

RFQ: RCKMOU02 DTD 22-08-2017

Battery Energy Storage System (BESS) for 17 MW Solar PV Project at Manglutan in South Andaman, in Andaman & Nicobar Islands

AMMENDMENT-01 DTD 26-08-2017

Sl.No.	Section / Clause	Amendment description	Remarks
1	Section 1,2,3	Revised IFB, ITB and SCC	Generally revised
2	Section 4	NTPC GCC & SCC with NTPC Amendments & Clarifications NTPC Terms of Payment Price Schedules to be filled in by Bidder List of Approved Banks for BG	Added
3	Section 5	Technical specifications	Already uploaded
4	Section 6	Added Forms & Attachments & Check List	Additions
5	Section 1- ITB	Last Date & Time for receipt of bids by email / hard copy of bids Date & Time of Bid opening Part – I (email)	04.09.2017 upto 13.00 hrs. 04.09.2017 at 13.30 hrs.

List of Consortium Banks (As on 22.02.2017)

	Nationalised Banks		Nationalised Banks
1	Allahabad bank	19	Vijaya Bank
2	Andhra bank		Public Sector Banks
3	Bank of Baroda	20	IDBI
4	Canara Bank		Foreign banks
5	Corporation bank	21	CITI Bank N.A
6	Central bank	22	Deutsche Bank AG
7	Indian Bank	23	The Hongkong and Shanghai Banking Corporation Limited
8	Indian Oversea Bank	24	Standard Chartered Bank
9	Oriental bank of Commerce	25	J P Morgan
10	Punjab National Bank		
11	Punjab & Sindh Bank		Private banks
12	State Bank of India	26	Axis Bank
13	State Bank of Hyderabad	27	The Federal Bank Limited
14	Syndicate Bank	28	HDFC
15	State Bank of Travancore	29	Kotak Mahindra Bank
16	UCO Bank	30	ICICI
17	Union Bank of India	31	Indusind Bank
18	United Bank of India	32	Yes Bank

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 1 OF

INDEX

Section 1	:	Invitation for Bids (IFB)
Section 2	:	Instructions to Bidders (ITB)
Section 3	:	Special Conditions of Contract (SCC)
Section 4	:	NTPC Terms & Conditions of Contract
Section 5	:	Technical Specification (TS)
Section 6	:	Forms and Procedures (FP)

Bid Form & Attachments (Techno-Commercial Bid)
 Bid Form & Attachments along with Price Schedules (Price Bid)

1. Performance Security Forms
2. Form of Joint Deed of Undertaking
3. Form of MoU to be signed with Associate / Collaborate
4. Check List for Bidder's Compliance
5. Form of Bank Guarantee by Associate/Collaborator

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 2 OF

SECTION - 1

INVITATION FOR BIDS (IFB)

NTPC Ltd. has invited Bids vide **IFB No.: 40073898** and **Tender No: RE-CS-5728-004(B)-9 dated 05-05-2017** for Battery Energy Storage System (BESS) for 17 MW Solar PV Project at Manglutan in South Andaman, in Andaman & Nicobar Islands. The scope of work includes Design, Engineering, Supply, Packaging and Forwarding, Transportation, Unloading, Storage, Installation, Testing, Commissioning, Grid Integration with 17 MW Solar PV Plant and 33 kV grid, of **6 MW, 24 MWh (at 33KV output throughout life of 25 Years)** Battery Energy Storage System (BESS, PCU, Transformers, BMS, EMS, Switchgears, Cables, Illumination, SCADA, weather prediction system, fire detection system, 33KV Metering Station etc. required for smooth operation) including twenty five year Operation and Maintenance (O&M) works on turnkey basis. The scope of work also includes Operation and Maintenance of the entire system for twenty five years including one year warranty period.

Bharat Heavy Electricals Ltd., Electronics Division, Bangalore, Karnataka State, India Invites Sealed bids in English (one original and six identical copies) are invited in 2 parts , Part-I (Techno-Commercial Bid including Qualification Bid and Part-II: Priced Bid) from eligible and qualified Battery Energy Storage System manufacturers / suppliers, for selecting Techno-commercially best and Pricewise Lowest Associate for participating as BHEL's Associate for Bidding for above Tender of NTPC Ltd..

Tender No. RCKMOU02 , dt.22.08.2017.	
Cost of Tender Documents	NIL
Tender document Sale Period	Hosted on Web Site of BHEL
Backup Bid Guarantee Amount to BHEL by successful bidder	₹ 4,50,00,000/- or Equivalent USD or Euro
MoU Guarantee Amount to BHEL by successful Bidder	1% of Bidder's quoted Price
Bank Guarantee for Deed of Joint Undertaking to NTPC by Selected Associate / Collaborator in case of Award of contract to BHEL	2% of Bidder's share of Contract Price.
Bank Guarantee for Contract Performance Security to BHEL by Selected Associate / Collaborator in case of Award of contract to BHEL	10% of the Associate's / Collaborator's share of Contract Price.
Last Date & Time for receipt of bids by email / hard copy of bids	04.09.2017 upto 13.00 hrs.
Date & Time of Bid opening Part – I (email)	04.09.2017 at 13.30 hrs.
Date & Time of Bid opening Part – II	Will be intimated Later

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 3 OF

Note: Bidders who participate in this Tender of BHEL and submit Bids in full compliance of this ITB shall be considered for Epanellement as BESS Vendor of BHEL.

For further details please please visit our web site: www.bheledn.com or www.bhel.com, or www.tenders.gov.in. All corrigenda, addendum, amendments, time extensions, time extensions, clarifications, etc (if any) to the Tender will be hosted on these websites www.bheledn.com or www.bhel.com only. Bidders should regularly visit websites to keep themselves updated.

Note: Registration procedure for items required by BHEL is always open at <https://suppliers.bhel.in>. Prospective suppliers (including MSEs and owned by SCs / STs (may visit this site and apply for registration in the respective Unit.

GENERAL MANAGER (SC&PV)

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 4 OF

SECTION – 2

INSTRUCTIONS TO BIDDERS (ITB)

1.0. DETAILED INVITATION FOR BIDS:

BHEL-Electronics Division, Bangalore is participating in the ICB tender floated by NTPC for Battery Energy Storage System for 17 MW Solar PV Project at Manglutan in South Andaman, A&N Islands. BHEL will be participating in this Tender of NTPC as the lead Bidder by associating / collaborating with a Battery Energy Storage System manufacturer / supplier who meets the stipulated qualification requirement. Bidder's brief scope of work shall be as follows. Detailed scope of work is listed elsewhere in this NIT.

BHEL invites bids from eligible bidders in TWO PARTS (i.e. Part-I: Techno-Commercial Bid and Part-II: Price Bid) from eligible bidders for Associating with BHEL for participating in NTPC Tender for Battery Energy Storage System for 17 MW Solar PV Project at Manglutan in South Andaman, A&N Islands

2.0. BRIEF SCOPE OF WORK

The scope shall cover Design, Engineering, Supply, Packaging and Forwarding, Transportation upto site, comprehensive transit cum storage cum erection insurance Unloading, Storage, Installation, Testing, Commissioning, Integration with NTPC's 17 MW Solar PV Plant, of 6 MW, 24 MWh (throughout life of 25 Years) Battery Energy Storage System (BESS, PCU, BMS, EMS, DC Cables, SCADA, fire detection system, etc. required for smooth operation) including twenty five year Operation and Maintenance (O&M) works on turnkey basis.

Bidder shall provide comprehensive operation & maintenance of the grid connected BESS System for a period of twenty-five (25) years from the date of successful completion of trial run. Bidder shall be responsible for identifying and providing any and all the other additional equipment, component and services necessary for its integration with the existing ac systems, as a fully functional grid interactive BESS System. All equipment, materials and services that are necessary for the satisfactory operation of the BESS for entire O&M period of 25 years shall be deemed to be included in the scope of EPC package work of Bidder:

Date of opening of Part -II (Price Bid) shall be intimated separately after opening and evaluation of Part-I (Techno-Commercial) Bid.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 5 OF

3.0. PRE-QUALIFICATION REQUIREMENTS (PQR) :

Bids of Only such Bidders who meet all the following Qualification criteria, shall be evaluated:

3.1. Qualifying Requirements for Bidders:

The Bidder should meet the qualifying requirements stipulated under clause 1.1. (Route-1). In addition, the Bidder should also meet the qualifying requirements stipulated under clause 2.0 together with the requirements stipulated under section ITB.

As per clarification issued by NTPC, In case, Battery Manufacturer is not participating directly in NTPC's tender, in that case battery manufacturer (irrespective of technology) can associate/collaborate with one or more bidders. Hence, Bidders who wish to participate in this Tender of BHEL shall NOT participate in NTPC's tender directly as lead Bidder. An undertaking to this effect shall be submitted along with Part-I of this Bid.

3.2 TECHNICAL CRITERIA

3.2.1. Experience (Route 1): The bidder should have manufactured, supplied, installed/ supervised installation and commissioned/ supervised commissioning of grid interactive battery energy storage system(s) of cumulative installed capacity of 3.6 MW or higher, out of which at least one grid interactive battery energy storage system should be of 1.2 MW capacity or higher. The reference grid interactive battery energy storage system of 1.2 MW or higher capacity must have been in successful operation for at least six (6) months prior to the date of techno-commercial bid opening.

3.2.2. Other Conditions:

3.2.2.1. The reference grid interactive battery energy storage system of 1.2 MW or higher capacity should be at a single location developed by Bidder for itself or any other client.

3.2.2.2. Bidder shall submit certificate of successful completion and operation from the Owner.

3.2.2.3. Projects executed by Bidder's group company, Holding Company or Subsidiary Company shall not be considered as Bidder's experience for meeting the QR.

3.2.2.4. In case the award for the reference works has been received by the Bidder either directly from owner of plant or any other intermediary organization, a certificate from such owner of plant or the intermediary organization shall be required to be furnished by the Bidder along with its techno-commercial bid in support of its claim of meeting requirement stipulated above. Certificate from owner of the plant shall also be furnished by the Bidder for successful operation of the reference plant. The Bidder shall submit End User Certificate which is subject to verification for qualification and hence shall provide full contact details of the End User for verification.

3.2.2.5. The bidder shall furnish major legal cases and their statutory liabilities if any.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 6 OF

3.3. FINANCIAL CRITERIA

3.3.1. FINANCIAL CRITERIA FOR ASSOCIATE/ COLLABORATOR

3.3.1.1. The average annual turnover of its Associate/ Collaborator, should not be less than INR 840 Million (Indian Rupees Eight Hundred Forty Million Only) or in equivalent foreign currency, during the preceding three (3) completed financial years as on the date of techno-commercial bid opening. **This should be supported with Documentary evidence in the form of Audited Balance Sheet. In case of Foreign Bidders the Audited Balance sheet should be supported by certification by a Chartered Accountant in India,**

3.3.1.2 In case the Associate/ Collaborator does not satisfy the average annual turnover criteria, stipulated at Clause 3.3.1 on its own, its Holding Company would be required to meet the stipulated turnover requirements as above, provided that the Net Worth of such Holding Company as on the last day of the preceding financial year is at least equal to or more than the paid-up share capital of the Holding Company. In such an event, the Associate/ Collaborator would be required to furnish along with its Techno-Commercial bid, a Letter of Undertaking from its Holding Company, supported by the Holding Company's Board Resolution, as per the format enclosed in the bid documents, pledging unconditional and irrevocable financial support for the execution of the contract by the Associate/ Collaborator in case of award.

3.3.1.3. Net Worth of the Associate/ Collaborator as on the last day of the preceding financial year should not be less than 100% (one hundred percent) of Associate/ Collaborator's paid-up share capital. In case the Associate/ Collaborator does not satisfy the Net Worth criteria on its own, it can meet the requirement of Net worth based on the strength of its Subsidiary(ies) and/or Holding Company and/or Subsidiaries of its Holding companies wherever applicable. In such a case, however the Net worth of the Associate/ Collaborator and its Subsidiary(ies) and/or Holding Company and/or Subsidiary(ies) of the Holding Company, in combined manner should not be less than 100% (one hundred percent) of their total paid up share capital. However individually, their Net worth should not be less than 75% (seventy-five percent) of their respective paid up share capitals. **This should be supported with Certification in English by the Bidder's Banker.**

3.4 ESTABLISHMENT AND MANPOWER CRITERIA:

The bidder shall be able to provide services to BHEL-EDN as detailed in the specifications within 24 hours of BHEL-EDN asking for the same. It is preferred that the Bidder has a local Indian office for providing services to BHEL-EDN **for which documentary evidence shall be furnished.**

However Bidders who do not have a local India office may also participate if they are willing to start a local Indian office with at least 10 engineers working on BESS, within 30 days from the date of receipt of order by BHEL from NTPC. An undertaking to this effect shall be submitted by Bidder on Company letter head and seal stating the above

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 7 OF

3.5 EXCLUSIVITY CRITERIA :

The bidder who is selected in this Bid as BHEL's Associate shall preferably not participate in this NTPC's Bid either directly or as an associate of any other Bidder. Else, the Bidder shall at least mandatorily agree to participate as BHEL's Associate as a preferred partner and provide preferential pricing to BHEL. **An undertaking to this effect shall be submitted by Bidder on Company letter head and seal stating the above.** If at a later date it is found that Bidder has violated this requirement, then BHEL may ban the Bidder from bidding to BHEL for any product or services in future.

4.0. BID SUBMISSION AND OPENING:

The proposals are to be submitted in TWO PARTS as follows:

Part-I: Pre-Qualification Requirement, Letter of Undertaking of Exclusivity / Preferential pricing, No-Deviation Certificate, Techno-commercial (with Un-priced Price Schedule) Bid

Part-II: Price Bid

Both Part-I and Part-II shall be submitted together latest by 30.08.2017 upto 13.00 hrs.

Price Bids of only such Bidders who meet the PQR and whose Techno-Commercial Bids are found acceptable, shall be opened. Date of Price Bid will be informed after Opening & evaluation of Part-I Bid

Soft signed copy of Qualification Requirements, Techno-Commercial Bids and Price Bids in soft copies in .pdf format shall reach the mailbox mentioned below:

spankaj@bheledn.co.in, chendhil@bheledn.co.in

NO REQUEST FOR EXTENSION SHALL BE ENTERTAINED.

Signed ORIGINAL Hard copy of the Part-I and Part-II Bids Price Bids shall be sent to:

AGM (SC&PV-MM) **Attention. Sh S S Dubey**
Bharat Heavy Electricals Ltd.
NEB 5th Floor, Electronics Division
Mysore Road, Bangalore – 560026.
Ph. 080-26989067, Cell: +919945530180

4.1. Bid Clarifications:

Bidders seeking clarifications on the tender specification requirements shall email the same to the following on or before 12:00 hrs IST on 29-08-2017

spankaj@bheledn.co.in, chendhil@bheledn.co.in

Only Clarifications by written Email will be acknowledged and replied by BHEL. Clarifications sought orally or via telephone will not be entertained.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 8 OF

4.2. Preparation of Bids

The Part-I and Part-II Bids shall consist of following and the same shall be submitted together within the due date as stipulated in the tender specifications.

4.2.1. Part-I Bid:

1) Pre-Qualification Requirements:

Documentary evidences in support of the PQR stipulated in this ITB. **Documentary evidence to meet the Financial criteria, Establishment criteria, and Undertaking for Preferred Partner and Preferential Pricing to BHEL, Undertaking for Establishing Local Indian Office with stipulated manpower.** The bidder shall furnish their audited profit and loss accounts and balance sheets for the preceding three (3) financial years from the original scheduled date of tender opening in support of meeting Financial Criteria. **This should be supported with Documentary evidence in the form of Audited Balance Sheet. In case of Foreign Bidders the Audited Balance sheet should be supported by certification by a Chartered Accountant in India. The Net worth of the Bidder should be supported with Certification in English by the Bidder's Banker.**

2) No Deviation Certificate

Bidders shall note that apart from the ITB and SCC enclosed herein, Terms & Conditions of NTPC (enclosed with this SCC) shall apply back-to-back on Associate / Collaborator. Bidder shall furnish a signed soft copy of **"Unconditional No Deviation Certificate"** on BHEL NIT specification requirements (mentioning NO DEVIATION from Technical specifications & Commercial Terms & Conditions) as a separate document. **Non-furnishing of the same shall risk in rejection of Bids.**

3) Power of Attorney:

Bidder shall furnish a Power of Attorney from competent authority of their organisation in the name of the Authorised signatory, authorizing him / her to sign and submit Bids, Provide clarifications if sought by BHEL, participate in negotiations with BHEL, participate in discussions with NYPC if required. Copy of Delegation of powers for Competent authority to issue Power of attorney shall be enclosed with the Power of Attorney.

4) Techno Commercial Bid

Bidder shall furnish a responsive techno commercial bid containing the Documents, Drawings, Sixing calculations, Energy Generation Guarantees as listed in BHEL's Technical Specifications. **Bidders shall note that techno commercial bids shall be considered for evaluation only if the "No Deviation Certificate" submitted by bidder is found to be satisfactory and unconditional.** Bidder shall furnish the signed soft copy of the Unpriced Price schedules indicating only Applicable taxes and Rates of taxes / duties as per the format enclosed in the specification in .pdf. **If Price information of any nature are included in Part-I the Bid will be summarily rejected.**

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 9 OF

4.2.2. Part-II Bid:

Bidder shall furnish the signed soft copy of the filled price schedules by email as per the format enclosed in the specification in .pdf. Bidder shall also be required to furnish signed ORIGINAL HARD COPY of Part-I and Part-II Bids.

Bidders shall quote their Prices on F.O.R Site basis, including basic Price of supply including Marine Freight & Insurance, Customs Duty, Customs Clearance charges , port handling, port clearance, port charges, (if any)., basic prices for services, Transportation upto Site, Inland Transit Freight & Insurance , Unloading at site, Storage at Site, Storage and Erection Insurance, Installation (except Civil Cost) & Commissioning including all Taxes & Duties, as Applicable 2 days prior to Bid Submission date.

Note: Bidders who participate in this Tender of BHEL and submit Bids in full compliance of this ITB shall be considered for Epanellement as BESS Vendor of BHEL.

4.3. Bid evaluation:

Bidders who meet the qualification requirements and have submitted documentary evidence in support of the same and who have submitted the signed copy of “No Deviation Certificate” as well as acceptance of Terms & Conditions shall be considered as eligible bidders and the Technical commercial bids of these Bidders shall be evaluated.

Clarifications if any shall be sought from Bidders on technical commercial Bid, and these clarifications shall be provided by Bidders within 24 hours upon request from BHEL failing which Bids shall be treated as nonresponsive and summarily rejected.

In case during the evaluation of Technical commercial Bid if any amendment is required to scope of supply and services, then the same shall be informed to eligible Bidders and Supplementary Price Bids shall be requested and the same shall be submitted by Bidders in similar fashion as Part-II Bid submission on date and time specified by BHEL-EDN.

Bidders who’s technical commercial bids are found to be responsive and suitable shall be requested by BHEL-EDN to submit the password for Price Bids via email.

Price Bids may be opened “IN CAMERA” by the committee. Clarifications if any shall be sought and filed for records.

4.4. Bid Evaluation Criteria:

The Bids shall be evaluated as per the following criteria:

The Total cost to BHEL-EDN shall be calculated including basic Price of supply including Marine Freight & Insurance, Customs Duty, Customs Clearance charges , port handling, port clearance, port charges, (if any)., basic prices for services, Transportation upto Site, Inland Transit Freight &

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 10 OF

Insurance , Unloading at site, Storage at Site, Storage and Erection Insurance, Installation (except Civil Cost) & Commissioning including all Taxes & Duties, as Applicable 2 days prior to Bid Submission date, to arrive at the “Lowest Cost to BHEL” Bid (L1). Bidder shall ascertain all costs towards above scope are included by Bidder in the Price Bid. Where Applicable Price and / or Taxes & Duties applicable is shown as NIL or left Blank, it will be assumed that such Price and / or Taxes & Duties is included in the overall Price. No Variation shall be allowed at a later date. Also Applicable taxes and duties as included in the Price shall be declared along with rates applicable. For supplies from abroad, the Customs Duty and other applicable Taxes & Duties on Imports shall be included (on Merit Duty basis) to arrive at the landed cost to BHEL.

No other Taxes & Duties other than those declared by Bidder shall be allowed at a later date except where the Taxes & Duties undergo a change due to statutory reasons.

4.5. Selection of Associate:

Bidder whose Techno commercial bids are found suitable and whose Price bid is evaluated to be the Lowest (L1) shall be called for negotiations, if required, to be able to obtain the most optimum and best price to ensure that BHEL is successful in bagging the order from NTPC. Subsequent to this Bidder will be termed as BHEL-EDN’s Associate and will be invited to enter into and sign an MoU Agreement with BHEL. The proposed MoU Format is enclosed, Subsequent to signing of MoU, Associate shall also sign a Deed of Joint Undertaking as per format enclosed which shall be submitted by BHEL along with composite Bid to NTPC.

In the event of NTPC placing order / signing contract with BHEL, this MoU and DJU shall form the basis for placement of order by BHEL on Associate during project execution on back-to-back basis. The successful bidder after Price bid evaluation shall visit BHEL-EDN, Bangalore office within a short notice of ONE DAY for price negotiations, signing of MoU Agreement , signing of DJU, signing of Attachments along with supporting documents for NTPC tender and also submit requisite BGs listed in clause 5.0.

Subsequent to evaluation of bids by NTPC, if NTPC wants to award the contract to BHEL and seeks reduction in prices / insists for negotiations then Associate shall agree for the same and resultant reduction in prices if any shall be proportionately be passed on to Associate and shall be unconditionally accepted by Associate.

5.0. REQUIREMENT TO BE FULFILLED BY BIDDER WHO IS SELECTED AS BHEL’s ASSOCIATE

5.1. Bidder who is selected by BHEL as the successful Bidder after Techno-Commercial and Price Evaluation, will be BHEL’s Associate for participating in the Tender floated by NTPC. The Associate shall enter into MoU Agreement for Associate with BHEL. Associate shall submit a Bank Guarantee to BHEL for 1% of the Final negotiated value of Bidder’s price as a security

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 11 OF

deposit for this MoU, This BG shall be valid for 45 days beyond the Date of Validity of the Bid and extendable further if required, till placement of order by BHEL on Associate.

5.2. BHEL as lead Bidder shall be required to submit a Bid Security in form of a Bank Guarantee of Rs.5,54,84,000/- to NTPC for participating in the Tender. **Associate shall submit a Back-up Bank Guarantee to BHEL for EMD for Rs.4,50,00,000/- . This BG shall be valid for 225 days from the Date of Opening of the Bids by NTPC.**

5.3. Associate shall also sign a Deed of Joint Undertaking (DJU) for submission to NTPC along with the BHEL's Composite Bid. This agreement and Deed of Joint Undertaking shall be valid till completion of all the contractual obligations of the Associate. Within 28 days of award of contract by NTPC to BHEL, **Associate shall submit a Bank Guarantee to NTPC for 2% of the Associate's share of Contract price, as a security deposit for this DJU.**

5.4. The MoU and DJU signed by Associate shall form the basis for future back-to-back placement of Order on Associate by BHEL, in the event of NTPC placing order / signing a contract with BHEL.

5.5. The selected Associate, shall furnish the following Bank Guarantees immediately upon being informed of selection and invited for signing of MoU agreement with BHEL.

- **Bank Guarantee to BHEL of 1 % of the Associates Price as Backup Guarantee for the MoU Agreement for Associate. This BG shall be valid for 45 days beyond the Date of Validity of the Bid and extendable further if required, till placement of order by BHEL on Associate.**
- **Back-up Bank Guarantee to BHEL for EMD for Rs.4,50,00,000/- . This BG shall be valid for 225 days from the Date of Opening of the Bids by NTPC and shall be extendable by NTPC on the request of BHEL..**

Bank Guarantees to BHEL shall be as per the enclosed formats from any of the Banks as per the List of approved Banks in this NIT. No change in format shall be acceptable whatsoever.

5.6. In the event of NTPC placing order / signing a contract with BHEL, **Associate shall submit a Bank Guarantee to NTPC for 2% of the Associate's share of Contract price, as a security deposit for this DJU.**

5.7. In the event of NTPC placing order / signing a contract with BHEL, then BHEL shall place back-to-back order on Associate on basis of MoU and DJU. **The Associate shall furnish within 10 days of placement of order by BHEL, a Bank Guarantee to BHEL for 10% of the Associates Ordered price as Contract Performance Guarantee (CPG) by Associate.**

6.0. CHECKLIST FOR BIDDERS: Bidders shall fill in the check List enclosed to the ITB and submit it with their Bid with seal & signature of the Bidder.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 12 OF

SECTION – 3

SPECIAL CONDITIONS OF CONTRACT (SCC)

Terms and Conditions:

1. Bidders shall note that BHEL will be participating as lead bidder in the following Tender of NTPC

Tender No. **RE-CS-5728-004(B)-9**, dt.05.05.2017

Tender for Battery Energy Storage System for 17 MW Solar PV Project at Manglutan in South Andaman, A&N Islands as per the scope of work briefly mentioned hereinafter.

1. The scope shall cover Design, Engineering, Supply, Packaging and Forwarding, Transportation upto site, comprehensive transit cum storage cum erection insurance Unloading, Storage, Installation, Testing, Commissioning, Integration with NTPC's 17 MW Solar PV Plant, of 6 MW, 24 MWh (throughout life of 25 Years) Battery Energy Storage System (BESS, PCU, BMS, EMS, DC Cables, SCADA, fire detection system, etc. required for smooth operation) including twenty five year Operation and Maintenance (O&M) works on turnkey basis.

