for evaluation of brochures, drawings and other documents to be submitted for review and approval during the project implementation.
- 3. All data and information shall be in English language.

SECTION	DESCRIPTION	PAGE		
M-6.0	M-6.0 ISO 9001 Certificate of the Manufacturer/Assembler/Integrator or equivalent for each of the Diesel Generating Set			
M-7.0	Standard Certification of the proposed offered model of Diesel Generating Set from any of the following internationally recognized certifying body/organization:			
	a) Canadian Standard Association (CSA)			
ĺ	b) Underwriter's Laboratories (UL)			
	c) Japanese Industrial Standards (JIS)			
	d) European Commission (CE)			
	e) Lloyd's Register (LR)			
	f) Germanischer Lloyd (GL)			
	g) Niippon Kaiji Kyokai (NKK)			
	h) American Bureau of Shipping (ABS)			



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SUPPLY, DELIVERY, INSTALLATION, TEST AND COMMISSIONING OF FOUR (4) UNITS OF MODULAR DIESEL GENSETS, ASSOCIATED ELECTRICAL EQUIPMENT AND BALANCE OF PLANT FOR BABUYAN CLARO AND DIBAY-DILAM DPP UNDER ELECTRIFICATION OF NEW AREAS IN CAGAYAN (PACKAGE 23) REV 01

SECTION VI - TECHNICAL SPECIFICATIONS

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Cont'd.....

DOCUMENTS TO BE SUBMITTED DURING PROJECT IMPLEMENTATION BUT NOT LIMITED TO:				
SECTION	DESCRIPTION	PAGE		
M-8.0	Power Derate Curves and Details or Certificate/Statement from Diesel Generating Set's Manufacturer/Assembler/ Integrator that the proposed Diesel Engine-Generator Set have no deration at Reference Site Conditions.			
M-9.0	 Manufacturer/Assembler/Integrator's General Data, Catalogue and Brochures of model/type of equipment offered and published as standard products for the Diesel Generating Set which contain the following information: i) Manufacturer/Assembler j) Model/Type k) Prime Rated Power l) Voltage m) Power Factor n) Frequency o) Rated Speed p) Arrangement & Number of Cylinders 			
M-10.0	Technical Data for Engine and Auxiliaries	See Attached Forms on page VI-TDS(MW)-17		
M-11.0	Supplier/Manufacturer/Assembler Drawings, Brochures, Instruction Manuals and other Documents as specified in Clause GW-6.3 and other relevant Clauses of the Technical Specifications			



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SUPPLY, DELIVERY, INSTALLATION, TEST AND COMMISSIONING OF FOUR (4) UNITS OF MODULAR DIESEL GENSETS, ASSOCIATED ELECTRICAL EQUIPMENT AND BALANCE OF PLANT FOR BABUYAN CLARO AND DIBAY-DILAM DPP UNDER ELECTRIFICATION OF NEW AREAS IN CAGAYAN (PACKAGE 23) REV 01

SECTION VI - TECHNICAL SPECIFICATIONS

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M-10.0 DIESEL ENGINE

ITEM	DESCRIPTION	NPC	SUPPLIER'S DATA	
		REQUIREMENT	30 kW	20 kW
M-10.1	DIESEL ENGINE			
M-10.1.1	Fuel Rate at Required Prime Power Output & Reference Site Conditions for DG Set			
	75 % Rated Load, Li/kW-hr	By Supplier		
	50 % Rated Load, Li/kW-hr	By Supplier		
	25 % Rated Load, Li/kW-hr	By Supplier		
M-10.1.2	Number of Strokes	4		
M-10.1.3	Rotating Direction (Viewed from Flywheel Side)	By Supplier		
M-10.1.4	Required Time from Starting Signal to Rated Speed, min.	By Supplier		
M-10.1.5	Maximum Time from "Cold Condition" to Rated Speed w/ Load and w/o AC power available for motor-driven auxiliaries, min.	By Supplier		
M-10.1.6	Heaviest part of D/G set for maintenance, kg	By Supplier		
M-10.1.7	Idling Speed Recommended, RPM	By Supplier		[
M-10.1.8	Duration of Idling (maximum), min.	By Supplier		
M-10.1.9	Minimum Load @ Normal Speed, kW	By Supplier		
M-10.1.10	Maximum Load @ Normal Speed, kW	By Supplier		
M-10.1.11	Engine Heat Dissipation, kJ/hr	By Supplier		
M-10.1.12	Engine Mechanical Efficiency, η_m	By Supplier		
M-10.1.13	Numerical Values for Power Adjustment Parameters (Exponents) for high speed per Table 2 of ISO 3046, a, m, n, s	By Supplier		a= m= n= s=
M-10.1.14	Expected Useful Life of Unit @ Prime Rated Power, Year	10		



