

**EPC Package for Andaman & Nicobar Gas Power Project (50 MW)**  
**Pre-Bid Clarifications**

| SL. NO. | ENQUIRY SPECIFICATION |          |          |                   | SPECIFICATION REQUIREMENT                           | COMMENTS / CLARIFICATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Owner's Reply                                                                                                                                |
|---------|-----------------------|----------|----------|-------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|         | SEC/ PART             | SUB SEC. | PAGE NO. | CLAUSE NO.        |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                              |
| 1.      | VI/A                  | Vol III  | 6/69     | 12.02.00 (a)      | Fire Water Pumping System                           | We understand that fire protection pumps & drive shall be provided as per TAC.                                                                                                                                                                                                                                                                                                                                                                                                     | Fire protection pumps & drive shall be provided as per TAC and other relevant standards as per specification.                                |
| 2.      | VI/A                  | Vol III  | 10/69    | 13.00.00 (b)      | Air-conditioning system for main plant control room | We understand that Packaged Air conditioners(PAC) (Ductable type) of suitable capacity with N+1 as redundancy shall be provided for Main Plant Control room building.                                                                                                                                                                                                                                                                                                              | Packaged Air conditioners (Ductable type) of suitable capacity with 100 % redundancy shall be provided for Main Plant Control room building. |
| 3.      | VI/A                  | Vol VI   | 9/71     | 8.03.01 B (xxvii) | Model study reports wherever applicable.            | NVVN to clarify which Model study report shall be submitted.                                                                                                                                                                                                                                                                                                                                                                                                                       | Applicability to be finalised during detail engineering.                                                                                     |
| 4.      | VI/B                  | M4       | 2/36     | 2.01.00           | HSD unloading area                                  | We understand that HSD is not applicable for this project.                                                                                                                                                                                                                                                                                                                                                                                                                         | Bidder's understanding is correct. Bidder to refer amendment in this regard.                                                                 |
| 5.      | VI/B                  | M4       | 13/36    | 7.00.00           | Fire Water Pumps                                    | <p>We understand that Common Hydrant &amp; Spray water pump shall be provided the complete plant. Also one number motor driven shall be provided as stand-by pump.</p> <p>Also one additional diesel driven pump shall be provided as stand-by pump.</p> <p>Hence if one hydrant &amp; spray pump will meet the plant requirement, then 3 nos of pump (2 motor driven (1W+1S) + 1 DG driven) shall be provided in the system.</p> <p>NVVN to confirm the bidder understanding.</p> | Bidder to refer Annexure-II to Chapter-M4, Volume-I, Part-B of Technical Specification.                                                      |

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| 6. | VI/B | II-E1 | 2/9  | 1.06.00 (C)    | <p>GENERAL ELECTRICAL SPECIFICATION</p> <p>HT motors volatge rating shall be 3.3kV for motors Above 200 KW and upto 1500 KW .<br/> HT motors volatge rating shall be 11kV for motors Above above 1500 KW.</p> <p><b>Following Voltage levels are proposed by Bidder</b></p> <p>i) For Motors 200kW to 1.5MW, Voltage levels shall be 3.3kV<br/> or For Motors 200kW to 2.5MW, Voltage level shall be 6.6kV<br/> or For Motors 200KW &amp; above, Voltage level shall be 11kV .<br/> Based on this, exact Medium Voltage level for distribution will be selected during detailed engineering.</p> | Bidder to select voltage levels as per CI 1.06.00 Chapter II E-1 Volume II Section VI Part B. |
| 7. | VI/B | II-E9 | 4/21 | 3.00.00<br>b-2 | <p>MV SWITCHGEARS<br/> Technical parameters</p> <p>Temper Rise allowed above 50 deg C ambient is 40 deg C for plain joints &amp; 55 deg C for Silver-plated joints.<br/> (i.e With ambient of 50 degC , the temperature allowed on plain joints is 90 deg C and for silver plated joints is 105 deg C<br/> Where as per cl.no 5.3.9 of IEC-62271-1 , maximum temperature allowed for silver plated joints is 115 deg (i.e temperature rise is 65 deg c on ambient temperature of 50 degc ).<br/> Please allow temperature rise for silver plated joints as IEC62271.</p>                         | Technical Specification requirement to be complied.                                           |