2. This Tender vide RFQ RCKMOU02 floated by BHEL for Competitive Bidding is for sole purpose of Selection of techno-Commercially best and Price wise lowest Bid among Vendors who are Bidding to be BHEL's Associate for Submission of Bid to NTPC, in response to above tender of NTPC, by entering into a **"MoU Agreement for Associate"** with BHEL. Format for MoU Agreement is enclosed. In case BHEL's bid is successful and BHEL receives order from NTPC / NTPC signs a contract with BHEL, then this **"MoU Agreement for Associate"** will form the basis of back-to-back placement of order on Associate by BHEL as per agreed scope division. This MoU Agreement will also form the basis for BHEL and Associate signing a **"Deed of Joint Undertaking" (DJU)** as per NTPC's format, This DJU will be submitted by BHEL to NTPC along with the composite Bid.

This tender shall not be understood as Tender for placement of order/ procurement of BESS by BHEL.

3. BHEL-EDN is not responsible for any delay in receipt of quotation sent by vendor through post/e-Mail/fax.

4. BHEL- EDN does not bind itself to accept the lowest rate quoted, but reserves right to accept whole or part of any quotation at its sole discretion. Bids should remain valid for a minimum period of 225 days from the due date of Bid opening by NTPC and shall be further extendable depending upon requirement of BHEL / NTPC.

5. BHEL-EDN is under no obligation to inform the prices of Lowest quoted vendor or any other vendors to anyone. This is keeping in view the confidentiality required for participation in NTPC's ICB tender.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 13 OF

4. Bidders shall quote their Prices on F.O.R Site basis. Lowest quotation is determined on the basis of Total Cost to BHEL- EDN including basic Price of supply including Marine Freight & Insurance, Customs Duty, Customs Clearance charges , port handling, port clearance, port charges, (if any)., basic prices for services, Transportation upto Site, Inland Transit Freight & Insurance , Unloading at site, Storage at Site, Storage and Erection Insurance, Installation (except Civil Cost) & Commissioning including all Taxes & Duties, as Applicable 2 days prior to Bid Submission date.

5. It is mandatory that all Bidders agree to sign Deed of Joint Undertaking (DJU) failing which Bids shall be liable for rejection. It is deemed that by submission of Bids to BHEL in response to this Tender, Bidder agrees to be considered for selection as BHEL's Associate for participating in NTPC Tender and if selected agrees to sign Deed of Joint Undertaking (DJU) if and when called upon by BHEL to do so. Techno-Commercial Best and Pricewise Lowest quoted (L1) Bidder shall be selected as BHEL-EDN's Associate for signing Deed of Joint Undertaking (DJU) as per NTPC's format enclosed , on Indian NON-JUDICIAL STAMP PAPER, before submission of Bid by BHEL-EDN to NPTI. This DJU shall be submitted along with the Bid by BHEL to NTPC and shall remain binding on both the parties till the completion of contract.

6. Submission of Bids, Receipt of bids, opening and Evaluation of Bids shall be as per ITB.

7. Process of Selection of Associate after evaluation and Requirements to be fulfilled by Associate after selection are detailed in ITB.

8. The Terms & Conditions (COMMERCIAL CONDITIONS OF CONTRACT) of NTPC as included in their Tender No. **RE-CS-5728-004(B)-9**, dt.05.05.2017, shall be applicable back-to-back and shall be binding on BHEL's Associate during execution of the contract. These terms and conditions are enclosed to this Tender specification.

9. Bidders shall submit NO DEVIATION Bids and shall furnish a **"NO DEVIATION"** declaration signed by Authorised signatory with company seal along with Part-I of the Bid, failing which the Bids will not be evaluated further. By submitting the NO DEVIATION declaration, Bidder agrees that he will comply to Technical Specifications, ITB, SCC and NTPC's Terms & Conditions and other Price related requirements specified by BHEL in totality and there shall be no deviations to any of the requirements

10. The Bidder is also required to submit a Signed copy of BHEL's Technical Specifications, ITB, SCC and NTPC's Terms & Conditions along with their Part-I Bid as acceptance of all terms & conditions and specifications. These shall form part of the future contract, if and when signed with Associate by BHEL.

11. In case of negotiations/ reduction in price required by NTPC as a part of post-Bid negotiations with successful Bidder, the same shall be proportionately passed on and acceptable to Associate.

12. Non-Acceptance or Non-Compliance of conditions at Sl. No. 8,9,10,11 will result in rejection of the Bids.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 14 OF

13. The MoU Agreement for Associate signed may be converted into back-to-back Purchase order on Associate after BHEL receives order from NTPC Validity of MoU Agreement shall be at least for 225 days from Date of Bid opening by NTPC.

14. At the time of award of order, Inspection/Test Reports/Certificates, if any as per specification/ Tender requirement, shall be adhered to. If Pre-shipment inspection at supplier's works is required either by BHEL and/or by NTPC, vendor shall provide necessary assistance for inspection.

15. Payment terms: NTPC payment terms as per NTPC's GCC / SCC shall apply back-to-back on Associate.

16. Taxes and duties considered and their applicable rates as on 1 day prior to Bid opening by BHEL shall be indicated in the Unpriced Price Schedule as well as in the Part-II Price Schedule. BHEL will not allow for any other Taxes & Duties during evaluation or during execution, other than those declared by Bidder. If there is any statutory change such as new/ changed GST rates, new Taxes, Cess or levies, etc. these shall be treated in same manner as in NTPC Tender terms & Conditions

17. Bidder's GST Registration Number should be mentioned in the Unpriced Price Bid Schedule as well as in the Price Bid.

18. **Liquidated Damages:** If Liquidated Damages are due to be paid by BHEL to NTPC, the same shall be passed on to Associate, in case delay is due to reasons attributable to the Associate.

a) If the Associate fails to achieve the successful Completion of Facilities within the agreed work schedule, then Liquidated Damages shall be levied by NTPC and payable by Associate, as per sum calculated at the following rates:

A sum of INR 10,68,643/- (Rupees Ten Lakh Sixty Eight Thousand Six Hundred Forty Three Only For each day of delay in successful Completion of Facilities under the Contract as per the scope of work of the Associate on whom BHEL has placed order for BESS.

b)The liquidated damages for delay in supply of spares beyond the dates stipulated under the Contract shall be as follows :

One half of the one percent (1/2%) of F.O.R price of undelivered spares, per week or part thereof of delay subject to maximum of five percent (5%) of the total F.O.R price of all spares included in the scope of work of the contractor under the contract.

(c) The total amount of liquidated damages for delay under the contract will be subject to a maximum of five percent (5%) of the total Contract Price.

19. BHEL-EDN reserves the right to accept/reject bids of any Bidder and/or annul/ re-float/ call for snap bid the tender, in case outcome is not favorable to BHEL-EDN's participation in the tender. BHEL's decision will be Final and binding on all Bidders.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 15 OF

Enclosed in Section 4: NTPC Commercial Terms & Conditions:

TIME SCHEDULE FOR CONTRACT:

	Activities/Milestone	Period in months from NOA	
		Start	Finish
1.	Basic Engineering & Approvals	0.5	3
2.	Ordering of Bought Out Items (BOIs)	1	4
3.	Detailed Engineering and approval	3	6
4	Civil Works	4	7
5	Supply of Batteries	7	10
6	Receipt of Batteries	8	11
7	Installation of Batteries	9	12
8.	Supply of Battery Management System and other BOI's	7	10
9.	Associated Electrical works	8	11
10.	Testing & Commissioning of Batteries	11	13
11	Installation and Commissioning of Battery Management System	11	13

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 16 OF

12	Integration with Solar PV Plant/Grid	12	14
13	Completion of facilities	-	15

The bidder shall also be required to submit a brief integrated PERT Network (L1 Schedule) matching with the above work schedule. The L1 Schedule shall, interalia, include at least following activities for each systems listed above, showing their

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 17 OF

SECTION – 4

NTPC's TERMS & CONDITIONS OF CONTRACT (SCC) (ENCLOSED)

- 1) General Conditions of Contract (GCC) and
- 2) Special Conditions of Contract (SCC).
- 3) Ammendments / Clarifications issued by NTPC

.....

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 18 OF

SECTION – 5 **TECHNICAL SPECIFICATIONS**

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 19 OF

SECTION 6 ATTACHMENTS & FORMS

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 20 OF

ATTACHMENT – 2

PAGE 1 OF 1

**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN
SOUTH ANDAMAN, A&N ISLANDS
BID DOCUMENT NO. : RE-CS-5728-004(B)-9
POWER OF ATTORNEY
BIDDER TO ATTACH THE POWER OF ATTORNEY
IN ACCORDANCE WITH CLAUSE 8.2.4 (b) OF ITB
(BOARD RESULATION IN FAVOUR OF AUTHORIZED SIGNATORY ALSO ENCLOSED)**

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 21 OF

ATTACHMENT – 3

PAGE 1 OF 1

**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN
SOUTH ANDAMAN, A&N ISLANDS**

**BID DOCUMENT NO. : RE-CS-5728-004(B)-9
(Qualification Data)**

Our qualification data in support thereof is enclosed in the following Attachments:

1. Attachments 3A : Experience Details of Bidder
2. Attachment 3B : Details of Financial Capacity Status
3. Attachment 3I : Deed of Joint undertaking (if applicable)

We further understand and agree that any misleading or false information furnished by us may result in summary rejection of our bid.

Note : 1. The Bidder shall enclose relevant documents like copies of authentic purchase order, completion certificates, agreements etc. supporting the details/data provided in above Attachments.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 22 OF

**ATTACHMENT - 3A-1
PAGE 1 OF 2**

**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN
SOUTH ANDAMAN, A&N ISLANDS**

**BID DOCUMENT NO. : RE-CS-5728-004(B)-9
(Details Pertaining to Technical Qualification of the Bidder
(A) FOR BIDDERS SEEKING QUALIFICATIONS AS PER 3.2.1 of ITB**

In support of Qualifying Requirements of Clause 3.2.1 of ITB, we confirm that we have manufactured, supplied, installed/ supervised installation and commissioned/ supervised commissioning of grid interactive battery energy storage system(s) of cumulative installed capacity of 3.6 MW or higher, out of which at least one grid interactive battery energy storage system have been of 1.2 MW capacity or higher.

We further confirm that reference grid interactive battery energy storage system of 1.2 MW or higher capacity has been in successful operation for at least six (6) months prior to the date of techno-commercial bid opening:

- (I) **Details of grid interactive battery energy storage system(s) of cumulative installed capacity of 3.6 MW or higher out of which one grid interactive battery energy storage system(s) is of 1.2 MW capacity or higher, which has been in successful operation for at least six (6) months prior to the date of techno-commercial bid opening, as per following :**

Sl. No.	Item Description	Reference Plant No.01 (1.2 MW or above)	Reference Plant No.02	Reference Plant No.03
1.0	Description of work			
2.0	Name of Client with full address, Fax No. & Tel. No.			
3.0	Name of the Power Plant with its location			
4.0	Name and designation of the responsible person in client's organization			
5.0	Contract No. and Date			
6.0	Whether this is a grid interactive battery energy storage system	YES*/ NO*	YES*/ NO*	YES*/ NO*
7.0	Capacity of the Plant	MW	MW	 MW

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 23 OF

Sl. No.	Item Description	Reference Plant No.01 (1.2 MW or above)	Reference Plant No.02	Reference Plant No.03
8.0	Whether scope of works included (a) manufacturing (b) Supply (c) Erected (d) Supervised Erection (e) Commissioning (f) Supervised Commissioning	YES*/NO* YES*/NO* YES*/NO* YES*/NO* YES*/NO* YES*/NO*	YES*/NO* YES*/NO* YES*/NO* YES*/NO* YES*/NO* YES*/NO*	YES*/NO* YES*/NO* YES*/NO* YES*/NO* YES*/NO* YES*/NO*
9.0	Date of Commissioning of the above Plant			
10.0	No. of months of successful operation of the above plant prior to the date of Techno-Commercial bid opening date.			
11.0	Completion Certificate from client, Copies of Authentic purchase orders, Agreements in support of data/details of Sl. No. 1 to 10 enclosed as Annex.			

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 24 OF

**ATTACHMENT – 3A-3
PAGE 1 OF 4**

**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN
SOUTH ANDAMAN, A&N ISLANDS
BID DOCUMENT NO. : RE-CS-5728-004(B)-9**

(Financial Data pertaining to Financial Qualification of the Bidder's Associate/Collaborator as per Clause 3.3.1.1 of ITB)

A* To satisfy the requirements specified in Sub-Clause Clause 3.3.1.1 of ITB of Bid Data Sheet, Section-III, We give below the following details:

In terms of Sub Clause 3.3.1.1 of ITB, Section-III, we confirm that our ~~Associate/Collaborator~~ average annual turnover during preceding three completed financial years as on date of Techno-commercial bid opening is not less than **INR 840 Milliion** (Indian Rupees Eight Hundred Fourty Million only). In support of above, we are indicating following details and also enclosing Audited Financial Statements:

Sl.No. Financial Year	Amount in Rupees (in Crore)
-----------------------	-----------------------------

1. 2016 - 2017

2. 2015 - 2016

4. 2014 - 2015

4. ** 2013 - 2014

5. Average Annual Turnover
for the preceding three (3) completed
Financial Years as on date of
Techno-commercial Bid Opening.

6. We have enclosed Audited Financial Statements for preceding (3) Three completed Financial Years	Yes*/No*
--	----------

**** In case where audited results for the last financial year as on the date of Techno-Commercial bid opening are not available, certification of financial statement from a practicing chartered accountant shall also be considered acceptable. In case, Certificate from practicing Chartered Accountant certifying its financial parameters is not submitted, the audited results of three consecutive financial years preceding the last financial year shall be considered for evaluating the financial parameters. Further a certificate**

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 25 OF

would be required from the CEO/CFO as per the format enclosed (Refer Appendix-C) in the bidding documents stating that the financial results of the company are under audit as on the date of Techno-commercial bid opening and the certificate from the practicing Chartered Accountant certifying the financial parameters is not available.

*** Please Strike off whichever is not applicable.**

B.* For Bidder's Associate/Collaborator not meeting the requirement of Sub Clause 3.3.1.1 of ITB on its own:

Since our ~~Associate/Collaborator~~ we do not satisfy the Financial Criteria stipulated at Sub Clause 3.3.1.1 of ITB, on our Own, we give below the following details of our ~~Associate/Collaborator's~~ **Holding Company in terms of Sub Clause 3.3.1.2** of ITB who meet the stipulated turnover requirements of 3.3.1.1 of ITB and whose Net worth as on the last day of the preceding financial year is at least equal to or more than the paid up share capital of the Holding Company.

1. Name and Address of the Holding Company:.....

2. Annual Turnover of the Holding Company with following details :

SI.No. Financial Year	Amount in Rupees (in Crore)
-----------------------	-----------------------------

1. 2016 - 2017

2. 2015 - 2016

3. 2014 - 2015

4. Average Annual Turnover of the Associate/Collaborator's Holding Company for the preceding three (3) completed Financial Years as on date of Techno-commercial Bid Opening.

5. We have enclosed Audited Financial Yes*/No* Statements for the last 3 financial years of the Holding Company

6. A Letter of Undertaking from the Holding Company, supported by Board Resolution, pledging unconditional and irrevocable financial support for execution of the contract by the bidder in case of award is enclosed

*** Please Strike off whichever is not applicable.**

Date :

(Printed Name).....

Place : (Designation).....

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 26 OF

**ATTACHMENT – 3A-3
PAGE 3 OF 4**

**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN
SOUTH ANDAMAN, A&N ISLANDS**

BID DOCUMENT NO. : RE-CS-5728-004(B)-9

(Financial Data pertaining to Financial Qualification of the Bidder's Associate/Collaborator as per Clause 3.3.1.3 of ITB)

Bidder's Name & Address :

Dear Sirs,

A)* To satisfy the requirements specified at Clause 3.3.1.3 of ITB, Section-III, We give below the following details:

We hereby confirm that our net worth of our ~~Associate/Collaborator~~ as on the last day of the preceding financial year is not less than 100% (One Hundred Percent) of its paid-up share capital.

The Details are as under:

Sl. No.	Description	As on last day of the preceding financial year (in INR Crore)
---------	-------------	--

1. Paid-up Share Capital
2. Net Worth
3. %age of Net worth to Paid-up Share Capital
4. Documentary evidence like Annual Report/
Audited financial statements for the last preceding
Financial year / in case Audited results for the last
preceding three (3) completed Financial Years are
not available, certification of financial statements
from a practicing Chartered Accountant etc. in
support of above is enclosed at Annexure.....to
his Attachment-3A-3.
5. Since we are not able to furnish our ~~Associate/Collaborator~~
audited financial statements on stand
alone entity basis, we are submitting
the following Documents for substantiation
of our Qualification:

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 27 OF

ATTACHMENT – 3A-3

PAGE 4 OF 4

Sl. No.	Description	As on last day of the preceding financial year (in Rs.Crores)
---------	-------------	--

a) Copies of unaudited unconsolidated financial

statements of the **Associate/Collaborator** alongwith

copies of the audited consolidated financial

statements of the **Associate/Collaborator's** Holding Company

for the last 3 completed Financial years enclosed at

Annexure.....to this Attachment 3A-3.

b) Certificate from the CEO/CFO of the **Associate/Collaborator's**.....

Holding company stating that the unaudited unconsolidated

financial statements form part of the consolidated

Annual Report of the company, is enclosed as per

the format at **Appendix-A** to this Attachment-3A-3.

In case where audited results for the last financial year as on the date of Techno-Commercial bid opening are not available, certification of financial statement from a practicing chartered accountant shall also be considered acceptable. In case, Certificate from practicing Chartered Accountant certifying its financial parameters is not submitted, the audited results of three consecutive financial years preceding the last financial year shall be considered for evaluating the financial parameters. Further a certificate would be required from the CEO/CFO as per the format enclosed in the bidding documents stating that the financial results of the company are under audit as on the date of Techno-commercial bid opening and the certificate from the practicing Chartered Accountant certifying the financial parameters is not available.

Date :

(Printed Name)

Place : (Designation).....

Note : * Please Strike off whichever is not applicable.

(i) Net worth means the sum total of the paid up share capital and free reserves. Free reserves means all reserves credited out of the profits and share premium account but does not include reserves credited out of the revaluation of the assets, write back of depreciation provision and amalgamation. Further any debit balance of Profit and Loss account and miscellaneous expenses to the extent not adjusted or written off, if any, shall be reduced from reserves and surplus. .

(ii) Other income is not considered for arriving at annual turnover.

(iii) "Holding Company" and "Subsidiary" shall have the meaning ascribed to them as per Companies Act of India.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 28 OF

**APPENDIX-A
TO ATTACHMENT – 3A-3
PAGE 1 OF 1**

**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN
SOUTH ANDAMAN, A&N ISLANDS
BID DOCUMENT NO. : RE-CS-5728-004(B)-9**

**PROFORMA OF CERTIFICATE FROM THE CEO/CFO OF THE ASSOCIATE/ COLLABORATOR'S
HOLDING COMPANY IN ACCORDANCE WITH 3.3.1.3 of ITB
(To be submitted by Bidder alongwith the Techno-Commercial Bid)**
Ref. : _____ Date :

Dear Sirs,

1.0 I, Mr. (CEO of the Company / CFO of the Company)* declare that M/s.
..... (Name of the Holding Company) is the Holding Company of M/s.
..... (Name of the Bidders **Associate/Collaborator**).

2.0 I hereby confirm and undertake that the unaudited unconsolidated financial statements submitted
in respect of the(**Bidder's Associate/Collaborator**) as part of the bid reference no.
..... dated have been considered for the purposes of the finalisation
of Consolidated Financial Statements of the Holding Company as part of the Annual Reports.

3.2 I further, certify that the figures in the unaudited unconsolidated financial statements are true and
correct and same have been duly reflected in the audited consolidated financial statements and / or
Annual Report of the Holding Company.

Yours faithfully
(Signature)
(Name & Designation).....
(Name of the Holding Company)
(Seal of Holding Company)
.....

Date : _____
Place : _____

Note : *Strike off whichever is not applicable.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 29 OF

ATTACHMENT - 3B

AGE 1 OF 2

**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN,
A&N ISLANDS**

BID DOCUMENT NO. : RE-CS-5728-004(B)-9

**Financial Capacity Status of Bidder and/or wherever applicable, his
Associate(s)/Collaborator(s)**

Sl. No.	Description
A	Orders in Hand
i	Total value of Contracts
ii	Value of work completed out of above value upto March 2016
iii	Value of anticipated work to be performed in the following Financial Years : 2017 - 2018 2018 - 2019 2019 - 2020 2020 - 2021 2021-2022

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 30 OF

B	Bidder's assessment of maximum negative cash flow (fund requirement) at any point of time between Notification of Award and completion of contract based on specified terms of payment and his expenditure plan for plant & equipment being offered by bidder for this package.				
C	Arrangement to meet the above fund requirement	Own Funds	Credit	Others	Total

D	Gross Turnover of Company during: Year ending - March 2013 Year ending - March 2014 Year ending - March 2015 Year ending - March 2016 Year ending - March 2017				
E	Balance Sheet and Profit & Loss Account duly certified by a Chartered Accountant for the last 5 years is to be submitted.	Enclosed at Annexure to this Attachment-3B			

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 31 OF

F	Declaration by Bankers or the Chartered Accountant regarding : i) Bank Guarantee Limits ii) Over Draft Limits/Cash Credit Limits iii) Deferred payment limits. iv) Fixed Deposits v) Movable Property Hypothecation. (Please state the present utilisation status also)	Enclosed at: Enclosed at: Enclosed at: Enclosed at: Enclosed at:
G	Information regarding any current litigation in which the Bidder is involved, the parties concerned the disputes and the dispute amount if any.	Enclosed at:

Note : 1. The above Attachment shall be filled-up by the bidder for **himself** and shall be furnished. 2. Continuation sheets of like size and format may be used and annexed to this Attachment if required.

Date :

(Printed Name)

Place : (Designation).....

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 32 OF

ATTACHEMENT 3I **FORM OF JOINT DEED OF UNDERTAKING**

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 33 OF

FORM OF JOINT DEED OF UNDERTAKING (Rev.01)

(ON NON-JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)

DEED OF JOINT UNDERTAKING TO BE EXECUTED BY THE BIDDER MEETING THE REQUIREMENTS SPECIFIED AT OF CLAUSE NO. 1.2(Route 2)*/ 1.3(Route 3)*/ 1.4(Route 4)*/ 1.5(Route 5)* AND THE ASSOCIATE / COLLABORATOR (BATTERY MANUFACTURER WHO HAS MANUFACTURED AND SUPPLIED 3.6 MW (OR HIGHER) CUMULATIVE CAPACITY WITH 1.2 MW (OR HIGHER) SINGLE LARGEST GRID INTERACTIVE BATTERY ENERGY STORAGE CAPACITY WHICH SHOULD HAVE BEEN IN SUCCESSFUL OPERATION FOR AT LEAST SIX (6) MONTHS PRIOR TO THE DATE OF TECHNO-COMMERCIAL BID OPENING), OF ITEM 3.0 OF SECTION-III (BID DATA SHEET) FOR SUCCESSFUL PERFORMANCE OF BATTERY PORTION OF THE "BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS", IN WHICH THE ASSOCIATE/ COLLABORATOR AND THE BIDDER ARE JOINTLY LIABLE TO THE EMPLOYER TO PERFORMANCE INCLUDING MEETING THE TECHNICAL GURANTEES OF BATTERY PORTION.

This DEED OF UNDERTAKING executed this day of
Two thousand by M/s a
Company incorporated under having its Registered Office at
..... (hereinafter called the "Associate/Collaborator", which expression shall
include its successors, administrators, executors and permitted assigns) and M/s
..... a company incorporated under the
..... having its registered office at (hereinafter called the
"Bidder", which expression shall include its successors, administrators, executors and
permitted assigns) in favour of NTPC Limited, a company incorporated under the Companies
Act, 1956, having its Registered Office at NTPC Bhavan, Scope Complex, 7, Institutional Area,
Lodhi Road, New Delhi - 110 003, (India) (hereinafter called "NTPC" or "Employer" which
expression shall include its successors, administrators, executors and assigns).

WHEREAS, the Employer invited bids for Battery Energy Storage System for 17 MW Solar
PV Project at Manglutan in South Andaman, A&N Islands Package vide its Bid Document No.
RE-CS-5728-004(B)-9.

AND WHEREAS the bid document stipulated that bidding is open to a bidder who meets the
requirement at Clause No. **1.2(Route 2)*/ 1.3(Route 3)*/ 1.4(Route 4)*/ 1.5(Route 5)*** of Item
No 3.0 of Section-III (Bid Data Sheet) and associates with a Battery Manufacturer as per Item
No.3.0 of Section-III (Bid Data Sheet), forming part of the bid documents.

WHEREAS, M/s.(Bidder) is submitting its proposal in
response to the aforesaid Invitation for Bid for Battery Energy Storage System for 17 MW
Solar PV Project at Manglutan in South Andaman, A&N Islands Package vide its Bid
Document No. RE-CS-5728-004(B)-9.

AND WHEREAS M/s..... (Bidder) itself
meet the requirements of Clause No. **1.2(Route 2)*/ 1.3(Route 3)*/ 1.4(Route 4)*/ 1.5(Route
5)*** of Item No 3.0 of Section-III (Bid Data Sheet) and desire of associate/ collaborator with
M/s..... (hereinafter referred to as 'Associate') who **has manufactured
and supplied 3.6 mw (or higher) cumulative capacity with 1.2 MW (or higher) single
largest grid interactive battery energy storage capacity which should have been in
successful operation for at least six (6) months prior to the date of techno-commercial
bid opening**, the Bidder and associate/ collaborator are required to jointly execute and furnish

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 34 OF

along with the bid an irrevocable Deed of Joint Undertaking and be jointly and severally responsible and bound unto the Employer for successful performance of the Battery Portion of Battery Energy Storage System EPC Package, fully meeting the declared guaranteed parameters and characteristics of Battery Portion as per the Bid Documents, in the event the bid is accepted by the Employer resulting in a Contract.