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SUPPLY, DELIVERY, INSTALLATION, TEST AND COMMISSIONING OF FOUR (4) UNITS OF MODULAR DIESEL GENSETS, ASSOCIATED ELECTRICAL EQUIPMENT AND BALANCE OF PLANT FOR BABUYAN CLARO AND DIBAY-DILAM DPP UNDER ELECTRIFICATION OF NEW AREAS IN CAGAYAN (PACKAGE 23) REV 01

SECTION VI - TECHNICAL SPECIFICATIONS

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M-10.0 DIESEL ENGINE (Cont'd.....)

ITEM	DESCRIPTION	NPC REQUIREMENT	SUPPLIER'S DATA	
			30 kW	20 kW
M-10.2	LUBRICATING OIL SYSTEM			
M-10.2.1	Total Lube Oil System Capacity, liters	By Supplier		
M-10.2.2	Lube Oil Consumption of the Engine, g/kwhr	By Supplier	-	
M-10.2.3	Lube Oil Pump Capacity, m ³ /hr	By Supplier		
M-10.2.4	Lube Oil Filter Mesh, microns	By Supplier		
M-10.2.5	Lube Oil Filter Type & Capacity	Spin-On Full Flow		
M-10.2.6	Lube Oil Priming Pump Capacity, if applicable, m ³ /hr	By Supplier		
M-10.3	STARTING SYSTEM	F		
M-10.3.1	Battery Capacity, AH	By Supplier		
M-10.3.2	Starting Voltage, V	24 or 12		
M-10.3.3	Starting Motor Rating, HP	By Supplier		
M-10.3.4	Full Load Cranking Current, A	By Supplier		
M-10.3.5	Battery Charging Type	By Supplier		
M-10.3.6	Battery Charger Charging rate	By Supplier		
M-10.3.7	Time of Cranking, sec	30		
M-10.4	EXHAUST SYSTEM			
M-10.4.1	Exhaust Gas Flow, m ³ /hr	By Supplier		
M-10.4.2	Exhaust Gas Temperature, ⁰ C	By Supplier		
M-10.4.3	Maximum Allowable Back Pressure, mmH ₂ O	By Supplier		
M-10.4.4	Exhaust Pipe (nom. Diameter x length x weight), mm x mm x kg	By Supplier		
M-10.4.5	Silencer (nom. Diameter x length x weight), mm x mm x kg	By Supplier		
M-10.4.6	Exhaust Pipe Material, ASTM	A 106 or as required		
M-10.4.7	Silencer Material, ASTM	A 106 or as required		



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SUPPLY, DELIVERY, INSTALLATION, TEST AND COMMISSIONING OF FOUR (4) UNITS OF MODULAR DIESEL GENSETS, ASSOCIATED ELECTRICAL EQUIPMENT AND BALANCE OF PLANT FOR BABUYAN CLARO AND DIBAY-DILAM DPP UNDER ELECTRIFICATION OF NEW AREAS IN CAGAYAN (PACKAGE 23) REV 01

SECTION VI - TECHNICAL SPECIFICATIONS

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M-10.0 DIESEL ENGINE (Cont'd.....)