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| 8. | VI/B | II-E9 | 12/21 | 5.01.00            | MV SWITCHGEARS | As per schemes and specifications of MV switchgear , All numerical relays in MV switchgear shall be interfaced with DDCMIS system on IEC61850 protocol and breaker on/off commands from DDCMIS.We would like propose the followingi) On/OFF commands, On/OFF/Trip Feed backs shall be hard wired. Balance all the signals will communicated through soft on IEC 61850 Protocol to DDCMIS.ii) Kindly share the proposed architecture to be followed for interfacing of Numerical relays with DDCMIS.iii) Detailed IO list for both hard wired and soft so that all the Bidders will be considered same and on par.iv) Kindly clarify whether DDCMIS can be part of Plant DCS or should be separate like SCADA.v) There is no hard wired control panel is required as per spec. Only hardwired Generator control/Synchronisation panel will be considered. | For MV Switchgear following feedback to Hardwired 1)Breaker ON & In service 2)Bus No voltage(For incomer) 3)Synch OK(INC and B/C) 4)EPB ON feedback(DA/DAF) 5)Trip command from DCS 6)Close command for DCS. Rest other signals may be envisaged from NR to DCS directly through IEC 61850 protocol or OPC protocol |
| 9. | VI/B | II-E9 | 12/21 | Scheme for feeders | MV SWITCHGEARS | As per schemes, Multifunction numerical relay is having two setting groups, please clarify two setting groups and operating philosophy.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1) Two setting groups are meant to differentiate two settings in motor. For example while starting period we keep setting of inst overcurrent as 10xImot and while motor crossed the starting time it should have Inst OC setting 6xIn.                                                                             |

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| 10. | VI/B | II-E9  | 8/21  | 6.00.00<br>(b) | MV SWITCHGEARS<br>DESIGN AND CONSTRUCTION FEATURES | DESIGN AND CONSTRUCTION FEATURES :<br>Height of the Switchgear Panel shall not to exceed 2600 mm. In this regard,<br><br>Height of the switchgear shall be selected as per OEM type tested design panels.                                                                                                                                                                                                                                                                                             | Technical Specification requirement to be complied.                                                                                                                                                                                                           |
| 11. | VI/B | II-E6  | 6/14  | 3.00.00        | Type of Lighting Fixture                           | As per clause, conventional type luminaires shall be used for DC lighting & hazardous areas. However, Conventional fixtures are being phased out by all Major OEMs and LED fixtures are offered due to Higher efficiency. Hence, LED fixtures shall be provided for DC and Hazardous area. Please confirm the same.                                                                                                                                                                                   | LED fixtures shall be used for DC and Hazardous areas.                                                                                                                                                                                                        |
| 12. | VI/B | II-E6  | 13/14 | Annexure-B     | Lux level for DC emergency Lighting                | As per Annexure-B, DC emergency lighting is to be designed in Unit Control room and Control Equipment room with 100Lux level in case of failure of AC lighting. However, only few DC fixtures are to be provided for safe evacuation in each area as per Cl. 3.03.01 of Chapter-II-E7. Both clause are contradictory in nature. We are proceeding with Cl. 3.03.01 of Chapter- II-E7 as lumen output of DC fixture is very low and achieving 100 Lux level is very difficult. Please accept the same. | Technical specification is clear. Bidder to comply Technical specification. Please note that for Control room, 100Lux shall be provided using DC fixtures and for other area 's DC fixtures shall be provided at strategic location and for safe evacuations. |
| 13. | VI/B | II-E13 | 23/26 | 10.00.00       | MAINTENANCE, TESTING & MONITORING EQUIPMENTS       | List of Testing and monitoring equipments for transformers is provided in the specified Clause. Please confirm if the equipments mentioned in list are to be supplied by Bidder.                                                                                                                                                                                                                                                                                                                      | The listed equipments are in scope of supply of the bidder.                                                                                                                                                                                                   |