NOW THEREFORE, THIS DEED WITNESSETH AS UNDER:

1. That in consideration of the Award of the Contract by the Employer to the Bidder, we the Associate/ Collaborator and the Bidder, do hereby declare and undertake that we shall be jointly and severally responsible and bound unto the Employer for the execution of successful performance of the Battery portion for Battery Energy Storage System EPC Package, such that it fully meets the guaranteed parameters and characteristics of the Battery portion as declared by associate/collaborator (Battery Manufacturer). However, Bidder/Contractor shall be fully and severely responsible for guaranteed parameters and characteristics of Battery Energy Storage system to employer.
2. In case of any breach of the Contract committed by the Bidder, we the Associate/ Collaborator do hereby undertake, declare and confirm that we shall be fully responsible for scope of supply and work as per Purchase order agreement with Bidder/Contractor for the Battery portion till the expiry of defect liability period and undertake to carry out all the obligations and responsibilities under this Deed of Undertaking in order to discharge the Bidder's obligation and responsibilities in respect of Battery Portion stipulated in the contract. Further if the Employer sustains any loss or damage on account of any breach of the Contract in respect of Battery portion (for scope of supply and work as per Purchase Order between Bidder/Contractor and Associate/ Collaborator), we the Associate/ Collaborator and Bidder jointly and severally undertake to promptly indemnify, and pay such loss/damages caused to the Employer on its written demand without any demur, reservation, contest or protest in any manner whatsoever. This is without prejudice to any rights of the Employer against the Bidder under the Contract and/or guarantees. It shall not be necessary or obligatory for the Employer to first proceed against the Bidder, nor any extension of time or any relaxation by the Employer to the Bidder shall prejudice any rights of the Employer under this Deed of Joint Undertaking to proceed against the Associate.
3. Without prejudice to the generality of the Undertaking in paragraph 1 above, the manner of achieving the objective set-forth in paragraph 1 above shall be as follows:
 - a) The Associate/ Collaborator will be fully responsible for manufacturing, supply, erection/supervise erection, testing commissioning/supervise commissioning, putting into satisfactory operation, carrying out the performance testing of Battery portion of Battery Energy Storage System EPC Package, fully meeting the guaranteed parameters and characteristics as declared by Bidder /associate/collaborator (Battery Manufacturer).

Further, the Associate/ Collaborator, shall depute their technical experts from time to time to the Employer's project site as required by the Employer/Bidder and agreed to the Bidder/Employer to facilitate the successful performance of the Battery portion of Battery Energy Storage System EPC Package as stipulated in the Bid Documents.

Further, Associate/ Collaborator shall ensure proper manufacturing, supply, erection / supervise erection, testing commissioning/supervise commissioning

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 35 OF

and successful performance of the Battery portion as declared by Bidder/associate/collaborator (Battery Manufacturer) and if necessary the Associate/ Collaborator shall advise the Bidder suitable modification and implement necessary corrective measures to discharge the obligations under the contract for Battery Portion.

- b) In the event the Associate/ Collaborator and the Bidder fail to demonstrate successful performance of the Battery portion of the Battery Energy Storage System EPC Package, The Associate/ Collaborator shall promptly provide all technical assistance/ services/support to analyse and suggest corrective measures/ modifications and jointly carry out all the corrective measures at their own expense.
 - c) Implementation of the corrected design and all other necessary repairs, replacements, rectifications or modifications to the Battery portion of Battery Energy Storage System EPC Package and payment of financial liabilities, penalties and any other obligations as provided under the Contract related to battery portion shall be the joint and several responsibility of the Bidder and Associate/ Collaborator during Defect Liability period.
4. We, the Bidder and the Associate/ Collaborator do hereby undertake and confirm that this undertaking shall be irrevocable and shall not be revoked till the expiry of the Defect Liability Period of Battery Energy Storage System EPC Package under Contract, and further stipulate that the Undertaking herein contained shall terminate upon satisfactory completion of such period. We further, agree that this Undertaking shall be without any prejudice to the various liabilities of the Bidder, including Contract Performance Guarantee as well as other obligations of the Bidder / Contractor in terms of the Contract.
 5. The Bidder and Associate/ Collaborator will be fully responsible for the quality of all the equipment manufactured at their works or at their Vendors works or construction at site, and their repair or replacement, if necessary, for incorporation in the Battery portion of Battery Energy Storage System EPC Package and timely delivery thereof to meet the completion schedule under the Contract.
 6. In order to achieve the successful completion of the Battery portion for Battery Energy Storage System EPC Package as per schedule and the performance and guarantee tests at site from time to time, the detailed planning for design, engineering procurement, supply, erection and commissioning and O&M activities shall be drawn by the Bidder and vetted by Associate/ Collaborator.
 7. Apart from the Bidder's Performance Bank Guarantee, the Associate/ Collaborator shall, furnish 'as security' a separate On Demand Performance Bank Guarantee from any reputed Commercial Bank as specified in the bid document in favour of the Employer in a form acceptable to the Employer.

The value of such Bank Guarantee shall be equal to **two percent (2%)** of the total value of the contract as specified at Note (a) of Clause 1.0 of Item No. 3.0, Section-III (Bid Data Sheet) of bidding documents, as awarded by the Employer and it shall be guaranteed towards the faithful performance/ compliance of this Deed of Undertaking in accordance with the terms and conditions specified herein. The Bank Guarantee shall be unconditional, irrevocable and valid till the expiry of defect liability period period of the Plant under the Contract. The guarantee amount shall be promptly paid to the Employer on demand without any demur, reservation, protest or contest.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 36 OF

8. This DEED OF UNDERTAKING shall be construed and interpreted in accordance with the laws of India and the courts in Delhi shall have exclusive jurisdiction.
9. We, the Associate/ Collaborator and the Bidder agree that this undertaking shall be irrevocable and shall form an integral, part of the Contract. We further agree that this undertaking shall continue to be enforceable till the expiry of defect liability period and till the Employer discharges it.
10. That this Deed shall be operative from the effective date of the Contract to the end of Defect Liability Period.

IN WITNESS WHEREOF, the Associate and the Bidder through their authorized representatives, have executed these presents and affixed common seal of their respective companies on the day, month and year first mentioned above.

Witness :

For M/s

(Associate/Collaborator)

2.
(Signatures/Name/Address)

.....
(Signature of the authorised
representative)

Name :

Designation :

Common Seal of the Company

For M/s.....
(Bidder)

Witness :

.....
(Signature of the authorised
representative)

Name :

Designation :

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 37 OF

Note :

1. Power of Attorney of the Persons Signing on behalf of Associate/Collaborator and Bidder is to be furnished by the Bidder and to be attached with this signed Deed of Joint Undertaking.
2. The Defect Liability period is as per GCC Cl. No. 27.0 and its subsequent amendments if any.
3. Certified Purchase Order between Bidder and Associate shall be submitted by Bidder at the time of placement of order.
4. In case Bidder proposes an integrated solution which is combination of two different battery technologies from two different manufacturers so as to meet the technical requirements as per specification, then Bidder has to necessarily submit two separate DJU with two different battery manufacturer.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 38 OF

**ATTACHMENT - 4A
PAGE 1 OF 1**

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS

BID DOCUMENT NO. : RE-CS-5728-004(B)-9

(Not Applicable)

List of Special Maintenance Tools & Tackles

We are furnishing below the list of special maintenance tools & tackles for various equipment under the subject package. The prices for these tools & tackles are already included in the lump-sum bid price. We further confirm that this list of special maintenance tools & tackles includes all the items as per the requirement of Technical Specifications.

Notwithstanding what is stated above we further confirm that any additional special maintenance tools and tackles required for the equipment supplied under this package shall be furnished by us at no extra cost to the Employer.

Sl.No.	Description of Equipment	Description of Tools & Tackles	Unit	Quantity
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	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 39 OF

**ATTACHMENT - 8
PAGE 1 OF 1**

**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT
MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

BID DOCUMENT NO. : RE-CS-5728-004(B)-9

TECHNICAL DATA SHEET

Bidders are required to fill in the Technical Data as per their own format and ATTACH the same in C Folder as Attachment – 8 for the following Items.

1. Battery & BMS
2. PCS
3. Transformer
4. EMS with Architecture
5. Plant Layout & Architecture Drawings
6. Any other relevant drawings of system

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 40 OF

**ATTACHMENT – 12
PAGE 1 OF 1**

**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN
SOUTH ANDAMAN, A&N ISLANDS**

BID DOCUMENT NO. : RE-CS-5728-004(B)-9

(Declaration on Demonstration Parameters)

1.0 We declare that the ratings and performance figures of the equipments furnished by us under the subject Package are guaranteed. We further declare that in the event of any deficiencies in meeting the guarantees in respect of the characteristic as established after conducting the performance test, you may at your discretion reject the equipment / systems in which case we shall replace the same with equipment as per specifications and meeting the guarantee, free of charge and within a reasonable time, to be mutually agreed.

Date :

Place : (Name of Authorized Person
having Power of Attorney).....

(Designation).....

Note: Any variation to the stipulated conditions under which guarantee are to be met will not be permitted and bids with such variations are liable to be rejected.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 41 OF

**ATTACHMENT – 13
PAGE 1 OF 1**

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS

BID DOCUMENT NO. : RE-CS-5728-004(B)-9

MILESTONE SCHEDULE

We hereby confirm the acceptance to the time schedule **(15 Months for completion of facilities)** for the subject package as specified in the bidding documents. Further, we confirm that we shall adhere with the time schedule for the subject package as specified in the bidding documents.

Further we confirm to carry out comprehensive Operation & Maintenance (Q&M) of entire Battery Energy Storage System for twenty five (25) years as specified in the Technical Specifications.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1 Rev No: 00 PAGE : 42 OF
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OPEN TENDER FOR SELECTING ASSOCIATE FOR PARTICIPATION IN NTPC TENDER AS BHEL's ASSOCIATE
 FOR
**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN
 SOUTH ANDAMAN, A&N ISLANDS**

BHEL NIT No. _____, RFQ RCKMOU02 Dt. 22.08.2017 Due Dt. 30.08.2017

CHECK LIST FOR COMPLIANCE

BIDDER NAME: _____

BID REFERENCE NO. _____

Sl.No.	NIT Requirement	Information / Document provided by Bidder	Reference page in Bid	Remarks
A	GENERAL INFORMATION			
1	BIDDER NAME & ADDRESS			
2	INDIAN COMPANY OR FOREIGN			
3	IF FOREIGN COMPANY, COMPANY LOCATION & ADDRESS			
4	BIDDER SIGNATORY / AUTHORISED REPRESENTATIVE NAME & CONTACT No.			
5	POWER OF ATTORNEY BY COMPETENT AUTHORITY			Check the Powers Conferred and Delegation of powers.
6	PoA ISSUED IN NAME OF			
7	DELEGATION OF POWER FOR ISSUING PoA INCLUDED?			Check who has Issued the PoA and his authority to issue.

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 43 OF

Sl.No.	NIT Requirement	Information / Document provided by Bidder	Reference page in Bid	Remarks
7	BIDDER HAS SUBMITTED BIDS IN 2 PARTS?	PART-1	YES / NO	
		PART-2	YES / NO	
7	NO DEVIATION CERTIFICATE FURNISHED BY BIDDER	FOR TECHNICAL	YES / NO	
		FOR COMMERCIAL TERMS & CONDITIONS?	YES / NO	
B	PRE-QUALIFICATION REQUIREMENTS			
1	BIDDER IS MANUFACTURER OR SUPPLIER OF BESS?	MANUFACTURER / SUPPLIER		Strike out which is not applicable
2	IS MANUFACTURER, PLACE OF MANUFACTURE			
3	BIDDER HAS CUMULATIVE INSTALLED CAPACITY OF 3.6 MW OR HIGHER?	YES / NO		Should have manufactured, supplied, installed/ supervised installation and Commissioned/ supervised commissioning of grid interactive battery energy storage system(s) of cumulative installed capacity of 3.6 MW or higher
4	DOCUMENTARY EVIDENCE FOR B-3 ABOVE?	FURNISHED AT		

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 44 OF

Sl.No.	NIT Requirement	Information / Document provided by Bidder	Reference page in Bid	Remarks
5	BIDDER HAS EXECUTED AT LEAST ONE GRID INTERACTIVE BATTERY ENERGY STORAGE SYSTEM OF 1.2MW OR HIGHER AND IN SUCCESSFUL OPERATION FOR AT LEAST SIX(6) MONTHS	YES / NO		at least one grid interactive battery energy storage system should be of 1.2 MW capacity or higher. The reference grid interactive battery energy storage system of 1.2 MW or higher capacity must have been in successful operation for at least six (6) months prior to the date NTPC bid opening.
6	DOCUMENTARY EVIDENCE PROVIDED FOR B-5?	FURNISHED AT		
7	HAS THE INSTALLATION AT B-5 COMPLETED 6 MONTHS AS ON DATE?	YES / NO		
8	DOCUMENTARY EVIDENCE PROVIDED FOR B-7?	FURNISHED AT		
9	DOES THE BIDDER HAVE ANY MAJOR LEGAL CASES AND / OR STATUTORY LIABILITIES?.	YES / NO		
10	BIDDER MEETS PRE-QUAL REQUIREMENTS WITH REG TO EXPERIENCE?	YES / NO		
C	FINANCIAL CRITERIA			

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 45 OF

Sl.No.	NIT Requirement	Information / Document provided by Bidder	Reference page in Bid	Remarks
1	AVERAGE ANNUAL TURNOVER OF THE BIDDER IN LAST 3 YEARS			Average Annual Turn Over of the Bidder, shall not be less than INR 840 Million (Indian Rupees Eight Hundred Forty Million Only) in preceding three (3) consecutive financial years as on the original scheduled date of tender opening.
2	DOCUMENTARY EVIDENCE FOR C-1 OF LAST 3 YEARS • AUDITED FINANCIAL RESULTS • BALANCE SHEET • P&L ACCOUNT			Check for Auditors signature and Certified by CA in India
3	BIDDER HAS A POSITIVE NET WORTH?	YES / NO		Net Worth of the Associate/ Collaborator as on the last day of the preceding financial year should not be less than 100% (one hundred percent) of Associate/ Collaborator's paid-up share capital.
4	DOCUMENTARY EVIDENCE FOR C-3 ?	FURNISHED AT		
5	BIDDER MEETS PRE-QUAL REQUIREMENTS WITH REG TO FINANCIAL CRITERIA?	YES / NO		

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 46 OF

Sl.No.	NIT Requirement	Information / Document provided by Bidder	Reference page in Bid	Remarks
D	EXCLUSIVITY CRITERIA			
1	BIDDER HAS FURNISHED UNDERTAKING FOR EXCLUSIVE TIE-UP?	YES / NO		
2	BIDDER HAS FURNISHED UNDERTAKING FOR PREFERENTIAL PRICING & PREFERRED PARTNER TIE-UP?	YES / NO		
3	BIDDER MEETS PRE-QUAL REQUIREMENTS WITH REG TO EXCLUSIVITY CRITERIA?	YES / NO		
E	MANPOWER CRITERIA			
1	BIDDER HAS A LOCAL INDIAN OFFICE FOR PROVIDING SERVICES TO BHEL FOR BESS?	YES / NO		
2	IF YES, ADDRESS OF THE LOCAL INDIAN OFFICE AND NUMBER OF ENGINEERS WORKING HERE			
3	IF BIDDER HAS NO INDIAN OFFICE, HAS BIDDER PROVIDED AN UNDERTAKING TO SET UP LOCAL INDIAN OFFICE WITH AT LEAST 10 ENGINEERS WITHIN 30 DAYS OF NOA ?	YES / NO		

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 47 OF

Sl.No.	NIT Requirement	Information / Document provided by Bidder	Reference page in Bid	Remarks
4	HAS BIDDER FURNISHED UN-PRICED PRICE SCHEDULE IN PART-1?	YES / NO		
5	DOES BIDDER MEET ALL CONDITIONS FOR EVALUATING TECHNO-COMMERCIAL BID?	YES / NO		
1	BIDDER HAS QUOTED F.O.R SITE?	YES / NO		
2	BID INCLUDES THE FOLLOWING ?	YES / NO		
a	CUSTOMS DUTY & CUSTOMS CLEARANCE	YES / NO		
b	PORT HANDLING, PORT CHARGES & PORT CLEARANCE CHARGES	YES / NO		
c	MARINE FRIEGHT?	YES / NO		
d	MARINE INSURANCE?	YES / NO		
e	TRANSIT FRIEGHT TO SITE & INSURANCE	YES / NO		
f	SITE STORAGE & ERECTION INSURANCE?	YES / NO		
8	BIDDER INDICATED & INCLUDED ALL APPLICABLE TAXES & DUTIES IN PRICE?	YES / NO		

	BATTERY ENERGY STORAGE SYSTEM FOR INTEGRATING WITH 17 MW SOLAR PV PLANT	Ref: SCPV/806/NTPC17/0 1
		Rev No: 00
		PAGE : 48 OF

Sl.No.	NIT Requirement	Information / Document provided by Bidder	Reference page in Bid	Remarks
10	BIDDER HAS INDICATED GST REGISTRATION NUMBER?	YES / NO		
19)	BIDDER COMPLIES TO NIT TERMS & CONDITIONS?	YES / NO		
20)	BIDDER CONFIRMS COMPLIANCE TO NTPC TERMS & CONDITIONS (GCC & SCC OF SECTION 4)?	YES / NO		

Note:

- Bidders shall fill in this Check List and submit it along with their Bid duly signed and with company seal.
- Bidders shall check whether requisite supporting documents have been submitted in Bid as per this Check List

SECTION – IV GENERAL CONDITIONS OF CONTRACT OF NTPC (GCC)

Table of Clauses – General Conditions of Contract

S. No.	Description
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A. Contract and Interpretation

1. Definitions
2. Contract Documents
3. Interpretation
4. Notices
5. Governing Law
6. Settlement of Disputes

B. Subject Matter of Contract

7. Scope of Facilities
8. Time for Commencement and Completion
9. Contractor's Responsibilities
10. Employer's Responsibilities

C. Payment

- | | |
|-----|------------------|
| 11. | Contract Price |
| 12. | Terms of Payment |
| 13. | Securities |
| 14. | Taxes and Duties |

D. Intellectual Property

- | | |
|-----|--------------------------|
| 15. | Copyright |
| 16. | Confidential Information |

E. Work Execution

- 17. Representatives
- 18. Work Program
- 19. Subcontracting
- 20. Design and Engineering
- 21. Procurement
- 22. Installation
- 23. Test and Inspection
- 24. Completion of the Facilities
- 25. Commissioning, Guarantee Tests and Operational Acceptance

F. Guarantees and Liabilities

- 26. Completion Time Guarantee
- 27. Defect Liability
- 28. Functional Guarantees
- 29. Patent Indemnity
- 30. Limitation of Liability

G. Risk Distribution

- 31. Transfer of Ownership
- 32. Care of Facilities
- 33. Loss of or Damage to Property; Accident or Injury to Workers;
Indemnification
- 34. Insurance
- 35. Unforeseen Conditions
- 36. Change in Laws and Regulations
- 37. Force Majeure
- 38. War Risks

H. Change in Contract Elements

- 39. Change in the Facilities
- 40. Extension of Time for Completion
- 41. Suspension
- 42. Termination
- 43. Assignment
- 44. Contractor Performance Feedback and Evaluation System
- 45. Fraud Prevention Policy
- 46. Withholding/Banning

Clause No.		Definition
A	Contract and Interpretation	
1.0	Definitions	The following words and expressions shall have the meanings hereby assigned to them: “Contract” means the Contract Agreement entered into between the Employer and the Contractor, together with the Contract Documents referred to therein; they shall constitute the Contract, and the term “the Contract” shall in all such documents be construed accordingly. “Contract Documents” means the documents listed in Article 1.1 (Contract Documents) of the Form of Contract Agreement (including any amendments thereto). “GCC” means the General Conditions of Contract hereof. “SCC” means the Special Conditions of Contract. “Day” means calendar day of the Gregorian Calendar. “Month” means calendar month of the Gregorian Calendar. “Employer” means the person named as such in the SCC and includes the legal successors or permitted assigns of the Employer. “Project Manager” means the person appointed by the Employer in the manner provided in GCC Sub-Clause 17.1 (Project Manager) hereof and named as such in the SCC to perform the duties delegated by the Employer. “Contractor” means the person(s) whose bid to perform the Contract has been accepted by the Employer and is named as such in the Contract Agreement, and includes the legal successors or permitted assigns of the Contractor. “Contractor’s Representative” means any person nominated by the Contractor and approved by the Employer in the manner provided in GCC Sub-Clause 17.2 (Contractor’s Representative and Construction Manager) hereof to perform the duties delegated by the Contractor. “Subcontractor,” including vendors, means any person to whom execution of any part of the Facilities, including preparation of any design or supply of any Plant and Equipment, is sub-contracted directly or indirectly by the Contractor, and includes its legal successors or permitted assigns. “Contract Price” means the sum specified in Article 2.1 (Contract Price) of the Contract Agreement, subject to such

Clause No.		Definition
		additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract. “Facilities” means the Plant and Equipment to be supplied and installed, as well as all the Installation Services to be carried out by the Contractor under the Contract. Plant and Equipment” means permanent plant, equipment, machinery, apparatus, articles and things of all kinds to be provided and incorporated in the Facilities by the Contractor under the Contract (including the spare parts to be supplied by the Contractor under GCC Sub-Clause 7.3 hereof), but does not include Contractor’s Equipment. “Installation Services” means all those services ancillary to the supply of the Plant and Equipment for the Facilities, to be provided by the Contractor under the Contract; e.g., transportation and provision of marine or other similar insurance, inspection, expediting, Site preparation works (including the provision and use of Contractor’s Equipment and the supply of all construction materials required), installation, testing, precommissioning, commissioning, operations & maintenance required for achieving Completion of Facilities, the provision of operations and maintenance manuals, training of Employer’s Personnel etc. “Contractor’s Equipment” means all plant, facilities, equipment, machinery, tools, apparatus, appliances or things of every kind required in or for installation, completion and maintenance of Facilities that are to be provided by the Contractor, but does not include Plant and Equipment, or other things intended to form or forming part of the Facilities. “Site” means the land and other places upon which the Facilities are to be installed, and such other land or places as may be specified in the Contract as forming part of the Site. “Effective Date” means the date from which the Time for Completion shall be determined as stated in Article 3 (Effective Date for Determining Time for Completion) of the Form of Contract Agreement. “Time for Completion” means the time within which Completion of the Facilities as a whole (or of a part of the Facilities where a separate Time for Completion of such part has been prescribed) is to be attained in accordance with the stipulations in the SCC and the relevant provisions of the Contract.

Clause No.		Definition
		“Completion” means that the Facilities (or a specific part thereof where specific parts are specified in the SCC) have been completed operationally and structurally and put in a tight and clean condition, and that all work in respect of Pre-commissioning of the Facilities or such specific part thereof has been completed; and Commissioning has been attained as per Technical Specifications. “Pre-commissioning” means the testing, checking and other requirements specified in the Technical Specifications that are to be carried out by the Contractor in preparation for Commissioning as provided in GCC Clause 24 (Completion) hereof. “Commissioning” means trial/initial operation of the Facilities or any part thereof by the Contractor, which operation is to be carried out by the Contractor as provided in GCC Sub-Clause 25.1 (Commissioning) hereof, for the purpose of carrying out Guarantee Test(s). “Guarantee Test(s)” means the test(s) specified in the Technical Specifications to be carried out to ascertain whether the Facilities or a specified part thereof is able to attain the Functional Guarantees specified in the Technical Specifications in accordance with the provisions of GCC Sub-Clause 25.2 (Guarantee Test) hereof. “Operational Acceptance” means the acceptance by the Employer of the Facilities (or any part of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor’s fulfilment of the Contract in respect of Functional Guarantees of the Facilities (or the relevant part thereof) in accordance with the provisions of GCC Clause 28 (Functional Guarantees) hereof and shall include deemed acceptance in accordance with GCC Clause 25 (Commissioning and Operational Acceptance) hereof. “Defect Liability Period” means the period of validity of the warranties given by the Contractor commencing at Completion of the Facilities or a part thereof, during which the Contractor is responsible for defects with respect to the Facilities (or the relevant part thereof) as provided in GCC Clause 27 (Defect Liability) hereof.
2.0		Contract Documents
	2.1	Subject to Article 1.2 (Order of Precedence) of the Contract Agreement, all documents forming part of the Contract (and all parts thereof) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.