ITEM	DESCRIPTION	NPC REQUIREMENT	SUPPLIER'S DATA	
			30 kW	20 kW
M-10.5	INTAKE AIR SYSTEM			
M-10.5.1	Air Intake Flow (Free Air), m ³ /hr	By Supplier		
M-10.5.2	Air Filter Type	By Supplier		
M-10.5.3	Turbocharger Type	By Supplier		
M-10.5.4	Turbocharger, RPM	By Supplier		
M-10.5.5	Charge Air Cooler Type	By Supplier		
M-10.5.6	Total Air Flow Required for Ventilation & Combustion, m ³ /hr	By Supplier		
M-10.6	COOLING SYSTEM (Coolant for initial filli Engine)	ng shall be provide	d By Sup	plier per
M-10.6.1	Total Cooling Water Capacity, Liters	By Supplier		:
M-10.6.2	Cooling Water Pump Capacity, m ³ /hr	By Supplier		
M-10.6.3	Jacket Water Pump Capacity, m ³ /hr	By Supplier		
M-10.6.4	Radiator Fan Air Flow, m³/hr	By Supplier		
M-10.6.5	Radiated Heat to Ambient, kw/hr	By Supplier		
M-10.6.6	Expansion Tank Capacity and Elevation, if applicable, liters and m.	By Supplier		
M-10.6.7	Radiator Dimensions (I x w x h), m	By Supplier		
M-10.6.8	Core Material	Aluminum		
M-10.6.9	Recommended cooling water properties such as ph, hardness, TDS, etc., ASTM			
	PH Value, ppm	By Supplier		
	Total Hardness	By Supplier		
	TDS, ppm	By Supplier	· · ·	
	Chloride	By Supplier	· · · ·	
	Sulfate, ppm	By Supplier		
	Silica, mg/l	By Supplier		
	Iron, ppm	By Supplier		
-	Conductivity, uS/cm	By Supplier		

Name of Firm

Name & Signature of Representative

Designation



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SUPPLY, DELIVERY, INSTALLATION, TEST AND COMMISSIONING OF FOUR (4) UNITS OF MODULAR DIESEL GENSETS, ASSOCIATED ELECTRICAL EQUIPMENT AND BALANCE OF PLANT FOR BABUYAN CLARO AND DIBAY-DILAM DPP UNDER ELECTRIFICATION OF NEW AREAS IN CAGAYAN (PACKAGE 23) REV 01

SECTION VI - TECHNICAL SPECIFICATIONS

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M-10.0 DIESEL ENGINE (Cont'd.....)

ITEM	DESCRIPTION	NPC	SUPPLIER'S DATA	
		REQUIREMENT	30 kW	20 kW
M-10.7	FUEL SYSTEM			
M-10.7.1	Fuel Feed Pump Capacity, m ³ /hr	By Supplier		
M-10.7.2	Discharge Head of Feed Pump, m	By Supplier		
M-10.7.3	Fuel Filter Type and Mesh, microns	Spin-On Full Flow		
M-10.7.4	Injection Nozzle Type	By Supplier		
M-10.7.5	Fuel Day Tank Capacity, m ³	1		
M-10.7.6	Fuel Day Tank Type (Elevated)	Rectangular or Approved Shape		
M-10.7.7	Fuel Tank Dimensions (W x L x H), m	Per Drawings		-
M-10.7.8	Fuel Tank Plate Material, ASTM	A 36		
M-10.7.9	Fuel Tank Shell Thickness, mm	5 (minimum)		
M-10.7.10	Structural Steel Supports	included		



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SUPPLY, DELIVERY, INSTALLATION, TEST AND COMMISSIONING OF FOUR (4) UNITS OF MODULAR DIESEL GENSETS, ASSOCIATED ELECTRICAL EQUIPMENT AND BALANCE OF PLANT FOR BABUYAN CLARO AND DIBAY-DILAM DPP UNDER ELECTRIFICATION OF NEW AREAS IN CAGAYAN (PACKAGE 23) REV 01

SECTION VI - TECHNICAL SPECIFICATIONS

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M-10.0 DIESEL ENGINE (Cont'd.....)