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| 14. | VI/B | II-E1 | 5/9<br>8/9 | 2.05.00<br>6.02.00 | 33KV CABLES    | As per Clause 6.02.00, 33kV system shall be solidly earthed.<br>As per clause 2.05.00, all HT Cables shall be Unearthed grade.<br>For solidly earthed 33kV system, 33kV(UE) cable is not required. Hence 33KV Earthed grade HT cables are being considered by Bidder. Please confirm.                                                                                                                                                                                                                                                                                                           | Bidder's understanding is correct. For 33kV system, 33kV Earthed grade HT cables are to be considered. |
| 15. | VI/B | II-E5 | 4/7        | 2.11.00            | LT Cable sizes | As per clause 2.11.00, all LT power cables of sizes more than 120 sq.mm. shall be XLPE insulated and sizes shall be of 1Cx150, 1Cx300, 1Cx630, 3Cx150 & 3Cx240 sq.mm However for cable sizes upto 120 sq.mm. both XLPE insulated & PVC insulated LT power cables are acceptable.<br><br>Single core XLPE insulated cables of all standard sizes (as per IS standards) upto and including 630 sq.mm. are being considered by Bidder<br>Multi core XLPE insulated cables of all standard sizes (as per IS standards) upto and including 300 sq.mm. are being considered by Bidder<br>Pls confirm. | Technical specification is clear. Bidder to comply Technical specification requirement.                |

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| 16. |      |        |         |                 | General                           | We understand 33kV switchgear will be connected with 33kV cables (owner scope) for transmission lines (owner). Pl. clarify our understanding is correct. There is no outdoor switchyard is applicable. As per this our terminal point will at 33kV Breaker feeder. | Bidder's understanding is not correct. Bidder to refer the tender SLD, in which it is clearly mentioned that interconnection to 33kV O/G feeders shall be in bidder's scope. 33kV line shall be terminated at plant boundary. |
| 17. | VI/B | Vol IV | 380/581 |                 | Guard wall, jetty                 | As per the tender spec, it is understood that jetty and Guard wall are not in bidder scope. Please confirm.                                                                                                                                                        | Jetty and Guard wall as shown in (black colour) Genral Layout plan Drg. 6400-999-POC-F-01 are not in bidder scope.                                                                                                            |
| 18. | VI/B | Vol IV | 9/37    | 4.01.02         | Geotechnical investigation        | In tender spec it is mentioned that "Geotechnical investigation work shall be got executed by the Contractor through the agencies as mentioned in Clause No. 1.06.03". The clause 1.06.03 is not available in the tender specification. Please furnish the same.   | Please refer amendment in this regard.                                                                                                                                                                                        |
| 19. | VI/B | Vol IV | 24/37   | 13.01.00<br>(i) | GRIHA 3 star rating               | It is assumed that design of building as per customer guidance is only in Bidder's scope. Getting 3 star GRIHA rating, approval process etc is not in bidders scope. Please confirm.                                                                               | Bidder is requested to adhere with provision of technical specification. It is in bidder's scope.                                                                                                                             |
| 20. | -    | -      | -       | -               | Quantities of filling and cutting | Please furnish the quantities of cutting and filling for tender estimation purpose (for maintaining formation level of 6.50m).                                                                                                                                     | Quantities of cutting and filling for tender estimation purpose shall be done by bidder on basis of Topographical Survey drawing CCPL/1128/2 enclosed with technical specification.                                           |

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| 21. | VI/B | II-E2  | 5/5   | 6.01.01     | (Generator - Type test- Short Circuit heat run test )                            | Temperature rise Test at manufacturing works shall be performed by ZPF Heat Run Method as per Cl. 6.2.3 IEE - 115 / Cl.25.2.3 of IS:7132 by Generator shall be tested in Motoring mode | Temperature rise test shall be preferably carried out as per Cl 25.2.1. of IS 7132. However, other methods shall also be acceptable subject to employer's approval considering the test bed limitations/accuracy of test method. |
| 22. | VI/B | II-E8  | 10/12 | 11.02.0 (3) | Regulation test                                                                  | Regulation test shall be done at site with Excitation equipment and engine.                                                                                                            | Technical specification is clear. Bidder to comply technical specification. The type test of regulation shall be done at OEM works.                                                                                              |
| 23. | VI/B | II-E10 | 2/9   | 2.00.00     | PCC-Single Front<br>MCC-Single/Double Front<br>ACDB/DCDB-Single/Double front     | We are proposing<br>PCC-Single Front<br>MCC-Double Front<br>ACDB /DCDB-Double Front                                                                                                    | Accepted                                                                                                                                                                                                                         |
| 24. | VI/B | II-E10 | 3/9   | 4.00.00     | TEMPERATURE RISE                                                                 | Temperature rise shall be as per IEC Standard                                                                                                                                          | 40 deg C for plain joints and 55 deg C for silver plated joints at ambient temp 50 des C                                                                                                                                         |
| 25. | VI/B | II-E10 | 3/9   | 5.04.01     | Control circuits shall operate at suitable voltage of 110V AC or 220V DC/110V DC | For breaker feeder Control supply shall be 220 V DC<br>For motor feeder control supply shall be 110 V AC                                                                               | Bidder understanding is in order.                                                                                                                                                                                                |
| 26. | VI/B | II-E10 | 7/9   | 6.01.00 (6) | Busbars shall be of high conductivity aluminium alloy or copper                  | We are proposing AL as busbar material                                                                                                                                                 | Accepted                                                                                                                                                                                                                         |
| 27. | -    | -      | -     | -           |                                                                                  | We shall proposing single tier arrangement for Incomer and Bus coupler ACB feeder. For outgoing Breaker feeder, we shall provide two tier arrangement.                                 | Accepted                                                                                                                                                                                                                         |