Clause No.		Definition
	2.2	The Contract will be signed in three originals and the Contractor shall be provided with one signed original and the rest will be retained by the Employer.
	2.3	The Contractor shall provide free of cost to the Employer all the engineering data, drawing and descriptive materials submitted with the bid, in at least six (6) copies to form a part of the Contract immediately after Notification of Award.
	2.4	Subsequent to signing of the Contract, the Contractor at his own cost shall provide the Employer with at least twenty (20) copies of electronic version of the signed Contract Agreement on CD-ROM within thirty (30) days of its signing.
3.0	Interpretation	
	3.1	Language
	3.1.1	Unless the Contractor is a national of the Employer's country and the Employer and the Contractor agree to use the local language, all Contract Documents, all correspondence and communications to be given, and all other documentation to be prepared and supplied under the Contract shall be written in English, and the Contract shall be construed and interpreted in accordance with that language.
	3.1.2	If any of the Contract Documents, correspondence or communications are prepared in any language other than the governing language under GCC Sub-Clause 3.1.1 above, the English translation of such documents, correspondence or communications shall prevail in matters of interpretation.
	3.1.3	The English Translation of the documents shall be carried out by professional translators and the translator shall certify that he is proficient in both languages in order to translate the document and that the translation is complete and accurate. Further, translation shall be authenticated by the Indian Consulate located in the Country where the documents have been issued or the Embassy of that Country in India.
		Singular and Plural
	3.2	The singular shall include the plural and the plural the singular, except where the context otherwise requires.
	3.3	Headings
		The headings and marginal notes in the General Conditions of Contract are included for ease of reference, and shall neither constitute a part of the Contract nor affect its interpretation
	3.4	Persons

Clause No.		Definition
		Words importing persons or parties shall include firms, corporations and government entities.
		Unless inconsistent with any provision of the Contract, the meaning of any trade term and the rights and obligations of parties thereunder shall be as prescribed by Incoterms
	3.5	Incoterms
		Unless inconsistent with any provision of the Contract, the meaning of any trade term and the rights and obligations of parties thereunder shall be as prescribed by Incoterms. Incoterms means international rules for interpreting trade terms published by the International Chamber of Commerce (latest edition), 38 Cours Albert 1er, 75008 Paris, France.
	3.6	Construction of the Contract
	3.6.1	The Contracts to be entered into between the Employer and the successful bidder shall be as under: For Foreign Bidder -- First Contract: For CIF (Indian port-of-entry) supply of all Plant and Equipment including Mandatory Spares to be supplied from abroad -- Second Contract: For Ex-works (India) supply of Plant and Equipment including Mandatory Spares. -- Third Contract : For providing all services i.e. port handling, port clearance and port charges for the imported goods, further loading, inland transportation for delivery at site, inland transit insurance, unloading, storage, handling at site, installation, insurance covers other than inland transit insurance, erection, testing, commissioning and conducting Guarantee tests in respect of all the equipment supplied under the 'First Contract' & the 'Second Contract' and all other services as specified in the Contract Documents. If the foreign bidder has proposed an Assignee in his bid to execute the Second Contract and/or the Third Contract and has also furnished written unequivocal consent of the proposed Assignee to work as independent Contractor on the terms and conditions offered by the bidder and if the Employer is satisfied with capacity and experience of the Assignee, the Employer will enter into the 'Second Contract' and/or 'Third Contract' with the said Assignee. In case no Assignee has been proposed by the foreign bidder in his bid or if the Assignee fails to enter into the Second Contract and/or Third Contract with the Employer or if the Employer

Clause No.		Definition
		in its judgment does not find acceptance of the proposed Assignee as its Contractor, then the foreign bidder shall be obliged to enter into and execute all the three Contracts with the Employer. For Domestic Bidder -- First Contract: For CIF (Indian port-of-entry) supply of Plant and equipment including Mandatory Spares to be supplied from abroad -- Second Contract: For Ex-works (India) supply of Plant and Equipment including Mandatory Spares. -- Third Contract : For providing all services i.e. port handling, port clearance and port charges for the imported goods, further loading, inland transportation for delivery at site, inland transit insurance, unloading, storage, handling at site, installation, insurance covers other than inland transit insurance, erection, testing, commissioning and conducting Guarantee tests in respect of all the equipment supplied under the 'First Contract' & the 'Second Contract' and all other services as specified in the Contract Documents.
	3.6.2	The award of separate Contracts shall not in any way dilute the responsibility of the Contractor for the successful completion of the Facilities as per Contract Documents and a breach in one Contract shall automatically be construed as a breach of the other Contract(s) which will confer a right on the Employer to terminate the other Contract(s) also at the risk and the cost of the Contractor.
	3.7	Entire Agreement
		Subject to GCC Sub-Clause 16.4 hereof, the Contract constitutes the entire agreement between the Employer and Contractor with respect to the subject matter of Contract and supersedes all communications, negotiations and agreements (whether written or oral) of parties with respect thereto made prior to the date of Contract.
	3.8	Amendment
		No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each party hereto

Clause No.		Definition
	3.9	Independent Contractor
		The Contractor shall be an independent contractor performing the Contract. The Contract does not create any agency, partnership, joint venture or other joint relationship between the parties hereto. Subject to the provisions of the Contract, the Contractor shall be solely responsible for the manner in which the Contract is performed. All employees, representatives or Subcontractors engaged by the Contractor in connection with the performance of the Contract shall be under the complete control of the Contractor and shall not be deemed to be employees of the Employer, and nothing contained in the Contract or in any subcontract awarded by the Contractor shall be construed to create any contractual relationship between any such employees, representatives or Subcontractors and the Employer.
	3.10	Joint Venture or Consortium
		If the Contractor is a joint venture or consortium of two or more firms, all such firms shall be jointly and severally bound to the Employer for the fulfilment of the provisions of the Contract and shall designate one of such firms to act as a leader with authority to bind the joint venture or consortium. The composition or the constitution of the joint venture or consortium shall not be altered without the prior consent of the Employer.
	3.11	Non-Waiver
	3.11.1	Subject to GCC Sub-Clause 3.11.2 below, no relaxation, forbearance, delay or indulgence by either party in enforcing any of the terms and conditions of the Contract or the granting of time by either party to the other shall prejudice, affect or restrict the rights of that party under the Contract, nor shall any waiver by either party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.
	3.11.2	Any waiver of a party's rights, powers or remedies under the Contract must be in writing, must be dated and signed by an authorized representative of the party granting such waiver, and must specify the right and the extent to which it is being waived.
	3.12	Severability

Clause No.		Definition
	3.12.1	If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.
	3.13	Country of Origin “Origin” means the place where the materials, equipment and other supplies for the Facilities are mined, grown, produced or manufactured, and from which the services are provided.
4.0	Notices	
	4.1	Unless otherwise stated in the Contract, all notices to be given under the Contract shall be in writing, and shall be sent by personal delivery, airmail post, special courier, cable, telegraph, telex, facsimile or Electronic Data Interchange (EDI) to the address of the relevant party set out in the Contract Coordination Procedure to be finalised pursuant to GCC SubClause 17.2.3.1, with the following provisions.
	4.1.1	Any notice sent by cable, telegraph, facsimile or EDI shall be confirmed within two (2) days after despatch by notice sent by airmail post or special courier, except as otherwise specified in the Contract.
	4.1.2	Any notice sent by airmail post or special courier shall be deemed (in the absence of evidence of earlier receipt) to have been delivered ten (10) days after despatch. In proving the fact of despatch, it shall be sufficient to show that the envelope containing such notice was properly addressed, stamped and conveyed to the postal authorities or courier service for transmission by airmail or special courier.
	4.1.3	Any notice delivered personally or sent by telegraph, facsimile shall be deemed to have been delivered on date of its despatch.
	4.1.4	Either party may change its postal, cable, telex, facsimile or EDI address or addressee for receipt of such notices by ten (10) days' notice to the other party in writing.
	4.2	Notices shall be deemed to include any approvals, consents, instructions, orders and certificates to be given under the Contract.

Clause No.		Definition
5.0	Governing Laws	
	5.1	The Contract shall be governed by and interpreted in accordance with laws in force in India. The Courts of Delhi shall have exclusive jurisdiction in all matters arising under the Contract.
6.0	Settlement of Disputes	
	6.1	Mutual Consultation If any dispute of any kind whatsoever shall arise between the Employer and the Contractor in connection with or arising out of the Contract, including without prejudice to the generality of the foregoing, any question regarding its existence, validity or termination, or the execution of the Facilities, whether during the progress of the Facilities or after their completion and whether before or after the termination, abandonment or breach of the Contract, the parties shall seek to resolve any such dispute or difference by mutual consultation. If the parties fail to resolve such a dispute or difference by mutual consultation, then the dispute maybe settled through Expert Settlement Council/Arbitration
	6.2	Resolution of Dispute through Conciliation
		Where the disputed amount is within Rs 250 crores (to be arrived at considering the claim and counter claim of the parties to the dispute) and in case the parties fail to resolve such a dispute or difference by mutual consultation, the dispute may be referred to Conciliation.
	6.2.1	Invitation for Conciliation:
	6.2.1.1	A party shall notify the other party in writing about such a dispute it wishes to refer for conciliation within a period of 30 days from the date of failure to resolve the dispute through mutual consultation. Such Invitation for conciliation shall contain sufficient information as to the dispute to enable the other party to be fully informed as to the nature of the dispute, amount of the monetary claim, if any, and apparent cause of action.
	6.2.1.2	Upon acceptance of the invitation to conciliate, the other party shall submit its counter claim, if any, within a period of 30 days from the date of the invitation to conciliate. If the other party rejects the invitation or if disputed amount exceeds Rs 250 crores, there will be no conciliation proceedings.

Clause No.		Definition
	6.2.1.3	If the party initiating conciliation does not receive a reply within thirty days from the date it sends the invitation, or within such other period of time as specified in the invitation, it shall treat this as a rejection of the invitation to conciliate from the other party.
	6.2.2	Conciliation:
	6.2.2.1	Where Invitation for conciliation has been furnished under GCC sub clause 6.2.1, the parties shall attempt to settle such dispute through Expert Settlement Council (ESC) which shall be constituted by CMD, NTPC.
	6.2.2.2	ESC will be formed from experts comprising three members from the panel of conciliators maintained by NTPC. However, there will be single member ESC for disputes involving claim and counter claim (if any) up to Rs. 1 crore. CMD will have authority to reconstitute an ESC to fill any vacancy.
	6.2.2.3	The eligible persons for consideration for empanelment in the panel of conciliators shall be amongst Retired Civil Servants of Govt. of India not below the rank of Additional Secretary, Retired Judges, Retired Directors/ Chairman of any Maharatna/Navratna company in India other than NTPC Ltd, Retired Independent Directors who have served on the Board of any Maharatna/ Navratna company in India other than NTPC Ltd and Independent experts in their respective fields preferably registered with the Indian Council of Arbitration or Delhi International Arbitration Centre or Federation of Indian Chambers of Commerce and Industry or SCOPE Arbitration Forum.
	6.2.3	Proceedings before ESC:
	6.2.3.1	The claimant shall submit its statement of claims along with relevant documents to ESC members, and to the party(s) indicated in the appointment letter within 30 days of the issue of the appointment letter. The respondent shall file its reply and counter claim (if any) within 30 days of the receipt of the statement of claims. Parties may file their rejoinder/additional documents, if any in support of their claim/counterclaim within next 15 days. No documents shall be allowed thereafter, except with the permission of ESC.
	6.2.3.2	The parties shall file their claim and counterclaim in the following format a. Chronology of the dispute b. Brief of the contract c. Brief history of the dispute e. Issues Details of Claim(s)/Counter Claim(s) f. Basis/Ground of claim(s)/counter claim(s) (along with relevant clause of contract)

Clause No.		Definition						
		Statement of claims shall be restricted to maximum limit of 20 pages.						
	6.2.3.3	In case of 3 members ESC, 2 members will constitute a valid quorum and the meeting can take place to proceed in the matter after seeking consent from the member who is not available. However, ESC recommendations will be signed by all the members.						
	6.2.3.4	The parties shall be represented by their in house employees. No party shall be allowed to bring any advocate or outside consultant/advisor/agent to contest on their behalf. Ex officers of NTPC who have handled the disputed matter in any capacity shall not be allowed to attend and present the case before ESC on behalf of contractor. However, ex employees of parties may represent their respective organizations. Parties shall not claim any interest on claims/counter-claims from the date of notice invoking conciliation till execution of settlement agreement, if so arrived. In case, parties are unable to reach a settlement, no interest shall be claimed by either party for the period from the date of notice invoking conciliation till the date of ESC recommendations and 30 days thereafter in any further proceeding.						
	6.2.3.5	ESC will conclude its proceedings in maximum 10 meetings, and give its recommendations within 90 days of its first meeting. ESC will give its recommendations to both the parties recommending possible terms of settlement. CMD NTPC may extend the time/number of meetings, in exceptional cases, if ESC requests for the same with sufficient reasons.						
	6.2.3.6	Depending upon the location of ESC members and the parties the venue of the ESC meeting shall be either Delhi/Mumbai/Kolkata/Chennai or any other city whichever is most economical from the point of view of travel and stay etc. All the expenditure incurred in ESC proceedings shall be shared by the parties in equal proportion.						
	6.2.4	Fees & Facilities to the Members of the ESC The cost of conciliation proceedings including but not limited to fees for Conciliator, Airfare, Local transport, Accommodation cost towards conference facility etc shall be as provided hereinafter below:						
		<table> <tr> <th>Sl.No.</th><th>Fees/ Facility</th><th>Entitlement</th></tr> <tr> <td>1</td><td>Fees</td><td>As paid to NTPC Independent Directors [Presently Rs. 20,000 per meeting]. In addition each conciliator to be paid Rs 10,000 for</td></tr> </table>	Sl.No.	Fees/ Facility	Entitlement	1	Fees	As paid to NTPC Independent Directors [Presently Rs. 20,000 per meeting]. In addition each conciliator to be paid Rs 10,000 for
Sl.No.	Fees/ Facility	Entitlement						
1	Fees	As paid to NTPC Independent Directors [Presently Rs. 20,000 per meeting]. In addition each conciliator to be paid Rs 10,000 for						

Clause No.		Definition		
				attending meeting to authenticate the settlement agreement. - max. of Rs. 2,10,000 per case per Conciliator.
		2	Secretarial expenses	Rs. 10,000 lump sum (to 1 member only).
		3	Transportation in the city of the meeting	Car as per entitlement or Rs. 2,000 per day
		4	Venue for meeting	NTPC conference rooms
		Facilities to be provided to the out -stationed member		
		5	Travel from the city of residence to the city of meeting	As per entitlement of Independent Directors. Executive class air tickets/ first class AC train tickets/ Luxury car/ reimbursement of actual fare. However, entitlement of air travel by Business class shall be subject to austerity measures, if any, ordered by Govt of India.
		6	Transport to and fro airport/railway station in the city of residence	Car as per entitlement or Rs. 3,000
		7	Stay for out stationed members	As per entitlement of Independent Directors.
		8	Transport in the city of meeting	Car as per entitlement or Rs. 2000 per day
		Aforesaid fees is subject to revision by NTPC from time to time and subject to government guidelines on austerity measures, if any. All the expenditure incurred in the ESC proceedings shall be shared by the parties in equal proportions. The Parties shall maintain the account of expenditure and present to the other for the purpose of sharing on conclusion of the ESC proceedings.		
	6.2.5	If decision of NTPC is acceptable to the contractor, a Settlement Agreement under section 73 of the Arbitration and Conciliation Act 1996 will be signed within 15 days of		

Clause No.		Definition
		contractor's acceptance and same shall be authenticated by all the ESC members. Parties are free to terminate conciliation proceedings at any stage as provided under the Arbitration and Conciliation Act 1996.
	6.2.6	The parties shall keep confidential all matters relating to the conciliation proceedings. Parties shall not rely upon them as evidence in arbitration proceedings or court proceedings.
	6.3	Arbitration
	6.3.1	In case the parties fail to settle the dispute through the process of mutual consultation and/or conciliation as per GCC SubClause 6.1 & 6.2 above, either party may give a notice to the other party, of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Such notice of intention to commence arbitration shall be given within a period of thirty (30) days from the date of failure to settle the matter through mutual consultation or thirty (30) days from the date of termination of ESC proceedings (applicable only in case where ESC has been constituted).
	6.3.2	Any dispute in respect of which a notice of intention to commence arbitration has been given, in accordance with Sub-Clause 6.3.1 above, shall be finally settled by arbitration. Arbitration may be commenced prior to or after completion of the Facilities.
	6.3.3	Any dispute submitted by a party to arbitration shall be heard by an arbitration panel composed of three arbitrators, in accordance with the provisions set forth below.
	6.3.4	The Employer and the Contractor shall each appoint one arbitrator, and these two arbitrators shall jointly appoint a third arbitrator, who shall chair the arbitration panel. If the two arbitrators do not succeed in appointing a third arbitrator within twenty eight (28) days after the latter of the two arbitrators has been appointed, the third arbitrator shall, at the request of either party, be appointed by the Appointing Authority for arbitrator designated in the SCC.
	6.3.5	If one party fails to appoint its arbitrator within forty-two (42) days after the other party has named its arbitrator, the party which has named an arbitrator may request the Appointing Authority to appoint the second arbitrator.
	6.3.6	If for any reason an arbitrator is unable to perform its function, the mandate of the Arbitrator shall terminate in accordance with the provisions of applicable laws as mentioned in GCC Clause 5(Governing Law) and a substitute shall be appointed in the same manner as the original arbitrator.

Clause No.		Definition
	6.3.7	Arbitration proceedings shall be conducted (i) in accordance with the rules of procedure designated in the SCC, (ii) in the place designated in the SCC, and (iii) in the language in which this Contract has been executed.
	6.3.8	The decision of a majority of the arbitrators (or of the third arbitrator chairing the arbitration, if there is no such majority) shall be final and binding and shall be enforceable in any court of competent jurisdiction as decree of the court. The parties thereby waive any objections to or claims of immunity from such enforcement.
	6.3.9	The arbitrator(s) shall give reasoned award.
	6.4	Notwithstanding any reference to the Conciliation or Arbitration herein, (a) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree. (b) the Employer shall pay the Contractor any monies due to the Contractor.
	6.5	The fee of Arbitrator(s) and the period of Arbitration shall be as specified here under:
	(A)	Arbitrators Fee
	I	The Arbitrators shall be paid fees at the following rates: Amount of Claims Lump sum fees (including fees and Counter Claims for study of pleadings, case (excluding interest) material, writing of the award, secretarial charges etc.) payable to each arbitrator (to be shared equally by the parties) Upto Rs.50 lakhs Rs. 10,000/- per meeting subject to a ceiling of Rs.1,00,000/- Above Rs.50 lakhs Rs.1,35,000/- plus Rs.1,800/- per to Rs.1 Crore lakh or a part there of subject to a ceiling of Rs.2,25,000/- Above Rs.1 Crore Rs.2,25,000/-plus Rs.33,750/-per and upto Rs.5 Crore crore or a part thereof subject to a ceiling of Rs.3,60,000/- Above Rs.5 Crore Rs.3,60,000/-plus Rs.22,500/-per and upto Rs.10 Crore crore or a part thereof subject to a ceiling of Rs.4,72,500/- Above Rs.10 Crore Rs.4,72,500 plus Rs.18,000/-per crore or part thereof subject to a ceiling of Rs.10,00,000/-

Clause No.		Definition
		If the claim is in foreign currency, the SBI Bills Selling Exchange rate prevailing on the date of claim shall be used for the purpose of converting the claim in Indian Rupee
	II	If after commencement of the Arbitration proceedings, the parties agree to settle the dispute mutually or refer the dispute to conciliation, the arbitrators shall put the proceedings in abeyance until such period as requested by the parties. Where the proceedings are put in abeyance or terminated on account of mutual settlement of dispute by the parties, the fees payable to the arbitrators shall be determined as under: (i) 20% of the fees if the claimant has not submitted statement of claim. (ii) 40% of the fees if the pleadings are complete (ii) 60% of the fees if the hearing has commenced (iii) 80% of the fees if the hearing is concluded but the award is yet to be passed
	III	Each party shall pay its share of arbitrator's fees in stages as under: (i) 20% of the fees on filing of reply to the statement of claim (ii) 40 % of the fees on completion of pleadings (iii) 20% of the fees on conclusion of the final hearing (iv) 20% at the time when award is given to the parties
	IV	Each party shall be responsible to make arrangements for the travel and stay etc. of the arbitrator appointed by it. As regards the Presiding Arbitrator, the expenses incurred on his travel/stay shall be shared equally by the parties.
	V	The parties agree that they shall appoint only those persons as arbitrators who accept the conditions of arbitration clause, including the fees schedule provided herein. No person shall be appointed as arbitrator or presiding arbitrator who does not accept the conditions of arbitration clause including the fee schedule provided hereinbefore.
	(B)	Arbitration Period
		The arbitrators shall make and publish the award within time stipulated as under: Amount of Claims and Period for making and Counter Claims publishing of the award (excluding interest) (counted from the date of first meeting of the arbitrators) Up to Rs. 5 Crore Within 8 months Above Rs. 5 Crore Within 12 months The above time limit can be extended by the arbitrators, for

Clause No.		Definition
		reasons to be recorded in writing, with the consent of the parties.
B	Subject Matter of Contract	
7.0	Scope Of Facilities	
	7.1	Unless otherwise expressly limited in the Technical Specifications, the Contractor's obligations cover the provision of all Plant and Equipment including structural steel and the performance of all Installation Services and civil works, allied works etc. required for the design, the manufacture (including procurement, quality assurance, construction, installation, associated civil works, Pre-commissioning and delivery) of the Plant and Equipment and the installation, completion, commissioning and performance testing of the Facilities in accordance with the plans, procedures, specifications, drawings, codes and any other documents as specified in the Technical Specifications. Such specifications include, but are not limited to, the provision of supervision and engineering services; the supply of labour, materials, equipment, spare parts (as specified in GCC Sub-Clause 7.3 below) and accessories; Contractor's Equipment; construction utilities and supplies; temporary materials, structures and facilities; transportation (including, without limitation, unloading and hauling to, from and at the Site); and storage, except for those supplies, works and services that will be provided or performed by the Employer, as set forth in Appendix 6 (Scope of Works and Supply by the Employer) to the Contract Agreement.
		The Contractor shall, unless specifically excluded in the Contract, perform all such work and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Completion of the Facilities as if such work and/or items and materials were expressly mentioned in the Contract.
	7.2	In addition to the supply of Mandatory Spare Parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the Facilities. However, the identity, specifications and quantities of such spare parts and the terms and conditions relating to the supply thereof are to be agreed between the Employer and the Contractor, and the price of such spare parts shall be that given in Price Schedule No. 6, which shall be added to the Contract Price. The price of such spare parts shall include the purchase price therefor and other costs and expenses (including the Contractor's fees) relating to the supply of spare parts. Prices of recommended spares covered under price Schedule No. 6 shall be kept valid for a period of six (6) months after placement of Notification of Award for Main Equipment and Mandatory Spares.

Clause No.		Definition
	7.3.1	The Contractor agrees that the spare parts recommended by him for 3 years operation and quoted in Schedule No. 6 shall be supplied by him at the same terms and conditions as are otherwise applicable to this Contract. Further, the Contractor also agrees to supply spare parts required for the operation and maintenance of the Facilities as per provision of subsequent paragraphs of this Sub-Clause.
	7.3.1.1	All the spares for the equipment under the Contract will strictly conform to the Specification and other relevant documents and will be identical to the corresponding main equipment/components supplied under the Contract and shall be fully interchangeable.
	7.3.1.2	All the mandatory spares covered under the Contract shall be produced along with the main equipment as a continuous operation and the delivery of the spares will be effected along with the main equipment in a phased manner and the delivery would be completed by the respective dates for the various categories of equipment as per the agreed network. In case of recommended spares the above will be applicable provided the order for the recommended spares have been placed with the Contractor prior to commencement of manufacture of the main equipment.
	7.3.1.3	The Contractor will provide the Employer with the manufacturing drawings, catalogues, assembly drawings and any other document required by the Employer so as to enable the Employer to identify the recommended spares. Such details will be furnished to the Employer as soon as they are prepared but in any case not later than six months prior to commencement of manufacture of the corresponding main equipment.
	7.3.1.4	To enable the Employer to finalise the requirement of recommended spares which are ordered subsequent to placement of order for main equipment/plant, in addition to necessary technical details, catalogue and such other information brought-out herein above, the Contractor will also provide a justification in support of reasonableness of the quoted prices of spares which will, inter-alia, include documentary evidence that the prices quoted by the Contractor to the Employer are not higher than those charged by him from other customers in the same period.
	7.3.1.5	In addition to the spares recommended by the Contractor, if the Employer further identifies certain items of spares, the Contractor will submit the prices and delivery quotation for such spares within thirty (30) days of receipt of such request with a validity period of six (6) months for consideration by the Employer and placement of order for additional spares if the Employer so desires.
	7.3.1.6	The quality plan and the inspection requirement finalised for the main equipment will also be applicable to the corresponding spares.
	7.3.1.7	The Contractor will provide the Employer with all the addresses and particulars of his sub-suppliers while placing the order on vendors for items/components/equipment

Clause No.		Definition
		covered under the Contract and will further ensure with his vendors that the Employer, if so desires, will have the right to place order for spares directly on them on mutually agreed terms based on offers of such vendors.
	7.3.1.8	The Contractor shall guarantee the long term availability of spares to the Employer for the full life of the equipment covered under the Contract. The Contractor shall guarantee that before going out of production of spare parts of the equipment covered under the Contract, he shall give the Employer atleast 2 years advance notice so that the latter may order his bulk requirement of spares, if it so desires. The same provision will also be applicable to Sub-contractors. Further, in case of discontinuance of manufacture of any spares by the Contractor and/or his Sub-contractor, Contractor will provide the Employer, two years in advance, with full manufacturing drawings, material specification and technical information including information on alternative equivalent makes required by the Employer for the purpose of manufacture/procurement of such items.
	7.3.1.9	The prices of all future requirements of item of spares beyond 3 years operational requirement will be derived from the corresponding ex-works price at which the order for such spares have been placed by Employer as a part of mandatory spares or recommended spares, or from the rates of mandatory spares or recommended spares as quoted by/negotiated with the Contractor. Ex-works order price of future spares shall be computed in accordance with the price adjustment provisions covered under the main Contract excepting that the base indices will be counted from the scheduled date of Commissioning of the last equipment under the main contract and there will be no ceiling on the amount of variation in the prices. The above option for procuring future recommended spares by the Employer shall remain valid for the period of 5 years from the date of Commissioning of the equipment.
	7.3.1.10	The Contractor will indicate in advance the delivery period of the items of spares, which the Employer may procure in accordance with above sub-clause. In case of emergency requirements of spares, the Contractor would make every effort to expedite the manufacture and delivery of such spares on the basis of mutually agreed time schedule.
	7.3.1.11	In case the Contractor fails to supply the mandatory, recommended or long term spares in the terms stipulated above, the Employer shall be entitled to purchase the same from the alternate sources at the risk and the cost of the Contractor and recover from the Contractor, the excess amount paid by the Employer over the rates worked on the above basis. In the event of such risk purchase by the Employer, the purchases will be as per the Works and Procurement Policy of the Employer prevalent at the time of

Clause No.		Definition
		such purchases and the Employer at his option may include a representative from the Contractor in finalising the purchases.
	7.3.1.12	It is expressly understood that the final settlement between the parties in terms of relevant clauses of the Contract Documents shall not relieve the Contractor of any of his obligations under the provision of long term availability of spares and such provisions shall continue to be enforced till the expiry of 5 years period reckoned from the scheduled date of Commissioning of the Plant and Equipment unless otherwise discharged expressly in writing by the Employer. Further, the provisions pertaining to long term availability of spares shall be extended beyond 5 years applicability period mentioned hereinabove if so desired by the Employer and at the mutually acceptable escalation formula.
	7.3.1.13	The Contractor shall warrant that all spares supplied will be new and in accordance with the Contract Documents and will be free from defects in design, material and workmanship and shall further guarantee as under: (i) For 3 years operational spares (both mandatory and recommended) a) For any item of spares ordered or to be ordered by the Employer for 3 years operational requirement of the plant which are manufactured as a continuous operation together with the corresponding main equipment/component, the Defect Liability Period will be twelve (12) months from the scheduled date of commercial operation of main equipment/plant under the Contract. 'Commercial Operation' shall mean the conditions of operation in which the complete equipment covered under the Contract is officially declared by the Employer to be available for continuous operation at different loads upto and including rated capacity. Such declaration by the Employer, however, shall not relieve or prejudice the Contractor any of his obligations under the Contract. In case of any failure in the original component/equipment due to faulty designs, materials and workmanship, the corresponding spare parts, if any, supplied will be replaced without any extra cost to the Employer unless a joint examination and analysis by the Employer and the Contractor of such spare parts prove that the defect found in the original part that failed, can safely be assumed not to be present in spare parts. Such replaced spare parts will have the same Defect Liability as applicable to the replacement made for the defective original part/component provided that such replacement for the original equipment and the spare replaced are again manufactured together. The discarded spare parts will become the property of the Contractor as soon as they have been replaced by the Contractor.