ITEM	DESCRIPTION	NPC	SUPPLIER'S DATA	
		REQUIREMENT	30 kW	20 kW
M-10.8	ENCLOSURE (Weatherproof & Soundproof)			
M-10.8.1	Manufacturer	By Supplier		
M-10.8.2	Max. Sound Pressure Level @ 1-m distance, dBA	85		
M-10.8.3	Dimensions ($L \times W \times H$), m	By Supplier		
M-10.8.4	Enclosure Walls Thickness, mm	2 minimum		
M-10.8.5	Enclosure Roof Thickness, mm	2 minimum		
M-10.8.6	Enclosure Material, ASTM	A 36		_
M-10.8.7	Insulation Material	Oil-water resistant and fire retardant insulation and sound attenuating material		
M-10.8.8	Hinges Material	Stainless Steel	· · -	
M-10.8.9	Total Weight (Genset, Auxiliaries & Enclosure), kg	By Supplier		
M-10.9	ENGINE METERING AND INDICATION			
M-10.9.1	RPM Meter (RPM) *	Included		
M-10.9.2	Hours Run Counter (hours) *	Included		
M-10.9.3	Oil Pressure (kg/cm ²) *	Included		
M-10.9.4	Oil Temperature (⁰ C) *	included		
M-10.9.5	Cooling Water Temperature (⁰ C) *	Included		
M-10.9.6	Cylinders Exhaust Gas Temperature (⁰ C)	Optional		
M-10.9.7	Battery Voltage, V	Included		
M-10.9.8	Ready to Start	Included		
M-10.9.9	Remote Control Position Indication	Included		

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BID DOCUMENTS

SUPPLY, DELIVERY, INSTALLATION, TEST AND COMMISSIONING OF FOUR (4) UNITS OF MODULAR DIESEL GENSETS, ASSOCIATED ELECTRICAL EQUIPMENT AND BALANCE OF PLANT FOR BABUYAN CLARO AND DIBAY-DILAM DPP UNDER ELECTRIFICATION OF NEW AREAS IN CAGAYAN (PACKAGE 23) REV 01

SECTION VI - TECHNICAL SPECIFICATIONS

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M-10.0 DIESEL ENGINE (Cont'd.....)

ITEM	DESCRIPTION	NPC	SUPPLIER'S	
		REQUIREMENT	30 kW	20 kW
M-10.10	ENGINE PROTECTION AND ALARM			
M-10.10.1	Engine Overspeed	Included		
M-10.10.2	Lube Oil Pressure Low	Included		
M-10.10.3	Lube Oil Temperature High	Included		
M-10.10.4	Cooling Water Temp. High	Included		
M-10.10.5	Cooling Water Temp. Low	Optional		
M-10.10.6	Fuel Day Tank Level High	Included		
M-10.10.7	Fuel Day Tank Level Low	Included		
M-10.10.8	Battery Voltage High	Included		
M-10.10.9	Battery Voltage Low	Included		
M-10.10.10	Failure to Crank	Included		
M-10.10.11	Overcrank	Included		
M-10.10.12	Annunciator Window with Common Audio alarm	Included		
M-10.11	HUMAN MACHINE INTERFACE CONTROL			
M-10.11.1	Manual Start/Stop *	Included		-
M-10.11.2	Auto/Remote Start	Included	·	
M-10.11.3	Test Run Auto	Included		
M-10.11.4	Emergency Stop *	Included		
M-10.11.5	Alpha/Numeric Screen	Included		
M-10.11.6	Discrete Status Indicators	Included		
M-10.11.7	Fault Reset	included		

NOTE: * These monitoring/control points shall also be provided at DG Set Enclosure-mounted panel with viewing window

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