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| 28. | -    | -     | -   | -       |                                             | We propose Operating height from 200mm to 2000mm as it reduces the panel size.                                                                                                                                                                                                                                                                                       | Operating height shall be from 300mm to 2000mm                                                                                                 |
| 29. | -    | -     | -   | -       |                                             | We are proposing 10% spare feeder for outgoing ACB controlled Motor feeder, supply feeder and other outgoing feeders. No spare feeders shall be provided for Incomers/Bus coupler/Bus & Line PT/ CST modules for all PMCC/MCC/ACDB / DCDB.                                                                                                                           | 20 % or minimum one for ACB/MCCB outgoing. For Incomer/Buscoupler and Line/Bus PT no spare to be considered.                                   |
| 30. | -    | -     | -   | -       |                                             | We are proposing below 30 KW-MPCB<br>30 KW to 110 KW -MCCB , Contactor controlled<br>above 110 KW-Acb controlled                                                                                                                                                                                                                                                     | Below 30 KW-MPCB<br>+ <b>CONTACTOR</b><br>30 KW to 110 KW -MCCB<br>+Contactor controlled <b>+OLR</b><br>above 110 KW-Acb controlled <b>+NR</b> |
| 31. | -    | -     | -   | -       |                                             | Kindly provide LT busduct details                                                                                                                                                                                                                                                                                                                                    | NSPBD,415V,2.5 KV(1 MIN pf),50KA<br>1SEC,105(PEAK/DYNAMIC)                                                                                     |
| 32. | VI/A | Vol V | 9/9 | 3.01.00 | Liquidated damage for performance shortfall | Contractor's aggregate liability to pay liquidated damages for failure to attain the functional guarantee shall not exceed <del>twenty five percent (25%)</del> five (5%) of the Total Contract Price i.e. sum of all the three contract price. The functional guarantees shall include net heat rate of the engine, net output of genset and availability of plant. | Bidder to comply specification requirement.                                                                                                    |



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| 33. | VI/B |  |  |  | Vendor List | <p>BHEL is an ISO 9001 company with an elaborate system for vendor evaluation. As is the practice with all International contractors, BHEL prefers to operate based on its standard approved vendor list. This is based on the following:</p> <ol style="list-style-type: none"> <li>1.BHEL's approved vendors have knowledge of BHEL's quality systems.</li> <li>2.BHEL has knowledge on the actual site working of these vendors.</li> <li>3. Interface engineering shall be smooth.</li> <li>4.Vendors and model nos. have been chosen &amp; groomed with respect to specific requirements of plant application, working in tandem with interfaces of BHEL make equipment/other packages of BHEL approved makes.</li> </ol> <p>In view of above, it is proposed to go on with BHEL standard vendor list. <b>Further, any other equipment, which are in-house manufactured by BHEL, shall be from BHEL only irrespective of same not being part of sub-Contractor/ Vendor list. For site works BHEL shall invite open tender. The shortlisted subcontractors list shall be forwarded to Owner for information.</b></p> | <p>BHEL's vendor list may be reviewed during detailed engg.<br/> For site works, BHEL's approved list may be furnished.</p> |
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