Clause No.		Definition
		b) For the item of spares ordered or to be ordered by the Employer for 3 years operational requirement of the plant, which with the written approval of the Employer, are not manufactured as a continuous operation will be warranted for 7000 hrs of trouble free operation if used within a period of eighteen (18) months reckoned from the date of delivery at site. However, if such spare parts are put to use after eighteen (18) months of the delivery at Site then the guarantee of such spares will stand valid till the expiry of thirty six (36) months from the scheduled date of Commissioning of equipment/plant covered under the contract or 7000 hrs of trouble free operation after such spares are put in service, whichever is earlier. c) For long term requirement For item of spares that may be ordered by the Employer to cover requirements beyond 3 years of Initial Operation of the plant, the warranty will be till the expiry of 7000 hrs of trouble free operation if used within a period of eighteen (18) months from the date of delivery at site. For item of spares that may be used after eighteen (18) months from the date of delivery at site, the warranty period will be 12 months from the date they are put to use or 7000 hrs of trouble free operation, whichever is earlier. In any case the defect liability of spares will expire at the end of forty eight (48) months from the date of their receipt at site. ii) The Defect Liability of spares covered in para (b) & (c) above, that are not used within 18 months from the respective date of the delivery at Site will, however, be subject to condition that all such spares being stored/maintained/preserved in accordance with Contractor's standard recommended practice, if any, and the same has been furnished to the Employer.
8.0	Time for Commencement and Completion	
	8.1	The Contractor shall commence work on the Facilities from the date of Notification of Award and without prejudice to GCC Sub-Clause 26.2 hereof, the Contractor shall hereafter proceed with the Facilities in accordance with the time schedule specified in Appendix 4 (Time Schedule) to the Contract Agreement.
	8.2	The Contractor shall attain Completion of the Facilities (or of a part where a separate time for Completion of such part is specified in the Contract) within the time stated in the SCC or within such extended time to which the Contractor shall be entitled under GCC Clause 40 (Extension of Time for Completion) hereof.
9.0	Contractor's Responsibilities	
	9.1	The Contractor shall design, manufacture (including associated purchases and/or subcontracting), install and

Clause No.		Definition
		complete the Facilities with due care and diligence in accordance with the Contract.
	9.2	The Contractor confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the Facilities (including any data as to boring tests) provided by the Employer, and on the basis of information that the Contractor could have obtained from a visual inspection of the Site (if access thereto was available) and of other data readily available to it relating to the Facilities as at the date twenty-eight (28) days prior to deadline set for price bid submission. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the Facilities.
	9.3	The Contractor shall acquire in its name all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located that are necessary for the performance of the Contract, including, without limitation, visas for the Contractor's and Subcontractor's personnel and entry permits for all imported Contractor's Equipment. The Contractor shall acquire all other permits, approvals and/or licenses that are not the responsibility of the Employer under GCC Sub-Clause 10.3 hereof and that are necessary for the performance of the Contract.
	9.4	The Contractor shall comply with all laws in force in the country where the Facilities are installed and where the Installation Services are carried out. The laws will include all national, provincial, municipal or other laws that affect the performance of the Contract and bind upon the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any and all liabilities, damages, claims, fines, penalties and expenses of whatever nature arising or resulting from the violation of such laws by the Contractor or its personnel, including the Subcontractors and their personnel, but without prejudice to GCC Sub-Clause 10.1 hereof
	9.5	Any Plant, Material and Services that will be incorporated in or be required for the Facilities and other supplies shall have their origin as specified under GCC Clause 3.13 (Country of Origin).
10.0	Employer's Responsibilities	
	10.1	The Employer shall ensure the accuracy of all information and/or data to be supplied by the Employer as described in Appendix 6 (Scope of Works and Supply by the Employer) to the Contract, except when otherwise expressly stated in the Contract.
	10.2	The Employer shall be responsible for acquiring and providing legal and physical possession of the Site and access thereto, and for providing possession of and access to all other areas reasonably required for the proper

Clause No.		Definition
		execution of the Contract, including all requisite rights of way, as specified in Appendix 6 (Scope of Works and Supply by the Employer) to the Contract Agreement. The Employer shall give full possession of and accord all rights of access thereto on or before the date(s) specified in Appendix 6.
	10.3	The Employer shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located which such authorities or undertakings require the Employer to obtain them in the Employer's name, are necessary for the execution of the Contract (they include those required for the performance by both the Contractor and the Employer of their respective obligations under the Contract), including those specified in Appendix 6 (Scope of Works and Supply by the Employer) to the Contract Agreement.
	10.4	If requested by the Contractor, the Employer shall use its best endeavours to assist the Contractor in obtaining in a timely and expeditious manner all permits, approvals and/or licenses necessary for the execution of the Contract from all local, state or national government authorities or public service undertakings that such authorities or undertakings require the Contractor or Subcontractors or the personnel of the Contractor or Subcontractors, as the case may be, to obtain.
	10.5	Unless otherwise specified in the Contract or agreed upon by the Employer and the Contractor, the Employer shall provide sufficient, properly qualified operating and maintenance personnel; shall supply and make available all raw materials, utilities, lubricants, chemicals, catalysts, other materials and facilities ; and shall perform all work and services of whatsoever nature, to enable the Contractor to properly carry out Pre-commissioning, Commissioning and Guarantee Tests, all in accordance with the provisions of Appendix 6 (Scope of Works and Supply by the Employer) to the Contract Agreement at or before the time specified in the program furnished by the Contractor under GCC Sub-Clause 18.2 (Program of Performance) hereof and in the manner thereupon specified or as otherwise agreed upon by the Employer and the Contractor.
	10.6	The Employer shall be responsible for the continued operation of the Facilities after Completion, in accordance with GCC Sub-Clause 24.8, and shall be responsible for facilitating the Guarantee Test(s) for the Facilities, in accordance with GCC Sub-Clause 25.2.
	10.7	All costs and expenses involved in the performance of the obligations under this GCC Clause 10 shall be the responsibility of the Employer, save those to be incurred by the Contractor with respect to the performance of Guarantee Tests, in accordance with GCC Sub-Clause 25.2.

Clause No.		Definition
C	Payment	
11.0	Contract Price	
	11.1	The Contract Price shall be as specified in Article 2 (Contract Price and Terms of Payment) of the Form of Contract Agreement.
	11.2	The Contract Price shall be adjusted in accordance with provisions of Appendix-2 (Price Adjustment) to the Contract Agreement.
	11.3	Subject to GCC Sub-Clauses 9.2, 10.1 and 35 (Unforeseen Conditions) hereof, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.
12.0	Terms of Payment	
	12.1	The Contract Price shall be paid as specified in Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement. The procedures to be followed in making application for and processing payments shall be those outlined in the same Appendix 1.
	12.2	No payment made by the Employer herein shall be deemed to constitute acceptance by the Employer of the Facilities or any part(s) thereof.
	12.3	The currency or currencies in which payments are made to the Contractor under this Contract shall be specified in Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement, subject to the general principle that payments will be made in the currency or currencies in which the Contract Price has been stated in the Contractor's bid.
13.0	Securities	
	13.1	Issuance of Securities The Contractor shall provide the securities specified below in favor of the Employer at the times, and in the amount, manner and form specified below.
	13.2	Advance Payment Security
	13.2.1	The Contractor shall, within twenty-eight (28) days of the Notification of Award of Contract, provide a security in an amount equal to the advance payment for supply of Plant & Equipment and 110% of the advance amount for Installation Services and Civil & Allied Works calculated in accordance with Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement, and in the currency or currencies of the Contract, with an initial validity of up to ninety (90) days beyond the schedule date of Completion of the last facility covered under the package in accordance with GCC Clause 24. However, in case of delay in completion of the facilities under the package, the validity of this security shall be extended by the period of such delay..

Clause No.		Definition
	13.2.2	The security shall be in the form of an unconditional bank guarantee as per the proforma provided in Section VII (Forms and Procedures)- Form of Advance Payment Security. The Advance payment Security shall be reduced prorata every three (3) months after First Running Account Bill/Stage Payment under the Contract based on the value of the respective equipment/facilities received. The cumulative amount of reduction at any point of time shall not exceed seventy five percent (75%) of the advance corresponding to cumulative value of the respective equipment/Facilities supplied and received as per certificate issued by the Project Manager. The balance shall be released after ninety (90) days beyond Completion of those Facilities. It should be clearly understood that reduction in the value of security for advance shall not in any way dilute the Contractor's responsibility and liabilities under the Contract including in respect of the Facilities for which the reduction in the value of security is allowed..
	13.3	Performance Security
	13.3.1	The Contractor shall, within twenty-eight (28) days of the Notification of Award, provide securities for the due performance of the Contract for ten percent (10%) of the Contract Price of all the Contracts, with an initial validity upto ninety (90) days beyond the end of scheduled Defect Liability Period of the last equipment covered under the package. If the Employer accepts to enter into 'Second Contract' and/or 'Third Contract' with the Assignee of a foreign Contractor, pursuant to GCC Sub-Clause 3.6, the said Assignee, in addition to the Contract Performance Securities to be provided by the foreign contractor for ten percent (10%) of the value of all the Contracts i.e. First Contract, Second Contract and Third Contract, shall provide within twenty eight (28) days of the Notification of Award, separate Contract Performance Security(ies) equivalent to ten percent (10%) of the value of Contract(s) entered into with the Assignee, for the due performance of Contract, with an initial validity upto ninety (90) days beyond the end of Scheduled Defect Liability period of the last equipment covered under the package. However, in case of delay in completion of the defect liability period, the validity of all the contract performance securities shall be extended by the period of such delay.
	13.3.2	The performance security shall be denominated in the currency or currencies of the Contract, or in a freely

Clause No.		Definition
		convertible currency acceptable to the Employer, and shall be in the form of unconditional bank guarantee provided in Section-VII (Forms and Procedures)-Form of Performance Security of the bidding documents.
	13.3.3	Unless otherwise stipulated in SCC, the security shall be reduced pro rata to the Contract Price of a part of the Facilities for which a separate time for Completion is provided, twenty one (21) months after Completion of the Facilities or where relevant part thereof, or fifteen (15) months after Operational Acceptance of the Facilities (or the relevant part thereof), whichever occurs first; provided, however, that if the Defects Liability Period has been extended on any part of the Facilities pursuant to GCC Sub-Clause 27.8 hereof, the Contractor shall issue an additional security in an amount proportionate to the Contract Price of that part. The security shall be returned to the Contractor immediately after its expiration, provided, however, that if the Contractor, pursuant to GCC Sub-Clause 27.10, is liable for an extended warranty obligation, the performance security shall be extended for the period and up to the amount agreed upon or as specified in the SCC.
	13.4	Security for Joint Deed of Undertaking In case Deed(s) of Joint Undertaking by the Contractor along with his Collaborator(s) / Associate(s) form part of the Contract, then, in addition to the Contract performance securities furnished by the Contractor, the Collaborator(s) / Associate(s) shall furnish, within twenty eight (28) days of the Notification of Award, separate unconditional Bank Guarantee(s) towards faithful performance of the Deed(s) of Joint Undertaking for amount(s) specified in relevant Item of Bid Data Sheets and with validity till such period as specified in the corresponding format for Deed of Joint Undertaking. However, in case of delay in completion of defect liability period, the validity of Bank Guarantee(s) submitted towards faithful performance of Deed(s) of Joint Undertaking shall be extended by such period of delay. The Bank Guarantee(s) shall be denominated in the currency or currencies of Contract and shall be as per the proforma provided in Section-VII (Forms and Procedures) - Form of Bank Guarantee to be furnished by Associate(s) / Collaborator(s).
	13.5	The Bank Guarantees submitted towards Advance Payment Security, Contract Performance Security and Security in compliance to the Deed of Joint Undertaking (if applicable) shall be essentially from any of the Banks listed at Annexure-I to Section-V (Special Conditions of Contract) of the bidding documents. In case of guarantees issued by branches outside India for foreign banks, the bank guarantees shall be routed through the correspondent Bank in India for due verification of signatures of the executant.

Clause No.		Definition
		The bank guarantee submitted from within India towards Advance Payment Security, Contract Performance Security and Security for Deed of Joint Undertaking (if applicable) shall be issued on a stamp paper of appropriate value as per stamp act prevailing in the State of the issuing Bank in India or the state of U.P. in India or the State from where the BG shall be operated, whichever is higher.
	13.6	Where a BG issued by a Bank outside India also needs to bear Stamp Duty of appropriate value applicable to the place in NTPC where BG is to be submitted, the BG will be adjudicated from Collector of Stamps, within 3 months of arrival of BG in India and the expenses incurred in this regard shall be borne by the Contractor.
14.0	Taxes and Duties	
	14.1	Except as otherwise specifically provided in the Contract, the Contractor shall bear and pay all taxes, duties, levies and charges assessed on the Contractor, its Sub-contractor or their employees by all municipal, state or national government authorities in connection with the Facilities in and outside of the country where the Site is located
	14.2	Notwithstanding GCC Sub-Clauses 14.1 above, the Employer shall bear and promptly pay/reimburse all Customs and Import duties, if imposed on the Plant and Equipment including Mandatory Spares supplied from abroad and specified in relevant Price Schedule (and on Recommended Spare Parts to be supplied from abroad and specified in relevant Price Schedule, when awarded) and that are to be incorporated into the Facilities, by the law of the country where the Site is located. However, if the Plant and Equipment are shipped in Shipper's containers, then the custom duty levied on the cost of empty containers shall be borne and paid/reimbursed by the Contractor. <i>Further, if the Customs and Import duties levied are more than as specified in Schedule-7, Contractor will bear the same.</i> Notwithstanding GCC Sub-Clauses 14.1 above, the Employer shall also bear and pay/reimburse to the Contractor Excise Duty, Sales Tax (but not the surcharge in lieu of Sales Tax), and Octroi (if applicable) in respect of both direct transactions between the Employer and Contractor and on Bought out items (to be dispatched directly from the sub-vendor's works to Project site), if imposed on the Plant and Equipment including Mandatory Spares supplied from within the Employer's country and specified in relevant Price Schedule (and also on locally supplied Recommended Spare Parts quoted in relevant Price Schedule, when awarded) to be incorporated in the Facilities, by the law of country where the site is located. For the above purpose, the Ex-works price if quoted in foreign currency and so incorporated in the contract, shall be converted to Indian Rupees as per the TT buying exchange

Clause No.		Definition
		rates established by State Bank of India prevailing on the actual date of Ex-works (India) dispatch Employer will issue the requisite sales tax declaration form(s) in order to get the benefit of any concession in the rate of sales tax. Further, in case of all components, equipment and materials identified by the contractor and NTPC to be despatched directly from the sub-vendor's work to NTPC site in a state different from the state wherein sub-vendor's works are located, the contractor will effect sale in transit. For effecting the sale in transit, the contractor shall ensure that his sub-vendor raises invoices in the contractor's name (and not in the name of NTPC) and obtains GR/LR/RR in the name of Contractor (and not in the name of NTPC). The Contractor shall further ensure that he endorses the GR/LR/RR in the name of NTPC during transit of the equipment before the delivery of equipment is taken by NTPC. All taxes, duties and levies on Works Contract, if any, shall be to the contractor's account and no separate claim in this regard will be entertained by the Employer. All taxes, duties and levies in respect of local transportation & insurance, other local costs incidental to delivery of plant & equipment including mandatory spares, civil construction works and erection and commissioning and also taxes, duties & levies including entry tax as may be applicable on the materials used for civil construction works and erection & commissioning shall be to the contractor's account and no separate claim in this regard will be entertained by the Employer. Incidence of Service Tax & Cess on any component of the bid price shall be to the contractor's account and included in the Contract Price as applicable on seven (7) days prior to the deadline set for price bid submission. However, financial implication if any on account of any change in the rate of service tax as applicable for direct transactions between the Employer and the contractor shall be to Employer's account in line with the provision of GCC clause 14.4.
		Entry Tax Entry Tax on the Plant and Equipment including Mandatory Spares specified in relevant Price Schedules shall be paid directly by the Employer to the concerned State Tax Authorities and the Entry Tax as per rates applicable as on seven days prior to the deadline set for price bid submission shall be deducted from the payments due to the Contractor.
	14.3	If any tax exemptions, reductions, allowances or privileges are available to the Contractor in the country where the Site is located, the Employer shall use its best endeavours to enable the Contractor to benefit from any such tax savings to the maximum allowable extent.
	14.4	For the purpose of the Contract, it is agreed that the Contract Price specified in Article 2 (Contract Price and Terms of

Clause No.		Definition
		Payment) of the Contract Agreement is based on the taxes, duties, levies and charges prevailing on seven (7) days prior to the deadline set for price bid submission in the country where the Site is located (hereinafter called "Tax" in this GCC Sub-Clause 14.4). If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the performance of Contract, which was or will be assessed on the Contractor in connection with performance of the Contract, an equitable adjustment of the Contract Price shall be made to fully take into account any such change by addition to the Contract Price or deduction therefrom, as the case may be, in accordance with GCC Clause 36 (Change in Laws and Regulations) hereof. However, these adjustments would be restricted to items in respect of direct transactions between the Employer and Contractor and Bought out items (dispatched directly from sub-vendor's works to Site). These adjustments shall not be applicable on procurement of raw materials, intermediary components etc. by the Contractor. Notwithstanding the above in case of any upward variation in rates of Entry Tax between those applicable seven days prior to the deadline set for price bid submission and the date of entry of goods and payment of Entry Tax by Owner, the deduction from Contractor's bills will be limited to the amount being worked out at the rates of Entry Tax as applicable seven days prior to the deadline set for price bid submission. In case of downward variation, the contract price will be adjusted for such downward variation in rates of Entry Tax between those applicable seven days prior to the deadline set for price bid submission and the date of entry of goods and payment of Entry Tax by Owner.
	14.5	In case the CIF price of mandatory spares and / or of recommended spares exceeds the exemption limit as provided under the extant Policy/Notifications of GOI, all applicable additional taxes & duties (if any) on the excess price shall be to the account of Employer. If the Employer orders any spare at a later date as per GCC Cl 7.3, all applicable additional taxes & duties, If any, not included in the original price shall be to the account of Employer.
	14.6	Income Tax As per Indian Income Tax Act & Rules, Employer is required to deduct Income Tax at source from all the payments to be made to Non resident/Foreign Contractor. For this purpose, the Contractor shall be required to either furnish (i) the certificate from Indian Tax Authority or (ii) Ruling from "the Authority for Advance Ruling (AAR)" determining the applicable rate of Income tax in India before release of first payment. The Contractor will be required to submit PAN details to the Project Manager before the submission of the first bill.

Clause No.		Definition
D	Intellectual Property	
15.0	Copyright	
	15.1	The copyright in all drawings, documents and other materials containing data and information furnished to the Employer by the Contractor herein shall remain vested in the Contractor or, if they are furnished to the Employer directly or through the Contractor by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party. The Employer shall however be free to reproduce all drawings, documents and other material furnished to the Employer for the purpose of the contract including, if required, for operation and maintenance of the facilities.
16.0	Confidential Information	
	16.1	The Employer and the Contractor shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following termination of the Contract. Notwithstanding the above, the Contractor may furnish to its Subcontractor(s) such documents, data and other information it receives from the Employer to the extent required for the Subcontractor(s) to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor(s) an undertaking of confidentiality similar to that imposed on the Contractor under this GCC Clause 16.
	16.2	The Employer shall not use such documents, data and other information received from the Contractor for any purpose other than the operation and maintenance of the Facilities. Similarly, the Contractor shall not use such documents, data and other information received from the Employer for any purpose other than the design, procurement of Plant and Equipment, construction or such other work and services as are required for the performance of the Contract.
	16.3	The obligation of a party under GCC Sub-Clauses 16.1 and 16.2 above, however, shall not apply to that information which (a) now or hereafter enters the public domain through no fault of that party (b) can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other party hereto (c) otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality
	16.4	The above provisions of this GCC Clause 16 shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the Facilities or any part thereof.

Clause No.		Definition
	16.5	The provisions of this GCC Clause 16 shall survive termination, for whatever reason, of the Contract
17.0	Work Execution	
	17.1	Project Manager If the Project Manager is not named in the Contract, then within fourteen (14) days of the Effective Date, the Employer shall appoint and notify the Contractor in writing of the name of the Project Manager. The Employer may from time to time appoint some other person as the Project Manager in place of the person previously so appointed, and shall give a notice of the name of such other person to the Contractor without delay. The Employer shall take reasonable care to see that no such appointment is made at such a time or in such a manner as to impede the progress of work on the Facilities. The Project Manager shall represent and act for the Employer at all times during the currency of the Contract. All notices, instructions, orders, certificates, approvals and all other communications under the Contract shall be given by the Project Manager, except as herein otherwise provided. All notices, instructions, information and other communications given by the Contractor to the Employer under the Contract shall be given to the Project Manager, except as herein otherwise provided.
	17.2	Contractor's Representative & Construction Manager
	17.2.1	The Contractor shall appoint the Contractor's Representative within fourteen (14) days of the Effective Date or before start of work whichever is earlier and shall request the Employer in writing to approve the person so appointed.
	17.2.1.1	The Contractor's representative shall be a regular Employee/ Partner/ Director only and the Contractor shall be required to submit a Power of Attorney in original in favour of its representative. Notarized photocopy of the Power of Attorney shall be acceptable only if the Power of Attorney has been registered by the Contractor. The Employer may verify the photocopy of the Power of Attorney with the Original and the Contractor shall be required to produce the original Power of Attorney for verification, if required by the Employer. The relation of the Contractor's representative with the contractor such as Partner/ Employee etc. should be clearly brought out in the Power of Attorney. The Contractor would be required to submit a documentary proof of the relation of the Contractor's representative with the contractor in the form of self-attested copy of any of the following documents: i). Previous financial year's Form 16 as available at TRACES site of Income tax department, if the Contractor's representative is an employee of contractor or his Appointment Letter/Salary Slip/other documentary evidence

Clause No.		Definition
		(only in case of recent appointment or where Form 16 details are not uploaded at TRACES). Further, the Contractor shall submit the copy of Form 16 as available through TRACES site for every subsequent year also in respect of the Contractor's representative till the period of authorization. ii). Article of Association / Registered Partnership Deed if the Contractor's representative is a partner or stake holder in Company. In case, the Contractor is not able to submit any of the documentary proofs as mentioned above at para (i) & (ii), he would be required to submit an affidavit stating the relationship between the Contractor's representative and the Contractor.
	17.2.1.2	In case, the Contractor's representative is also doing some other Contract(s)/Work(s) as nominee of the same contractor, the Contractor shall give a declaration citing list of all works
	17.2.1.3	If the Employer objects to the appointment giving the reason therefore, then the Contractor shall appoint a replacement within fourteen (14) days of such objection, and the foregoing provisions of this GCC Sub-Clause 17.2.1 shall apply thereto.
	17.2.2	The Contractor's Representative shall represent and act for the Contractor at all times during the currency of the Contract and shall give to the Project Manager all the Contractor's notices, instructions, information and all other communications under the Contract. All notices, instructions, information and all other communications given by the Employer or the Project Manager to the Contractor under the Contract shall be given to the Contractor's Representative or, in its absence, its deputy, except as herein otherwise provided. The Contractor shall not revoke the appointment of the Contractor's Representative without the Employer's prior written consent, which shall not be unreasonably withheld. If the Employer consents thereto, the Contractor shall appoint some other person as the Contractor's Representative, pursuant to the procedure set out in GCC Sub-Clause 17.2.1.
	17.2.3	The Contractor's Representative may, subject to the approval of the Employer (which shall not be unreasonably withheld), at any time delegate to any person any of the powers, functions and authorities vested in him or her. Any such delegation may be revoked at any time. Any such delegation or revocation shall be subject to a prior notice signed by the Contractor's Representative, and shall specify the powers, functions and authorities thereby delegated or revoked. No such delegation or revocation shall take effect unless and until a copy thereof has been delivered to the Employer and the Project Manager. Any act or exercise by any person of powers, functions and

Clause No.		Definition
		authorities so delegated to him or her in accordance with this GCC Sub-Clause 17.2.3 shall be deemed to be an act or exercise by the Contractor's Representative.
	17.2.4	From the commencement of installation of the Facilities at the Site until Operational Acceptance, the Contractor's Representative shall appoint a suitable person as the construction manager (hereinafter referred to as "the Construction Manager"). The Construction Manager shall supervise all work done at the Site by the Contractor and shall be present at the Site throughout normal working hours except when on leave, sick or absent for reasons connected with the proper performance of the Contract. Whenever the Construction Manager is absent from the Site, a suitable person shall be appointed to act as his or her deputy.
	17.2.5	The Employer may by notice to the Contractor object to any representative or person employed by the Contractor in the execution of the Contract who, in the reasonable opinion of the Employer, may behave inappropriately, may be incompetent or negligent, or may commit a serious breach of the Site regulations provided under GCC Sub-Clause 22.3. The Employer shall provide evidence of the same, whereupon the Contractor shall remove such person from the Facilities.
	17.2.5	If any representative or person employed by the Contractor is removed in accordance with GCC Sub-Clause 17.2.5, the Contractor shall, where required, promptly appoint a replacement.
	17.2.6	case any of the information/declaration/undertaking provided by Contractor/Contractor's representative is found to be false and/or the Contractor/Contractor's representative suppresses any relevant information at any stage, the Contractor will be liable for actions in terms of Employer's Banning policy.
18.0	Work Program	
	18.1	Contractor's Organization
		The Contractor shall supply to the Employer and the Project Manager a chart showing the proposed organization to be established by the Contractor for carrying out work on the Facilities. The chart shall include the identities of the key personnel together with the curricula vitae of such key personnel to be employed within twenty-one (21) days of the Effective Date. The Contractor shall promptly inform the Employer and the Project Manager in writing of any revision or alteration of such an organization chart.
	18.2	Program of Performance
		Within twenty-eight (28) days after the date of notification of award of Contract, the Contractor shall prepare and submit to the Project Manager a detailed program of performance of the Contract, made in the form of PERT Network and showing the sequence in which it proposes to design,

Clause No.		Definition
		manufacture, transport, assemble, install and recommission the Facilities, as well as the date by which the Contractor reasonably requires that the Employer shall have fulfilled its obligations under the Contract so as to enable the Contractor to execute the Contract in accordance with the program and to achieve Completion and Acceptance of the Facilities in accordance with the Contract. The program so submitted by the Contractor shall accord with the Time Schedule included in Appendix 4 (Time Schedule) to the Contract Agreement and any other dates and periods specified in the Contract. The Contractor shall update and revise the program as and when appropriate or when required by the Project Manager, but without modification in the Times for Completion given in the SCC and any extension granted in accordance with GCC Clause 40, and shall submit all such revisions to the Project Manager.
	18.3	Progress Report
		The Contractor shall monitor progress of all the activities specified in the program referred to in GCC Sub-Clause 18.2 (Program of Performance) above, and supply a progress report to the Project Manager every month. The progress report shall be in a form acceptable to the Project Manager and shall also indicate: (a) percentage completion achieved compared with the planned percentage completion for each activity; and (b) where any activity is behind the program, giving comments and likely consequences and stating the corrective action being taken.
	18.4	Progress of Performance
		If at any time the Contractor's actual progress falls behind the program referred to in GCC Sub-Clause 18.2 (Program of Performance), or it becomes apparent that it will so fall behind, the Contractor shall, at the request of the Employer or the Project Manager, prepare and submit to the Project Manager a revised program, taking into account the prevailing circumstances, and shall notify the Project Manager of the steps being taken to expedite progress so as to attain Completion of the Facilities within the Time for Completion under GCC Sub-Clause 8.2 (Time for Commencement and Completion), any extension thereof entitled under GCC Sub-Clause 40.1 (Extension of Time for Completion), or any extended period as may otherwise be agreed upon between the Employer and the Contractor.
	18.5	Work Procedures
		The Contract shall be executed in accordance with the Contract Documents and the procedures given in the section on Forms and Procedures of the Contract Documents.

Clause No.		Definition
		If agreed between the Employer and the Contractor, the Contractor may execute the Contract in accordance with its own standard project execution plans and procedures to the extent that they do not conflict with the provisions contained in the Contract.
	18.6	Maintenance of Records of Weekly Progress Review Meetings at Site
		The Contractor shall be required to attend all weekly site progress review meetings organized by the 'Project Manager' or his authorised representative. The deliberations in the meetings shall inter alia include the weekly program, progress of work (including details of manpower tools and plants deployed by the contractor vis-à-vis agreed schedule), inputs to be provided by Employer, delays, if any and recovery program, specific hindrances to work and work instructions by Employer. The minutes of the weekly meetings shall be recorded in triplicate in a numbered register available with the Project Manager or his authorized representative. These recordings shall be jointly signed by the Project Manager or his authorized representative and the Contractor and one copy of the signed records shall be handed over to the Contractor".
19.0	Sub-contracting	
	19.1	Appendix 5 (List of Approved Subcontractors) to the Contract Agreement specifies major items of supply or services and a list of approved Subcontractors against each item, including vendors. Insofar as no Subcontractors are listed against any such item, the Contractor shall prepare a list of Subcontractors for such item for inclusion in such list. The Contractor may from time to time propose any addition to or deletion from any such list. The Contractor shall submit any such list or any modification thereto to the Employer for its approval in sufficient time so as not to impede the progress of work on the Facilities. Such approval by the Employer for any of the Subcontractors shall not relieve the Contractor from any of its obligations, duties or responsibilities under the Contract.
	19.2	The Contractor shall select and employ its Subcontractors for such major items from those listed in the lists referred to in GCC Sub-Clause 19.1.
	19.3	For items or parts of the Facilities not specified in Appendix 5 (List of Approved Subcontractors) to the Contract Agreement, the Contractor may employ such Subcontractors as it may select, at its discretion.
20.0	Design And Engineering	
	20.1	Specifications and Drawings
	20.1.1	The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions

Clause No.		Definition
		of the Contract, or where not so specified, in accordance with good engineering practice. The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared, whether such specifications, drawings and other documents have been approved by the Project Manager or not, provided that such discrepancies, errors or omissions are not because of inaccurate information furnished in writing to the Contractor by or on behalf of the Employer.
	20.1.2	The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designated by or on behalf of the Employer, by giving a notice of such disclaimer to the Project Manager.
	20.2	Codes and Standards
		Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date twenty-eight (28) days prior to deadline set for price bid submission shall apply unless otherwise specified. During Contract execution, any changes in such codes and standards shall be applied after approval by the Employer and shall be treated in accordance with GCC Clause 39 (Changes Originating from Contractor).
	20.3	Approval/Review of Technical Documents by Project Manager
	20.3.1	The Contractor shall prepare (or cause its Subcontractors to prepare) and furnish to the Project Manager the documents listed in Appendix 7 (List of Documents for Approval or Review) to the Contract Agreement for its approval or review as specified and as in accordance with the requirements of GCC Sub-Clause 18.2 (Program of Performance). Any part of the Facilities covered by or related to the documents to be approved by the Project Manager shall be executed only after the Project Manager's approval thereof. GCC Sub-Clauses 20.3.2 through 20.3.7 shall apply to those documents requiring the Project Manager's approval, but not to those furnished to the Project Manager for its review only.
	20.3.2	Within twenty one (21) days after receipt by the Project Manager of any document requiring the Project Manager's approval in accordance with GCC Sub-Clause 20.3.1, the Project Manager shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in writing of its disapproval thereof and the reasons therefor and the modifications that the Project Manager proposes.
	20.3.3	The Project Manager shall not disapprove any document, except on the grounds that the document does not comply

Clause No.		Definition
		with some specified provision of the Contract or that it is contrary to good engineering practice.
		If the Project Manager disapproves the document, the Contractor shall modify the document and resubmit it for the Project Manager's approval in accordance with GCC Sub-Clause 20.3.2. If the Project Manager approves the document subject to modification(s), the Contractor shall make the required modification(s), and upon resubmission with the required modifications the document shall be deemed to have been approved. The procedure for submission of the documents by the Contractor and their approval by the Project Manager shall be discussed and finalised with the Contractor.
	20.3.5	If any dispute or difference occurs between the Employer and the Contractor in connection with or arising out of the disapproval by the Project Manager of any document and/or any modification(s) thereto that cannot be settled between the parties within a reasonable period, then such dispute or difference may be referred to Expert Settlement Council (ESC) for determination in accordance with GCC Sub-Clause 6.2 hereof. If such dispute or difference is referred to ESC, the Project Manager shall give instructions as to whether and if so, how, performance of the Contract is to proceed. The Contractor shall proceed with the Contract in accordance with the Project Manager's instructions, provided that if the ESC upholds the Contractor's view on the dispute and if the Employer has not given notice under GCC Sub-Clause 6.3.1 hereof, then the Contractor shall be reimbursed by the Employer for any additional costs incurred by reason of such instructions and shall be relieved of such responsibility or liability in connection with the dispute and the execution of the instructions as the ESC shall decide, and the Time for Completion shall be extended accordingly.
	20.3.6	The Project Manager's approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the Project Manager.
	20.3.7	The Contractor shall not depart from any approved document unless the Contractor has first submitted to the Project Manager an amended document and obtained the Project Manager's approval thereof, pursuant to the provisions of this GCC Sub-Clause 20.3. If the Project Manager requests any change in any already approved document and/or in any document based thereon, the provisions of GCC Clause 39 (Change in the Facilities) shall apply to such request.
21.0	Procurement	
	21.1	Plant and Equipment

Clause No.		Definition
		Subject to GCC Sub-Clause 14.2, the Contractor shall manufacture or procure and transport all the Plant and Equipment in an expeditious and orderly manner to the Site.
	21.2	Employer-Supplied Plant, Equipment, and Materials
		If Appendix 6 (Scope of Works and Supply by the Employer) to the Contract Agreement provides that the Employer shall furnish any specific items of machinery, equipment or materials to the Contractor, the following provisions shall apply:
	21.2.1	The Employer shall, at its own risk and expense, transport each item to the place on or near the Site as agreed upon by the parties and make such item available to the Contractor at the time specified in the program furnished by the Contractor, pursuant to GCC Sub-Clause 18.2 (Program of Performance), unless otherwise mutually agreed.
	21.2.2	Upon receipt of such item, the Contractor shall inspect the same visually and notify the Project Manager of any detected shortage, defect or default. The Employer shall immediately remedy any shortage, defect or default, or the Contractor shall, if practicable and possible, at the request of the Employer, remedy such shortage, defect or default at the Employer's cost and expense. After inspection, such item shall fall under the care, custody and control of the Contractor. The provision of this GCC Sub-Clause 21.2.2 shall apply to any item supplied to remedy any such shortage or default or to substitute for any defective item, or shall apply to defective items that have been repaired.
	21.2.3	The foregoing responsibilities of the Contractor and its obligations of care, custody and control shall not relieve the Employer of liability for any undetected shortage, defect or default, nor place the Contractor under any liability for any such shortage, defect or default whether under GCC Clause 27 (Defect Liability) or under any other provision of Contract.
	21.3	Transportation
	21.3.1	The Contractor shall at its own risk and expense transport all the Plant and Equipment and the Contractor's Equipment to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances. Packing Material The Contractor shall ensure that all the plant and equipment are suitably packed and protected to prevent damage or deterioration during its transportation to site, handling and storage at site till the time of its installation. The ownership of all such packing material (except empty shipper's containers on which the customs duty has been paid by the Contractor pursuant to GCC Clause 14.2) shall stand transferred to the Employer upon dispatch of the plant and equipment and endorsement of dispatch documents in favour of the Employer.
	21.3.2.	Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport

Clause No.		Definition
		operated by any person to carry the Plant and Equipment and the Contractor's Equipment.
	21.3.3.	Upon despatch of each shipment of the Plant and Equipment and the Contractor's Equipment, the Contractor shall notify the Employer by telex, cable, facsimile or Electronic Data Interchange (EDI) of the description of the Plant and Equipment and of the Contractor's Equipment, the point and means of dispatch, and the estimated time and point of arrival in the country where the Site is located, if applicable, and at the Site. The Contractor shall furnish the Employer with relevant shipping documents to be agreed upon between the parties.
	21.3.4.	The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the Plant and Equipment and the Contractor's Equipment to the Site. The Employer shall use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads, bridges or any other traffic facilities that may be caused by the transport of the Plant and Equipment and the Contractor's Equipment to the Site.
	21.4	Customs Clearance (Applicable in case of ICB Tender only)
		The Contractor shall, at its own expense, handle all imported Plant and Equipment and Contractor's Equipment at the point(s) of import and shall handle any formalities for customs clearance, subject to the Employer's obligations under GCC Sub-Clause 14.2, provided that if applicable laws or regulations require any application or act to be made by or in the name of the Employer, the Employer shall take all necessary steps to comply with such laws or regulations. In the event of delays in customs clearance due to fault of the Employer, the Contractor shall be entitled to an extension in the Time for Completion, pursuant to GCC Clause 40.
22.0	Installation	
	22.1	Setting Out/Supervision/Labour
	22.1.1	Bench Mark: The Contractor shall be responsible for the true and proper setting-out of the Facilities in relation to bench marks, reference marks and lines provided to it in writing by or on behalf of the Employer. If, at any time during the progress of installation of the Facilities, any error shall appear in the position, level or alignment of the Facilities, the Contractor shall forthwith notify the Project Manager of such error and, at its own expense, immediately rectify such error to the reasonable

Clause No.		Definition
		satisfaction of the Project Manager. If such error is based on incorrect data provided in writing by or on behalf of the Employer, the expense of rectifying the same shall be borne by the Employer.
	22.1.2	Contractor's Supervision: The Contractor shall give or provide all necessary superintendence during the installation of the Facilities, and the Construction Manager or its deputy shall be constantly on the Site to provide full-time superintendence of the installation. The Contractor shall provide and employ only technical personnel who are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand.
	22.1.3	Labour: (a) The Contractor shall provide and employ on the Site in the installation of the Facilities such skilled, semi-skilled and unskilled labour as is necessary for the proper and timely execution of the Contract. The Contractor shall preferably engage skilled/semiskilled/unskilled workers from amongst the land oustees of the Project. (b) Unless otherwise provided in the Contract, the Contractor shall be responsible for the recruitment, transportation, accommodation and catering of all labour, local or expatriate, required for the execution of the Contract and for all payments in connection therewith. (c) The Contractor shall be responsible for obtaining all necessary permit(s) and/or visa(s) from the appropriate authorities for the entry of all labour and personnel to be employed on the Site into the country where the Site is located. (d) The Contractor shall at its own expense provide the means of repatriation to all of its and its Subcontractor's personnel employed on the Contract at the Site to their various home countries. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the event that the Contractor defaults in providing such means of transportation and temporary maintenance, the Employer may provide the same to such personnel and recover the cost of doing so from the Contractor. (e) The Contractor shall at all times during the progress of the Contract use its best endeavor to prevent any unlawful, riotous or disorderly conduct or behaviour by or amongst its employees and the labour of its Subcontractors.

Clause No.		Definition
		(f) The Contractor shall, in all dealings with its labour and the labour of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs and all local laws and regulations pertaining to the employment of labour.
	22.2	Contractor's Equipment
	22.2.1	All Contractors' Equipment brought by the Contractor onto the Site shall be deemed to be intended to be used exclusively for the execution of the Contract. The Contractor shall not remove the same from the Site without the Project Manager's consent that such Contractor's Equipment is no longer required for the execution of the Contract.
	22.2.2	Unless otherwise specified in the Contract, upon completion of the Facilities, the Contractor shall remove from the Site all Equipment brought by the Contractor onto the Site and any surplus materials remaining thereon.
	22.2.3	The Employer will, if requested, use its best endeavor to assist the Contractor in obtaining any local, state or national government permission required by the Contractor for the export of the Contractor's Equipment imported by the Contractor for use in the execution of the Contract that is no longer required for the execution of the Contract.
	22.3	Site Regulations and Safety
		The Employer and the Contractor shall establish Site regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply therewith. The Contractor shall prepare and submit to the Employer, with a copy to the Project Manager, proposed Site regulations for the Employer's approval, which approval shall not be unreasonably withheld. Such Site regulations shall include, but shall not be limited to, rules in respect of security, safety of the Facilities, gate control, sanitation, medical care, and fire prevention.
	22.4	Opportunities for Other Contractors
	22.4.1	The Contractor shall, upon written request from the Employer or the Project Manager, give all reasonable opportunities for carrying out the work to any other contractors employed by the Employer on or near the Site.
	22.4.2.	If the Contractor, upon written request from the Employer or the Project Manager, makes available to other contractors any roads or ways the maintenance for which the Contractor is responsible, permits the use by such other contractors of the Contractor's Equipment, or provides any other service of

Clause No.		Definition
		whatsoever nature for such other contractors, the Employer shall fully compensate the Contractor for any loss or damage caused or occasioned by such other contractors in respect of any such use or service, and shall pay to the Contractor reasonable remuneration for the use of such equipment or the provision of such services.
	22.4.3.	The Contractor shall also so arrange to perform its work as to minimize, to the extent possible, interference with the work of other contractors. The Project Manager shall determine the resolution of any difference or conflict that may arise between the Contractor and other contractors and the workers of the Employer in regard to their work.
	22.4.4.	The Contractor shall notify the Project Manager promptly of any defects in the other Contractors' work that come to its notice, and that could affect the Contractor's work. The Project Manager shall determine the corrective measures, if any, required to rectify the situation after inspection of the Facilities. Decisions made by the Project Manager shall be binding on the Contractor.
	22.5	Emergency Work
		If, by reason of an emergency arising in connection with and during the execution of the Contract, any protective or remedial work is necessary as a matter of urgency to prevent damage to the Facilities, the Contractor shall immediately carry out such work. If the Contractor is unable or unwilling to do such work immediately, the Employer may do or cause such work to be done as the Employer may determine is necessary in order to prevent damage to the Facilities. In such event the Employer shall, as soon as practicable after the occurrence of any such emergency, notify the Contractor in writing of such emergency, the work done and the reasons therefor. If the work done or caused to be done by the Employer is work that the Contractor was liable to do at its own expense under the Contract, the reasonable costs incurred by the Employer in connection therewith shall be paid by the Contractor to the Employer. Otherwise, the cost of such remedial work shall be borne by the Employer.
	22.6	Site Clearance
	22.6.1	Site Clearance in Course of Performance: In the course of carrying out the Contract, the Contractor shall keep the Site reasonably free from all unnecessary obstruction, store or remove any surplus materials, clear away any wreckage, rubbish or temporary works from the Site, and remove any Contractor's Equipment no longer required for execution of the Contract.
	22.6.2	Clearance of Site after Completion: After Completion of all parts of the Facilities, the Contractor shall clear away and remove all wreckage, rubbish and debris of any kind from the Site, and shall leave the Site and Facilities clean and safe.

Clause No.		Definition
	22.6.3	Disposal of Scrap "The Contractor shall with the agreement of the Employer promptly remove from the site any 'Scrap' generated during performance of any activities at site in pursuance of the Contract. The term 'Scrap' shall refer to scrap / waste / remnants arising out of the fabrication of structural steel work and piping work at the project site in the course of execution of the contract and shall also include any wastage of cables during the termination process while installing the cables. The ownership of such Scrap shall vest with the Contractor except in cases where the items have been issued by the Employer from its stores for their installation only without any adjustment to the Contract Price. The removal of scrap shall be subject to the Contractor producing the necessary clearance from the relevant authorities (Custom, Excise etc.), if required by the law, in respect of disposal of the scrap. The liability for the payment of the applicable taxes/duties shall be that of the Contractor. The Contractor shall also indemnify to keep the Employer harmless from any act of omission or negligence on the part of the Contractor in following the statutory requirements with regard to removal/disposal of scrap. The Indemnity Bond shall be furnished by Contractor as per proforma enclosed in Section-VII (Forms and Procedure). Further, in case the laws require the Employer to take prior permission of the relevant Authorities before handing over the scrap to the Contractor, the same shall be obtained by the Contractor on behalf of the Employer".
	22.7	Watching and Lighting The Contractor shall provide and maintain at its own expense all lighting, fencing, and watching when and where necessary for the proper execution and the protection of the Facilities, or for the safety of the owners and occupiers of adjacent property and for the safety of the public
	22.8	Shift Work
	22.8.1	To achieve the required rate of progress in order to complete the Facilities within the Time for Completion, the Contractor may carry on the work, round the clock, in multiple shifts per day, as may be necessary. The Contractor shall however be responsible to comply with all applicable laws in this regard.
	22.8.2	No additional payment will be made on account of round the clock working in multiple shifts.
	22.8.3	Wherever the work is carried out at night adequate lighting of working areas and access routes for pedestrians or vehicles shall be provided by the Contractor at his cost. Sufficient notice should be given by the Contractor to the Employer regarding the details of works in shifts so that necessary supervision could be provided.

Clause No.		Definition
23.0	Test And Inspection	
	23.1	The Contractor shall at its own expense carry out at the place of manufacture and/or on the Site all such tests and/or inspections of the Plant and Equipment and any part of the Facilities as are specified in the Contract.
	23.2	The Employer and the Project Manager or their designated representatives shall be entitled to attend the aforesaid test and/or inspection, provided that the Employer shall bear all costs and expenses incurred in connection with such attendance including, but not limited to, all travelling and board and lodging expenses.
	23.3	Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a reasonable advance notice of such test and/or inspection and of the place and time thereof to the Project Manager. The Contractor shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Employer and the Project Manager (or their designated representatives) to attend the test and/or inspection.
	23.4	The Contractor shall provide the Project Manager with a certified report of the results of any such test and/or inspection. If the Employer or Project Manager (or their designated representatives) fails to attend the test and/or inspection, or if it is agreed between the parties that such persons shall not do so, then the Contractor may proceed with the test and/or inspection in the absence of such persons, and may provide the Project Manager with a certified report of the results thereof.
	23.5	The Project Manager may require the Contractor to carry out any test and/or inspection not required by the Contract, provided that the Contractor's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impedes the progress of work on the Facilities and/or the Contractor's performance of its other obligations under the Contract, due allowance will be made in respect of the Time for Completion and the other obligations so affected.
	23.6	If any Plant and Equipment or any part of the Facilities fails to pass any test and/or inspection, the Contractor shall either rectify or replace such Plant and Equipment or part of the Facilities and shall repeat the test and/or inspection upon giving a notice under GCC Sub-Clause 23.3.
	23.7	If any dispute or difference of opinion shall arise between the parties in connection with or arising out of the test and/or inspection of the Plant and Equipment or part of the Facilities that cannot be settled between the parties within a reasonable period of time, it may be referred to the Expert Settlement Council (ESC) for determination in accordance with GCC Sub-Clause 6.2.

Clause No.		Definition
	23.8	The Contractor shall afford the Employer and the Project Manager, at the Employer's expense, access at any reasonable time to any place where the Plant and Equipment are being manufactured or the Facilities are being installed, in order to inspect the progress and the manner of manufacture or installation, provided that the Project Manager shall give the Contractor a reasonable prior notice.
	23.9	The Contractor agrees that neither the execution of a test and/or inspection of Plant and Equipment or any part of the Facilities, nor the attendance by the Employer or the Project Manager, nor the issue of any test certificate pursuant to GCC Sub-Clause 23.4, shall release the Contractor from any other responsibilities under the Contract.
	23.10	No part of the Facilities or foundations shall be covered up on the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the Project Manager whenever any such part of the Facilities or foundations are ready or about to be ready for test and/or inspection; such test and/or inspection and notice thereof shall be subject to the requirements of the Contract.
	23.11	The Contractor shall uncover any part of the Facilities or foundations, or shall make openings in or through the same as the Project Manager may from time to time require at the Site, and shall reinstate and make good such part or parts. If any part of the Facilities or foundations have been covered up at the Site after compliance with the requirement of GCC Sub-Clause 23.10 and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating, and making good the same shall be borne by the Employer, and the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been delayed or impeded in the performance of any of its obligations under the Contract.
24.0	Completion of the Facilities	
	24.1	As soon as installation of the Facilities or any part thereof has, in the opinion of the Contractor, been completed as specified in the Technical Specifications, excluding minor items not materially affecting the operation or safety of the Facilities, the Contractor shall so notify the Employer in writing.
	24.2	Within seven (7) days after receipt of the notice from the Contractor under GCC Sub-Clause 24.1, the Employer shall supply the operating and maintenance personnel and the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services as specified in Appendix 6 (Scope of Works and Supply by the Employer) to the Contract Agreement, required for Pre-commissioning of the Facilities or any part thereof.

Clause No.		Definition
	24.3	As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Employer and the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters, if so specified in Appendix 6 (Scope of Works and Supply by the Employer)/ Technical Specifications, have been provided by the Employer in accordance with GCC Sub-Clause 24.2, the Contractor shall commence Pre-commissioning of the Facilities or the relevant part thereof in preparation for Commissioning.
	24.4	As soon as all works in respect of Pre-commissioning are completed and, in the opinion of the Contractor, the Facilities or any part thereof is ready for Commissioning, the Contractor shall commence Commissioning as per procedures stipulated in Technical Specifications, and as soon as Commissioning is satisfactorily completed, the Contractor shall so notify the Project Manager in writing.
	24.5	The Project Manager shall, within fourteen (14) days after receipt of the Contractor's notice under GCC Sub-Clause 24.4, either issue a Completion Certificate in the form specified in the Forms and Procedures section in the bidding documents, stating that the Facilities or that part thereof have reached Completion as at the date of the Contractor's notice under GCC Sub-Clause 24.4, or notify the Contractor in writing of any defects and/or deficiencies. If the Project Manager notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies, and shall repeat the procedure described in GCC Sub-Clause 24.4. If the Project Manager is satisfied that the Facilities or that part thereof have reached Completion, the Project Manager shall, within seven (7) days after receipt of the Contractor's repeated notice, issue a Completion Certificate stating that the Facilities or that part thereof have reached Completion as at the date of the Contractor's repeated notice. If the Project Manager is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within seven (7) days after receipt of the Contractor's repeated notice, and the above procedure shall be repeated.
	24.6	If the Project Manager fails to issue the Completion Certificate and fails to inform the Contractor of any defects and/or deficiencies within fourteen (14) days after receipt of the Contractor's notice under GCC Sub-Clause 24.4 or within seven (7) days after receipt of the Contractor's repeated notice under GCC Sub-Clause 24.5, or if the Employer makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Completion as of the date of the Contractor's notice or repeated notice, or as of the Employer's use of the Facilities, as the case may be.

Clause No.		Definition
	24.7	As soon as possible after Completion, the Contractor shall complete all outstanding minor items so that the Facilities are fully in accordance with the requirements of the Contract, failing which the Employer will undertake such completion and deduct the costs thereof from any monies owing to the Contractor.
	24.8	Upon Completion, the Employer shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, and shall thereafter take over the Facilities or the relevant part thereof.
25.0	Commissioning, Guarantee Tests and Operational Acceptance	
	25.1	Commissioning
	25.1.1	Commissioning of the Facilities or any part thereof shall be completed by the Contractor as per procedures detailed in the Technical Specifications. The Employer shall, unless otherwise specified in Appendix 6 (Scope of Works and Supply by the Employer)/ Technical Specifications, supply the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Commissioning of the Facilities.
	25.2	Guarantee Test
	25.2.1	The Guarantee Test (and repeats thereof) shall be conducted by the Contractor after Commissioning of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Contract Documents. The Contractor's and Project Manager's advisory personnel shall attend the Guarantee Test. The Employer shall promptly provide the Contractor with such information as the Contractor may reasonably require in relation to the conduct and results of the Guarantee Test (and any repeats thereof).
	25.2.2.	If for reasons attributable to the Employer, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period of twelve months from the date of Completion of respective facility, the payment towards Successful Completion of Guarantee Test, shall be released to the Contractor against Bank Guarantee. Such Bank Guarantee shall have initial validity of one (1) year. The Bank Guarantee shall be extended for any subsequent period, if required, such that the same remains valid till the Successful Completion of Guarantee Test.

Clause No.		Definition
	25.3	Operational Acceptance
	25.3.1	Subject to GCC Sub-Clause 25.4 (Partial Acceptance) below, Operational Acceptance shall occur in respect of the Facilities or any part thereof when (a) the Guarantee Test has been successfully completed and the Functional Guarantees are met; or (b) the Contractor has paid the liquidated damages specified in GCC Sub-Clause 28.3 hereof; and (c) any minor items mentioned in GCC Sub-Clause 24.7 hereof relevant to the Facilities or that part thereof have been completed.
	25.3.2	At any time after any of the events set out in GCC Sub-Clause 25.3.1 have occurred, the Contractor may give a notice to the Project Manager requesting the issue of an Operational Acceptance Certificate in the form provided in the Bidding Documents or in another form acceptable to the Employer in respect of the Facilities or the part thereof specified in such notice as at the date of such notice.
	25.3.3	The Project Manager shall, after consultation with the Employer, and within forty five (45) days after receipt of the Contractor's notice, issue an Operational Acceptance Certificate.
	25.3.4	If within forty five (45) days after receipt of the Contractor's notice, the Project Manager fails to issue the Operational Acceptance Certificate or fails to inform the Contractor in writing of the justifiable reasons why the Project Manager has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as at the date of the Contractor's said notice.
	25.4	Partial Acceptance
	25.4.1.	If the Contract specifies that Completion and Commissioning shall be carried out in respect of parts of the Facilities, the provisions relating to Completion and Commissioning including the Guarantee Test shall apply to each such part of the Facilities individually, and the Operational Acceptance Certificate shall be issued accordingly for each such part of the Facilities.
	25.4.2.	If a part of the Facilities comprises facilities such as buildings, for which no Commissioning or Guarantee Test is required, then the Project Manager shall issue the Operational Acceptance Certificate for such facility when it attains Completion, provided that the Contractor shall thereafter complete any outstanding minor items that are listed in the Operational Acceptance Certificate.
F	Guarantees and Liabilities	
26.0	Completion Time Guarantee	
	26.1	The Contractor guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for

Clause No.		Definition
		completion is specified in the SCC) within the Time for Completion specified in the SCC pursuant to GCC Sub-Clause 8.2, or within such extended time to which the Contractor shall be entitled under GCC Clause 40 (Extension of Time for Completion) hereof.
	26.2	If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GCC Clause 40 (Extension of Time for Completion), the Contractor shall pay to the Employer liquidated damages in the amount computed at the rates specified in the SCC. The aggregate amount of such liquidated damages shall in no event exceed the amount specified as "Maximum" in the SCC. Once the "Maximum" is reached, the Employer may consider termination of the Contract, pursuant to GCC Sub-Clause 42.2.2. Such payment shall completely satisfy the Contractor's obligation to attain Completion of the Facilities or the relevant part thereof within the Time for Completion or any extension thereof under GCC Clause 40 (Extension of Time for Completion). The Contractor shall have no further liability whatsoever to the Employer in respect thereof. However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the Facilities or from any other obligations and liabilities of the Contractor under the Contract. Save for liquidated damages payable under this GCC Sub-Clause 26.2, the failure by the Contractor to attain any milestone or other act, matter or thing by any date specified in Appendix 4 (Time Schedule) to the Contract Agreement and/or other program of work prepared pursuant to GCC Clause 18 (Program of Performance) shall not render the Contractor liable for any loss or damage thereby suffered by the Employer.
	26.3	No bonus shall be given for earlier completion of the facilities or part thereof.
27.0	Defect Liability	
	27.1	The Contractor warrants that the Facilities or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Plant and Equipment supplied and of the work executed
	27.2	The Defect Liability Period shall be eighteen (18) months from the date of Completion of the Facilities (or any part thereof) or twelve (12) months from the date of Operational Acceptance of the Facilities (or any part thereof), whichever first occurs, unless specified otherwise in the SCC. If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant and Equipment supplied or of the work executed by the Contractor, the Contractor shall promptly, in

Clause No.		Definition
		consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Contractor shall, at its discretion, determine) such defect as well as any damage to the Facilities caused by such defect. The Contractor shall not be responsible for the repair, replacement or making good of any defect or of any damage to the Facilities arising out of or resulting from any of the following causes: (a) improper operation or maintenance of the Facilities by the Employer (b) operation of the Facilities outside specifications provided in the Contract (c) normal wear and tear.
	27.3	The Contractor's obligations under this GCC Clause 27 shall not apply to a) any materials that are supplied by the Employer under GCC Sub-Clause 21.2 (Employer-Supplied Plant, Equipment and Materials), are normally consumed in operation, or have a normal life shorter than the Defect Liability Period stated herein b) any designs, specifications or other data designed, supplied or specified by or on behalf of the Employer or any matters for which the Contractor has disclaimed responsibility herein c) any other materials supplied or any other work executed by or on behalf of the Employer, except for the work executed by the Employer under GCC Sub-Clause 27.7.
	27.4	The Employer shall give the Contractor a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The Employer shall afford all reasonable opportunity for the Contractor to inspect any such defect.
	27.5	The Employer shall afford the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations under this GCC Clause 27. The Contractor may, with the consent of the Employer, remove from the Site any Plant and Equipment or any part of the Facilities that are defective if the nature of the defect, and/or any damage to the Facilities caused by the defect, is such that repairs cannot be expeditiously carried out at the Site.
	27.6	If the repair, replacement or making good is of such a character that it may affect the efficiency of the Facilities or any part thereof, the Employer may give to the Contractor a notice requiring that tests of the defective part of the Facilities shall be made by the Contractor immediately upon completion of such remedial work, whereupon the Contractor shall carry out such tests. If such part fails the tests, the Contractor shall carry out further repair, replacement or making good (as the case may be) until that part of the Facilities passes such tests. The

Clause No.		Definition
		tests in character shall in any case be not less than what has already been agreed by the Employer and the Contractor for the original equipment/part of the Facilities.
	27.7	If the Contractor fails to commence the work necessary to remedy such defect or any damage to the Facilities caused by such defect within a reasonable time (which shall in no event be considered to be less than fifteen (15) days), the Employer may, following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by the Employer in connection therewith shall be paid to the Employer by the Contractor or may be deducted by the Employer from any monies due to the Contractor or claimed under the Performance Security.
	27.8	If the Facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the Employer because of any of the aforesaid reasons. Upon correction of the defects in the Facilities or any part thereof by repair/replacement, such repair/replacement shall have the Defect Liability Period extended by a period of twelve (12) month from the time such replacement/repair of the Facilities or any part thereof.
	27.8.1	At the end of the Defect Liability Period, the contractor's liability ceases except for latent defects. The contractor's liability for latent defects warranty shall be limited to a period of five (5) years from the end of Defect Liability Period. For the purpose of this clause, the latent defects shall be the defects inherently lying within the material or arising out of design deficiency which do not manifest themselves during the Defect Liability Period in this GCC clause 27, but later.
	27.9	Except as provided in GCC Clauses 27 and 33 (Loss of or Damage to Property / Accident or Injury to Workers/Indemnification), the Contractor shall be under no liability whatsoever and howsoever arising, and whether under the Contract or at law, in respect of defects in the Facilities or any part thereof, the Plant and Equipment, design or engineering or work executed that appear after Completion of the Facilities or any part thereof, except where such defects are the result of the gross negligence, fraud, criminal or wilful action of the Contractor.
	27.10	In addition, the Contractor shall also provide an extended warranty for any such component of the Facilities and during the period of time as may be specified in the SCC. Such obligation shall be in addition to the defect liability specified under GCC Sub-Clause 27.2.
28.0	Functional Guarantees	
	28.1	The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified in Appendix 8 (Functional guarantees)

Clause No.		Definition
		to the Contract Agreement, subject to and upon the conditions therein specified.
	28.2	If, for reasons attributable to the Contractor, the guaranteed level of the Functional Guarantees specified in Appendix 8 (Functional Guarantees) to the Contract Agreement are not met either in whole or in part, the Contractor shall, within a mutually agreed time, at its cost and expense make such changes, modifications and/or additions to the Plant or any part thereof as may be necessary to meet such guarantees. The Contractor shall notify the Employer upon completion of the necessary changes, modifications and/or additions, and shall seek the Employer's consent to repeat the Guarantee Test. If the specified Functional Guarantees are not established even during the repeat of the Guarantee Test, the Employer may at its option, either (a) Reject the Equipment and recover the payments already made, or (b) Terminate the Contract pursuant to GCC Sub-Clause 42.2.2 and recover the payments already made, or (c) Accept the equipment after levy of liquidated damages in accordance with the provisions specified in Appendix-8 (Functional Guarantees) to the Contract Agreement.
	28.3	In case the Employer exercises its option to accept the equipment after levy of liquidated damages, the payment of liquidated damages under GCC Sub-Clause 28.2, up to the limitation of liability specified in the Appendix-8 (Functional Guarantees) to the Contract Agreement, shall completely satisfy the Contractor's guarantees under GCC Sub-Clause 28.2, and the Contractor shall have no further liability whatsoever to the Employer in respect thereof. Upon the payment of such liquidated damages by the Contractor, the Project Manager shall issue the Operational Acceptance Certificate for the Facilities or any part thereof in respect of which the liquidated damages have been so paid.
29.0	Patent Indemnity	
	29.1	The Contractor shall, subject to the Employer's compliance with GCC Sub-Clause 29.2, indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Employer may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract by reason of: (a) the installation of the Facilities by the Contractor or the use of the Facilities in the country where the Site is located; and (b) the sale of the products produced by the Facilities in any country.

Clause No.		Definition
		Such indemnity shall not cover any use of the Facilities or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Facilities or any part thereof, or any products produced thereby in association or combination with any other equipment, plant or materials not supplied by the Contractor, pursuant to the Contract Agreement.
	29.2	If any proceedings are brought or any claim is made against the Employer arising out of the matters referred to in GCC Sub-Clause 29.1, the Employer shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim. If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defence of any such proceedings or claim. The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.
	29.3	The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Contractor may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Employer.
30.0	Limitation of Liability	
	30.1	Except in cases of criminal negligence or wilful misconduct,
		(a) the Contractor shall not be liable to the Employer, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Contractor to pay liquidated damages to the Employer and

Clause No.		Definition
		(b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to any obligation of the Contractor to indemnify the Employer with respect to patent infringement.
G	Risk Distribution	
31.0	Transfer of Ownership	
	31.1	Ownership of the Plant and Equipment
		Ownership of the Plant and Equipment (including spare parts) to be imported into the country where the Site is located shall be transferred to the Employer upon loading on to the mode of transport to be used to convey the Plant and Equipment from the country of origin to that country and upon endorsement of despatch document in favour of the Employer. Ownership of the Plant and Equipment (including spare parts) procured in the country where the Site is located shall be transferred to the Employer when the Plant and Equipment are loaded on to the mode of transport to be used to convey the Plant and Equipment from the works to the site and upon endorsement of the despatch documents in favour of the Employer.
	31.2	Ownership of the Contractor's Equipment used by the Contractor and its Subcontractors in connection with the Contract shall remain with the Contractor or its Subcontractors.
	31.3	Disposal of Surplus Material
		"Ownership of any Plant and Equipment in excess of the requirements for the Facilities (i.e. surplus material) shall revert to the Contractor upon Completion of the Facilities and Guarantee Test or at such earlier time when the Employer and the Contractor agree that the Plant and Equipment in question are no longer required for the Facilities, provided quantity of any Plant and Equipment specifically stipulated in the Contract shall be the property of the Employer whether or not incorporated in the Facilities. The Contractor shall remove from the site such surplus material brought by him in pursuance of the Contract, subject to the Contractor producing the necessary clearance from the relevant authorities (Customs, Excise etc.), if required by law, in respect of re-export or disposal of the surplus material locally. The liability for the payment of the applicable taxes/duties, if any, on the surplus material so re-exported and/or disposed locally shall be that of the Contractor. The Contractor shall also indemnify to keep the Employer harmless from any act of omission or negligence on the part

Clause No.		Definition
		of the Contractor in following the statutory requirements with regard to removal/disposal of surplus material. The Indemnity Bond shall be furnished by contractor as per proforma enclosed in Section-VII (Part 3 of 3 - Forms and Procedures). Further, in case the laws require the Employer to take prior permission of the relevant Authorities before handing over the surplus material to the Contractor, the same shall be obtained by the Contractor on behalf of the Employer."
	31.4	Notwithstanding the transfer of ownership of the Plant and Equipment, the responsibility for care and custody thereof together with the risk of loss or damage thereto shall remain with the Contractor pursuant to GCC Clause 32 (Care of Facilities) hereof until Completion of the Facilities or the part thereof in which such Plant and Equipment are incorporated.
	31.5	In case of two/three Contracts entered into between the Employer and the Contractor as per GCC Sub-Clause 3.6 or where the Employer hands over his equipment to the Contractor for executing the Contract, then the Contractor shall at the time of taking delivery of the Equipment through Bill of Lading or other despatch documents furnish Trust Receipt for Plant, Equipment and Materials and also execute an Indemnity Bond in favour of the Employer in the form acceptable to Employer for keeping the equipment in safe custody and to utilise the same exclusively for the purpose of the said Contract. Proforma for the Trust Receipt and Indemnity Bond is enclosed under Section-VII (Forms and Procedures). The Employer shall also issue a separate Authorisation Letter to the Contractor to enable him to take physical delivery of plant, equipment and materials from the Employer as per proforma enclosed under Section-VII (Forms and Procedures).
32.0	Care of Facilities	
	32.1	The Contractor shall be responsible for the care and custody of the Facilities or any part thereof until the date of Completion of the Facilities pursuant to GCC Clause 24 (Completion of the Facilities) or, where the Contract provides for Completion of the Facilities in parts, until the date of Completion of the relevant part, and shall make good at its own cost any loss or damage that may occur to the Facilities or the relevant part thereof from any cause whatsoever during such period. The Contractor shall also be responsible for any loss or damage to the Facilities caused by the Contractor or its Subcontractors in the course of any work carried out, pursuant to GCC Clause 27 (Defect Liability). Notwithstanding the foregoing, the Contractor shall not be liable for any loss or damage to the Facilities or that part thereof caused by reason of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Sub-Clauses 32.2 and 38.1.

Clause No.		Definition
	32.2	If any loss or damage occurs to the Facilities or any part thereof or to the Contractor's temporary facilities by reason of
		(a) (insofar as they relate to the country where the Site is located) nuclear reaction, nuclear radiation, radioactive contamination, pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced contractor could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, insofar as such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance, including War Risks and Political Risks, taken out under GCC Clause 34 (Insurance) hereof (b) any use or occupation by the Employer or any third party (other than a Subcontractor) authorized by the Employer of any part of the Facilities (c) any use of or reliance upon any design, data or specification provided or designated by or on behalf of the Employer, or any such matter for which the Contractor has disclaimed responsibility herein, the Employer shall pay to the Contractor all sums payable in respect of the Facilities executed, notwithstanding that the same be lost, destroyed or damaged, and will pay to the Contractor the replacement value of all temporary facilities and all parts thereof lost, destroyed or damaged. If the Employer requests the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Contractor shall make good the same at the cost of the Employer in accordance with GCC Clause 39 (Change in the Facilities). If the Employer does not request the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Employer shall either request a change in accordance with GCC Clause 39 (Change in the Facilities), excluding the performance of that part of the Facilities thereby lost, destroyed or damaged, or, where the loss or damage affects a substantial part of the Facilities, the Employer shall terminate the Contract pursuant to GCC Sub-Clause 42.1 (Termination for Employer's Convenience) hereof, except that the Contractor shall have no entitlement to profit under paragraph (e) of GCC Sub-Clause 42.1.3 in respect of any unexecuted Facilities as at the date of termination.
	32.3	The Contractor shall be liable for any loss of or damage to any Contractor's Equipment, or any other property of the Contractor used or intended to be used for purposes of the Facilities, except (i) as mentioned in GCC Sub-Clause 32.2 (with respect to the Contractor's temporary facilities), and (ii) where such loss or damage arises by reason of any of the matters specified in GCC Sub-Clauses 32.2(b) and (c) and 38.1.

Clause No.		Definition
	32.4	With respect to any loss or damage caused to the Facilities or any part thereof or to the Contractor's Equipment by reason of any of the matters specified in GCC Sub-Clause 38.1, the provisions of GCC Sub-Clause 38.3 shall apply.
33.0	Loss of or Damage to Property; Accident or Injury to workers; Indemnification	
	33.1	Subject to GCC Sub-Clause 33.3, the Contractor shall indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property (other than the Facilities whether accepted or not), arising in connection with the supply and installation of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers or agents, except any injury, death or property damage caused by the negligence of the Employer, its contractors, employees, officers or agents.
	33.2	If any proceedings are brought or any claim is made against the Employer that might subject the Contractor to liability under GCC Sub-Clause 33.1, the Employer shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim. If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defence of any such proceedings or claim. The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing
	33.3	The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from any liability for loss of or damage to property of the Employer, other than the Facilities not yet taken over, that is caused by fire, explosion or any other perils, in excess of the amount recoverable from insurances procured under GCC Clause 34 (Insurances), provided that such fire, explosion or other perils were not caused by any act or failure of the Contractor.
	33.4	The party entitled to the benefit of an indemnity under this GCC Clause 33 shall take all reasonable measures to mitigate any loss or damage which has occurred. If the party

Clause No.		Definition
		fails to take such measures, the other party's liabilities shall be correspondingly reduced.
34.0	Insurance	
	34.1	To the extent specified in Appendix 3 (Insurance Requirements) to the Contract Agreement, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said Appendix. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, who should not unreasonably withhold such approval. (a) Cargo Insurance During Transport Covering loss or damage occurring while in transit from the Contractor's or Subcontractor's works or stores until arrival at the Site, to the Plant and Equipment (including spare parts therefor) and to the Contractor's Equipment. (b) Installation All Risks Insurance Covering physical loss or damage to the Facilities at the Site, occurring prior to Completion of the Facilities, with extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the Defect Liability Period while the Contractor is on the Site for the purpose of performing its obligations during the Defect Liability Period. (c) Third Party Liability Insurance Covering bodily injury or death suffered by third parties (including the Employer's personnel) and loss of or damage to property occurring in connection with the supply and installation of the Facilities. (d) Automobile Liability Insurance Covering use of all vehicles used by the Contractor or its Subcontractors (whether or not owned by them) in connection with the execution of the Contract. (e) Workers' Compensation In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed. (f) Employer's Liability In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed. (g) Other Insurances Such other insurances as may be specifically agreed upon by the parties hereto as listed in the said Appendix 3.
	34.2	The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 34.1, except for the Third Party Liability, Workers' Compensation and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 34.1 except

Clause No.		Definition
		for the Cargo Insurance During Transport, Workers' Compensation and Employer's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.
	34.3	The Contractor shall, in accordance with the provisions of Appendix 3 (Insurance Requirements) to the Contract Agreement, deliver to the Employer certificates of insurance (or copies of the insurance policies) as evidence that the required policies are in full force and effect. The certificates shall provide that no less than twenty-one (21) days' notice shall be given to the Employer by insurers prior to cancellation or material modification of a policy.
	34.4	The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.
	34.5	The Employer shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in Appendix 3 (Insurance Requirements) to the Contract Agreement.
	34.6	If the Contractor fails to take out and/or maintain in effect the insurances referred to in GCC Sub-Clause 34.1, the Employer may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Contractor under the Contract any premium that the Employer shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Contractor. If the Employer fails to take out and/or maintain in effect the insurances referred to in GCC 34.5, the Contractor may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Employer under the Contract any premium that the Contractor shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Employer. If the Contractor fails to or is unable to take out and maintain in effect any such insurances, the Contractor shall nevertheless have no liability or responsibility towards the Employer, and the Contractor shall have full recourse against the Employer for any and all liabilities of the Employer herein.
	34.7	Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies effected by it pursuant to this GCC Clause 34, and all monies payable by any insurers shall be paid to the Contractor as per the procedure outlined in GCC Sub-Clause 34.8 below. The Employer shall give to the Contractor all such reasonable assistance as may be required by the Contractor. With respect to insurance claims in which the Employer's interest is involved,

Clause No.		Definition
		the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Employer. With respect to insurance claims in which the Contractor's interest is involved, the Employer shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.
	34.8	In respect of insurance proceeds/claim settlements relating to claims referred by the Contractor, the Employer shall given from time, written authorization to the under writer(s) to directly pay such proceeds/settlements to the contractor as are in accordance with the provisions hereunder: (i) Wherever total damages/loss of equipment/material, would occur, the Contractor will be entitled to payment of all payments received from the underwriters except the following amounts: (a) The amount paid to the Contractor under the Contract in respect of equipment/material damaged/lost (excluding the pro-rata initial advance) but including the entire amount of escalation, if any, already paid to the Contractor. (b) Taxes and duties which have already been paid by the Employer. In the event the claim money settled, is less than the total of the amount in a & b above, then the entire claim money settled will be retained by the Employer and the Contractor will forthwith pay the Employer the short fall amount between the claim money and the total of amounts as per a & b mentioned above. Subsequent payments, if any, due under the Contract shall be regulated by the relevant terms of payment. (ii) In case of damage to any equipment/material during any stage, the Contractor upon rectification of the damaged equipment to the satisfaction of the Employer shall be paid to the extent of full claims settled by the underwriters.
35.0	Unforeseen Conditions	
	35.1	If, during the execution of the Contract, the Contractor shall encounter on the Site any physical conditions (other than climatic conditions) or artificial obstructions that could not have been reasonably foreseen prior to the date of the Contract Agreement by an experienced contractor on the basis of reasonable examination of the data relating to the Facilities (including any data as to boring tests) provided by the Employer, and on the basis of information that it could have obtained from a visual inspection of the Site (if access thereto was available) or other data readily available to it relating to the Facilities, and if the Contractor determines that it will in consequence of such conditions or obstructions incur additional cost and expense or require additional time to perform its obligations under the Contract that would not have been required if such physical conditions or artificial obstructions had not been encountered, the Contractor shall

Clause No.		Definition
		promptly, and before performing additional work or using additional Plant and Equipment or Contractor's Equipment, notify the Project Manager in writing of (a) the physical conditions or artificial obstructions on the Site that could not have been reasonably foreseen (b) the additional work and/or Plant and Equipment and/or Contractor's Equipment required, including the steps which the Contractor will or proposes to take to overcome such conditions or obstructions (c) the extent of the anticipated delay (d) the additional cost and expense that the Contractor is likely to incur. On receiving any notice from the Contractor under this GCC Sub-Clause 35.1, the Project Manager shall promptly consult with the Employer and Contractor and decide upon the actions to be taken to overcome the physical conditions or artificial obstructions encountered. Following such consultations, the Project Manager shall instruct the Contractor, with a copy to the Employer, of the actions to be taken.
	35.2	Any reasonable additional cost and expense incurred by the Contractor in following the instructions from the Project Manager to overcome such physical conditions or artificial obstructions referred to in GCC Sub-Clause 35.1 shall be paid by the Employer to the Contractor as an addition to the Contract Price.
	35.3	If the Contractor is delayed or impeded in the performance of the Contract because of any such physical conditions or artificial obstructions referred to in GCC Sub-Clause 35.1, the Time for Completion shall be extended in accordance with GCC Clause 40 (Extension of Time for Completion).
36.0	Change in Laws and Regulations	
	36.1	If, after the date seven (7) days prior to the deadline set for Price Bid submission, in the country where the Site is located, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated or changed (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the costs and expenses of the Contractor and/or the Time for Completion, the Contract Price shall be correspondingly increased or decreased, and/or the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract. However, these adjustments would be restricted to items in respect of both direct transactions between the Employer and Contractor and Bought out items (to be dispatched directly from the sub-vendor's works to NTPC Site). These adjustments shall not be applicable on procurement of raw materials, intermediary components etc. by the Contractor.

Clause No.		Definition
		Notwithstanding the foregoing, such additional or reduced costs shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with the Appendix 2 to the Contract Agreement.
37.0	Force Majeure	
	37.1	"Force Majeure" shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the party affected.
	37.2	If either party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.
	37.3	The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with GCC Clause 40 (Extension of Time for Completion).
	37.4	The party or parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfil its or their obligations under the Contract, but without prejudice to either party's right to terminate the Contract under GCC Sub-Clauses 37.6 and 38.5.
	37.5	No delay or non-performance by either party hereto caused by the occurrence of any event of Force Majeure (a) shall constitute a default or breach of the Contract (b) (subject to GCC Sub-Clauses 32.2, 38.3 and 38.4) give rise to any claim for damages or additional cost or expense occasioned thereby if and to the extent that such delay or non-performance is caused by the occurrence of an event of Force Majeure.
	37.6	If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the currency of the Contract, the parties will attempt to develop a mutually satisfactory solution, failing which the dispute shall be resolved in accordance with GCC Clause 6.
	37.7	Notwithstanding GCC Sub-Clause 37.5, Force Majeure shall not apply to any obligation of the Employer to make payments to the Contractor herein.
38.0	War Risks	

Clause No.		Definition
	38.1	"War Risks" shall mean any of the following events occurring or existing in or near the country (or countries) where the Site is located: (a) war, hostilities or warlike operations (whether a state of war is declared or not), invasion, act of foreign enemy and civil war (b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts, and (c) any explosion or impact of any mine, bomb, shell, grenade or other projectile, missile, munitions or explosive of war.
	38.2	Notwithstanding anything contained in the Contract, the Contractor shall have no liability whatsoever for or with respect to (a) destruction of or damage to Facilities, Plant & Equipment, or any part thereof (b) destruction of or damage to property of the Employer or any third party (c) injury or loss of life if such destruction, damage, injury or loss of life is caused by any War Risks, and the Employer shall indemnify and hold the Contractor harmless from and against any and all claims, liabilities, actions, lawsuits, damages, costs, charges or expenses arising in consequence of or in connection with the same.
	38.3	If the Facilities or any Plant and Equipment or Contractor's Equipment or any other property of the Contractor used or intended to be used for the purposes of the Facilities shall sustain destruction or damage by reason of any War Risks, the Employer shall pay the Contractor for (a) any part of the Facilities or the Plant and Equipment so destroyed or damaged (to the extent not already paid for by the Employer) (b) replacing or making good any Contractor's Equipment or other property of the Contractor so destroyed or damaged so far as may be required by the Employer, and as may be necessary for completion of the Facilities, (c) replacing or making good any such destruction or damage to the Facilities or the Plant and Equipment or any part thereof.
	38.4	If the Employer does not require the Contractor to replace or make good any such destruction or damage to the Facilities, the Employer shall either request a change in accordance with GCC Clause 39 (Change in the Facilities), excluding the performance of that part of the Facilities thereby destroyed or damaged or, where the loss, destruction or damage affects a substantial part of the Facilities, shall terminate the Contract, pursuant to GCC Sub-Clause 42.1 (Termination for Employer's Convenience).

Clause No.		Definition
	38.5	Notwithstanding anything contained in the Contract, the Employer shall pay the Contractor for any increased costs or incidentals to the execution of the Contract that are in any way attributable to, consequent on, resulting from, or in any way connected with any War Risks, provided that the Contractor shall as soon as practicable notify the Employer in writing of any such increased cost.
	38.6	If during the performance of the Contract any War Risks shall occur that financially or otherwise materially affect the execution of the Contract by the Contractor, the Contractor shall use its reasonable efforts to execute the Contract with due and proper consideration given to the safety of its and its Subcontractors' personnel engaged in the work on the Facilities, provided, however, that if the execution of the work on the Facilities becomes impossible or is substantially prevented for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of any War Risks, the parties will attempt to develop a mutually satisfactory solution, failing which the dispute will be resolved in accordance with GCC Clause 6.
	38.7	In the event of termination pursuant to GCC Sub-Clauses 38.3, the rights and obligations of the Employer and the Contractor shall be specified in GCC Sub-Clauses 42.1.2 and 42.1.3, except that the Contractor shall have no entitlement to profit under paragraph (e) of GCC Sub-Clause 42.1.3 in respect of any unexecuted Facilities as of the date of termination.
H	Change in Contract Elements	
39.0	Change In The Facilities	
	39.1	Introducing a Change
	39.1.1	The Employer shall have the right to propose, and subsequently require, that the Project Manager order the Contractor from time to time during the performance of the Contract to make any change, modification, addition or deletion to, in or from the Facilities (hereinafter called "Change"), provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract .
	39.1.2	The Contractor may from time to time during its performance of the Contract propose to the Employer (with a copy to the Project Manager) any Change that the Contractor considers necessary or desirable to improve the quality, efficiency or safety of the Facilities. The Employer may at its discretion approve or reject any Change proposed by the Contractor.
	39.1.3	Notwithstanding GCC Sub-Clauses 39.1.1 and 39.1.2, no change made necessary because of any default of the

Clause No.		Definition
		Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.
	39.1.4	The procedure on how to proceed with and execute Changes is specified in GCC Sub-Clauses 39.2 and 39.3.
	39.2	Changes Originating from Employer
	39.2.1	If the Employer proposes a Change pursuant to GCC Sub-Clause 39.1.1, it shall send to the Contractor a "Request for Change Proposal," requiring the Contractor to prepare and furnish to the Project Manager as soon as reasonably practicable a "Change Proposal," which shall include the following: (a) brief description of the Change (b) effect on the Time for Completion (c) estimated cost of the Change (d) effect on Functional Guarantees (if any) (e) effect on any other provisions of the Contract.
	39.2.2	The pricing of any change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If the rates and prices of any change are not available in the Contract, the parties thereto shall agree on specific rates for the variation of the change.
	39.2.3	If before or during the preparation of the Change Proposal it becomes apparent that the aggregate effect of compliance therewith and with all other Change Orders that have already become binding upon the Contractor under this GCC Clause 39 would be to increase or decrease the Contract Price as originally set forth in Article 2 (Contract Price) of the Contract Agreement by more than fifteen (15) percent, the Contractor may give a written notice of objection thereto prior to furnishing the Change Proposal as aforesaid. If the Employer accepts the Contractor's objection, the Employer and the Contractor shall agree on specific rates for valuation of the change.
	39.2.4	Upon receipt of the Change Proposal, the Employer and the Contractor shall mutually agree upon all matters therein contained including agreement on rates if such rates are not available in the Contract or if the limit of 15% set forth in Clause 39.2.3 has been exceeded. Within fourteen (14) days after such agreement, the Employer shall, if it intends to proceed with the Change, issue the Contractor with a Change Order. If the Employer is unable to reach a decision within fourteen (14) days, it shall notify the Contractor with details of when the Contractor can expect a decision. If the Employer decides not to proceed with the Change for whatever reason, it shall, within the said period of fourteen (14) days, notify the Contractor accordingly.

Clause No.		Definition
	39.2.5	If the Employer and the Contractor cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Completion, or any other matters identified in the Change Proposal, the Employer may nevertheless instruct the Contractor to proceed with the Change by issue of a "Pending Agreement Change Order." Upon receipt of a Pending Agreement Change Order, the Contractor shall immediately proceed with effecting the Changes covered by such Order. The parties shall thereafter attempt to reach agreement on the outstanding issues under the Change Proposal. If the parties cannot reach agreement within sixty (60) days from the date of issue of the Pending Agreement Change Order, then the matter may be referred to the Expert Settlement Council (ESC) in accordance with the provisions of GCC Sub-Clause 6.2.
	39.3	Changes Originating from Contractor
	39.3.1	If the Contractor proposes a Change pursuant to GCC Sub-Clause 39.1.2, the Contractor shall submit to the Project Manager a written "Application for Change Proposal," giving reasons for the proposed Change and including the information specified in GCC Sub-Clause 39.2.1. Upon receipt of the Application for Change Proposal, the parties shall follow the procedures outlined in GCC Sub-Clauses 39.2.4 and 39.2.5.
40.0		Extension of Time for Completion
	40.1	The Time(s) for Completion specified in the SCC shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following: a) any Change in the Facilities as provided in GCC Clause 39 (Change in the Facilities) b) any occurrence of Force Majeure as provided in GCC Clause 37 (Force Majeure), unforeseen conditions as provided in GCC Clause 35 (Unforeseen Conditions), or other occurrence of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Sub-Clause 32.2 c) any suspension order given by the Employer under GCC Clause 41 (Suspension) hereof or reduction in the rate of progress pursuant to GCC Sub-Clause 41.2 or d) any changes in laws and regulations as provided in GCC Clause 36 (Change in Laws and Regulations) or e) any default or breach of the Contract by the Employer, specifically including failure to supply the

Clause No.		Definition
		items listed in Appendix 6 (Scope of Works and Supply by the Employer) to the Contract Agreement, or any activity, act or omission of any other contractors employed by the Employer or failure to give possession of site under GCC Clause 10.2. (f) any other matter specifically mentioned in the Contract; by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor.
	40.2	Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Project Manager a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Employer and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Employer's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to the Expert Settlement Council (ESC), pursuant to GCC Sub-Clause 6.2.`
	40.3	The Contractor shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.
	40.4	Documents for Consideration of Time Extension
		The following documents shall form the principal basis for consideration of Time Extension pursuant to GCC clause 40 with or without LD, levy of liquidated damages pursuant to GCC clause 26 and settlement of extra claims during the execution of contract: 1. The joint recordings in the weekly meetings register 2. Records of Technical Coordination Meetings. 3. Records of Contract Review meetings. 4. Written notices issued by the "Project Manager" or his authorized representative to Contractor in the relevant period.
41.0	Suspension	
	41.1	The Employer/ Project Manager may, by notice to the Contractor, order the Contractor to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended, the effective date of the suspension and the reasons therefor. The Contractor shall thereupon suspend performance of such obligation (except those obligations necessary for the care or preservation of the Facilities) until ordered in writing to resume such performance by the Project Manager/ Employer.

Clause No.		Definition
		If, by virtue of a suspension order given by the Project Manager/Employer, other than by reason of the Contractor's default or breach of the Contract, the Contractor's performance of any of its obligations is suspended for an aggregate period of more than ninety (90) days, then at any time thereafter and provided that at that time such performance is still suspended, the Contractor may give a notice to the Project Manager requiring that the Employer shall, within twenty-eight (28) days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with GCC Clause 39 (Change in the Facilities), excluding the performance of the suspended obligations from the Contract. If the Employer fails to do so within such period, the Contractor may, by a further notice to the Project Manager, elect to treat the suspension, where it affects a part only of the Facilities, as a deletion of such part in accordance with GCC Clause 39 (Change in the Facilities) or, where it affects the whole of the Facilities, as termination of the Contract under GCC Sub-Clause 42.1 (Termination for Employer's Convenience).
	41.2	If a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, or fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice or b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas in accordance with GCC Sub-Clause 10.2, or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities; then the Contractor may by fourteen (14) days' notice to the Employer suspend performance of all or any of its obligations under the Contract, or reduce the rate of progress.
	41.3	If the Contractor's performance of its obligations is suspended or the rate of progress is reduced pursuant to this

Clause No.		Definition
		GCC Clause 41, then the Time for Completion shall be extended in accordance with GCC Sub-Clause 40.1, and any and all additional costs or expenses incurred by the Contractor as a result of such suspension or reduction shall be paid by the Employer to the Contractor in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Contractor's default or breach of the Contract.
	41.4	During the period of suspension, the Contractor shall not remove from the Site any Plant and Equipment, any part of the Facilities or any Contractor's Equipment, without the prior written consent of the Employer.
42.0	Termination	
	42.1	Termination for Employer's Convenience
	42.1.1	The Employer may at any time terminate the Contract for any reason by giving the Contractor a notice of termination that refers to this GCC Sub-Clause 42.1.
	42.1.2	Upon receipt of the notice of termination under GCC Sub-Clause 42.1.1, the Contractor shall either immediately or upon the date specified in the notice of termination (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d)(ii) below (c) remove all Contractor's Equipment from the Site, repatriate the Contractor's and its Subcontractors' personnel from the Site, remove from the Site any wreckage, rubbish and debris of any kind, and leave the whole of the Site in a clean and safe condition (d) In addition, the Contractor, subject to the payment specified in GCC Sub-Clause 42.1.3, shall (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant and Equipment as at the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors (iii) deliver to the Employer all non-proprietary drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities.

Clause No.		Definition
	42.1.3	In the event of termination of the Contract under GCC Sub-Clause 42.1.1, the Employer shall pay to the Contractor the following amounts: (a) the Contract Price, properly attributable to the parts of the Facilities executed by the Contractor as of the date of termination (b) the costs reasonably incurred by the Contractor in the removal of the Contractor's Equipment from the Site and in the repatriation of the Contractor's and its Subcontractors' personnel (c) any amounts to be paid by the Contractor to its Subcontractors in connection with the termination of any subcontracts, including any cancellation charges (d) costs incurred by the Contractor in protecting the Facilities and leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 42.1.2 (e) the cost of satisfying all other obligations, commitments and claims that the Contractor may in good faith have undertaken with third parties in connection with the Contract and that are not covered by paragraphs (a) through (d) above.
	42.2	Termination for Contractor's Default
	42.2.1	The Employer, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefor to the Contractor, referring to this GCC Sub- Clause 42.2: (a) if the Contractor becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, if the Contractor is a corporation, a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Contractor takes or suffers any other analogous action in consequence of debt (b) if the Contractor assigns or transfers the Contract or any right or interest therein in violation of the provision of GCC Clause 43 (Assignment). (c) if the Contractor, in the judgement of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract. For the purpose of this Sub-Clause : "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.

Clause No.		Definition
		"fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Employer and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Employer of the benefits of free and open competition.
	42.2.2	If the Contractor (a) has abandoned or repudiated the Contract (b) has without valid reason failed to commence work on the Facilities promptly or has suspended (other than pursuant to GCC Sub-Clause 41.2) the progress of Contract performance for more than twenty-eight (28) days after receiving a written instruction from the Employer to proceed (c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause (d) refuses or is unable to provide sufficient materials, services or labour to execute and complete the Facilities in the manner specified in the program furnished under GCC Clause 18 (Program of Performance) at rates of progress that give reasonable assurance to the Employer that the Contractor can attain Completion of the Facilities by the Time for Completion as extended then the Employer may, without prejudice to any other rights it may possess under the Contract, give a notice to the Contractor stating the nature of the default and requiring the Contractor to remedy the same. If the Contractor fails to remedy or to take steps to remedy the same within fourteen (14) days of its receipt of such notice, then the Employer may terminate the Contract forthwith by giving a notice of termination to the Contractor that refers to this GCC Sub-Clause 42.2.
	42.2.3	Upon receipt of the notice of termination under GCC Sub-Clauses 42.2.1 or 42.2.2, the Contractor shall, either immediately or upon such date as is specified in the notice of termination, (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) below

Clause No.		Definition
		(c) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination (d) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Works and to the Plant and Equipment as at the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors (e) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities.
	42.2.4	The Employer may enter upon the Site, expel the Contractor, and complete the Facilities itself or by employing any third party. The Employer may, to the exclusion of any right of the Contractor over the same, take over and use with the payment of a fair rental rate to the Contractor, with all the maintenance costs to the account of the Employer and with an indemnification by the Employer for all liability including damage or injury to persons arising out of the Employer's use of such equipment, any Contractor's Equipment owned by the Contractor and on the Site in connection with the Facilities for such reasonable period as the Employer considers expedient for the supply and installation of the Facilities. Upon completion of the Facilities or at such earlier date as the Employer thinks appropriate, the Employer shall give notice to the Contractor that such Contractor's Equipment will be returned to the Contractor at or near the Site and shall return such Contractor's Equipment to the Contractor in accordance with such notice. The Contractor shall thereafter without delay and at its cost remove or arrange removal of the same from the Site.
	42.2.5	Subject to GCC Sub-Clause 42.2.6, the Contractor shall be entitled to be paid the Contract Price attributable to the Facilities executed as at the date of termination, the value of any unused or partially used Plant and Equipment on the Site, and the costs, if any, incurred in protecting the Facilities and in leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 42.2.3. Any sums due to the Employer from the Contractor accruing prior to the date of termination shall be deducted from the amount to be paid to the Contractor under this Contract.
	42.2.6	If the Employer completes the Facilities, the cost of completing the Facilities by the Employer shall be determined. If the sum that the Contractor is entitled to be paid, pursuant to GCC Sub-Clause 42.2.5, plus the reasonable costs incurred by the Employer in completing the Facilities,

Clause No.		Definition
		exceeds the Contract Price, the Contractor shall be liable for such excess. If such excess is greater than the sums due to the Contractor under GCC Sub-Clause 42.2.5, the Contractor shall pay the balance to the Employer, and if such excess is less than the sums due to the Contractor under GCC Sub-Clause 42.2.5, the Employer shall pay the balance to the Contractor. The Employer and the Contractor shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.
	42.3	Termination by Contractor
	42.3.1	If (a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to Appendix 1 (Terms and Procedures of Payment) of the Contract Agreement, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice, or (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities which the Employer is required to obtain as per provision of the Contract or as per relevant applicable laws of the country, then the Contractor may give a notice to the Employer thereof, and if the Employer has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the Contractor is still unable to carry out any of its obligations under the Contract for any reason attributable to the Employer within twenty-eight (28) days of the said notice, the Contractor may by a further notice to the Employer referring to this GCC Sub-Clause 42.3.1, forthwith terminate the Contract.
	42.3.2	The Contractor may terminate the Contract forthwith by giving a notice to the Employer to that effect, referring to this

Clause No.		Definition
		GCC Sub- Clause 42.3.2, if the Employer becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, being a corporation, if a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Employer takes or suffers any other analogous action in consequence of debt.
	42.3.3	If the Contract is terminated under GCC Sub-Clauses 42.3.1 or 42.3.2, then the Contractor shall immediately (a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d)(ii) (c) remove all Contractor's Equipment from the Site and repatriate the Contractor's and its Subcontractor's personnel from the Site (d) In addition, the Contractor, subject to the payment specified in GCC Sub-Clause 42.3.4, shall (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant and Equipment as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors (iii) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.
	42.3.4	If the Contract is terminated under GCC Sub-Clauses 42.3.1 or 42.3.2, the Employer shall pay to the Contractor all payments specified in GCC Sub-Clause 42.1.3 and reasonable compensation for all loss or damage sustained by the Contractor arising out of, in connection with or in consequence of such termination.
	42.3.5	Termination by the Contractor pursuant to this GCC Sub-Clause 42.3 is without prejudice to any other rights or remedies of the Contractor that may be exercised in lieu of or in addition to rights conferred by GCC Sub-Clause 42.3.

Clause No.		Definition
	42.3.6	In this GCC Clause 42, the expression "Facilities executed" shall include all work executed, Installation Services provided, any or all Plant and Equipment acquired (or subject to a legally binding obligation to purchase) by the Contractor and used or intended to be used for the purpose of the Facilities, up to and including the date of termination.
	42.3.7	In this GCC Clause 42, in calculating any monies due from the Employer to the Contractor, account shall be taken of any sum previously paid by the Employer to the Contractor under the Contract, including any advance payment paid pursuant to Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement.
43.0	Assignment	
	43.1	The Contractor shall not, without the express prior written consent of the Employer, assign to any third party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Contractor shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.
44.0	Contractor Performance Feedback and Evaluation System	
		The Employer has in place an established 'Contractor Performance and Feedback System' against which the Contractor's performance during the execution of Contract shall be evaluated on a continuous basis at regular intervals. In case the performance of the Contractor is found unsatisfactory on any of the following four parameters, the Contractor shall be considered ineligible for participating in future tenders for two years. * Financial Status * Project Execution and Project Management Capability. * Engineering & QA Capability * Claims & Disputes On completion of above ineligibility period, the Contractor would be required to submit a request to NTPC for participating in future tenders specifying the measures taken to improve their performance. On receipt of such request, the performance of contractor shall be assessed/ reevaluated by NTPC and if the performance is found to be satisfactory, the Contractor shall be considered eligible for participation in future tenders.
45.0	Fraud Prevention Policy	
		"The contractor along with their associate / collaborator / subcontractors / sub-vendors / consultants / service providers shall strictly adhere to the Fraud Prevention policy of the Employer displayed on its tender website http://www.ntpctender.com . The Contractor along with their

Clause No.		Definition
		associate / collaborator / subcontractors / sub-vendors / consultants / service providers shall observe the highest standard of ethics and shall not indulge or allow anybody else working in their organization to indulge in fraudulent activities during execution of the contract. The contractor shall immediately apprise the Employer about any fraud or suspected fraud as soon as it comes to their notice.
46.0	Withholding /Banning	
		The Employer has in place a Policy for withholding and Banning of Business Dealings as enclosed at Annexure-II to Special Conditions of Contract (SCC) of the Bidding Documents. Business dealings may be withheld or banned with the Contractor on account of any Default by the Contractor under GCC Clause 42.2.1 & 42.2.2 or any of the grounds as detailed in the said Banning Policy.

SECTION – 4: SPECIAL CONDITIONS OF CONTRACT OF NTPC (SCC)

The following Special Conditions of Contract (SCC) shall supplement the General Conditions of Contract (GCC). Wherever there is a conflict, the provisions herein shall prevail over those in the GCC. The corresponding clause number of the GCC is indicated in parentheses.

Name of Package: Battery Energy Storage System for 17 MW Solar PV Project at Manglutan in South Andaman, A&N Islands

Bid Document No. : RE-CS-5728-004(B)-9

Special Conditions (SCC) No.	GCC Clause Ref., if any	Special Conditions
1	Definitions (GCC Clause 1)	The Employer is: Name of Employer : NTPC Limited Address of Employer: NTPC Limited, Room No. 220, Engg. Office Complex Annexe, Plot A-8A, Sector 24, Noida - 201301 Distt. Gautam Budh Nagar, State of U.P. in India Fax No. 0091-120- 2410251 Tel. No. 0091-120- 2410341 The Project Manager is: Name of Project Manager: Head of Project Address of Project Manager: To be intimated later Time for Completion: The time schedule for completion of facilities for the bidder will be 15 months from the date of NOA. Further Bidder is also to provide comprehensive Operation and Maintenance (O&M) of entire Battery Energy Storage System for a period of Twenty Five(25) years from the date of successful Completion of trial run.
1.1	Settlement of Disputes (GCC Clause 6) GCC 6.3.4 GCC 6.3.7(i)	Appointing Authority for third Arbitrator : a) President, Institution of Engineers in case of an Indian Contractor. b) President, International Chambers of Commerce, Paris in case of a Foreign Contractor. Rules of procedure for arbitration proceedings: a) In case of a foreign contractor/ collaborator/associate of the contractor, the arbitration proceeding shall be conducted in accordance with the United Nations Commission on International Trade Law (UNCITRAL) Arbitration Rules of 1976.

Special Conditions (SCC) No.	GCC Clause Ref., if any	Special Conditions
	GCC 6.3.7(ii) GCC 6.3.7(ii)	b) In case of an Indian Contractor, the arbitration proceedings shall be conducted in accordance with Indian Arbitration and Conciliation Act 1996. In case the Indian Contractor is an Indian Public Sector Enterprise/Government Department (but not a State Govt. Undertaking or Joint Sector Undertaking which is not a subsidiary of Central Govt. Undertaking), the dispute arising between the Employer and the Contractor shall be referred for resolution to a Permanent Arbitration Machinery (PAM) of the Department of Public Enterprises, Government of India. The Place for Arbitration shall be: New Delhi, India.
2	Time for Commencement and Completion (GCC Clause 8) GCC 8.2	Time for Completion: The time schedule for completion of facilities for the bidder will be 15 months from the date of NOA. Further Bidder is also to provide comprehensive Operation and Maintenance (O&M) of entire Battery Energy Storage System for a period of Twenty Five(25) years from the date of successful Completion of trial run.

Special Conditions (SCC) No.	GCC Clause Ref., if any	Special Conditions				
3	Completion Time Guarantee (GCC Clause 26) 4 GCC 26.2	Applicable rate for liquidated damages: a) Liquidated Damages for delay in successful Completion of Facilities shall be as under: If the contractor fails to achieve the successful Completion of Facilities within the agreed work schedule, the Contractor shall pay to the Employer as liquidated damages and not as penalty, a sum calculated at the following rates: <table><tr><td>A sum of INR 10,68,643/- (Ten Lakh Sixty Eight Thousand Six Hundred Forty Three Only)</td><td>For each day of delay in successful Completion of Facilities under the Contract as per the scope of work of the Contractor.</td></tr></table> b) The liquidated damages for delay in supply of spares beyond the dates stipulated under the Contract shall be as follows : One half of the one percent (1/2%) of Ex-works (India)/CIF (Indian port-of-entry) price of undelivered spares, per week or part thereof of delay subject to maximum of five percent (5%) of the total CIF /Ex-orks of all spares included in the scope of work of the contractor under the contract. (d) The total amount of liquidated damages for delay under the contract will be subject to a maximum of five percent (5%) of the total Contract Price [total of First, Second & Third Contract (as applicable)] Add the following at the end of GCC clause 41.3: The Bank Guarantee and Insurance charges for the extended period on account of delays attributable to the Employer shall be reimbursed at the following rates <table><tr><td>Rate applicable for : reimbursement of BG</td><td>0.25% p.a. + service tax, or actual, whichever</td></tr></table>	A sum of INR 10,68,643/- (Ten Lakh Sixty Eight Thousand Six Hundred Forty Three Only)	For each day of delay in successful Completion of Facilities under the Contract as per the scope of work of the Contractor.	Rate applicable for : reimbursement of BG	0.25% p.a. + service tax, or actual, whichever
A sum of INR 10,68,643/- (Ten Lakh Sixty Eight Thousand Six Hundred Forty Three Only)	For each day of delay in successful Completion of Facilities under the Contract as per the scope of work of the Contractor.					
Rate applicable for : reimbursement of BG	0.25% p.a. + service tax, or actual, whichever					
4	GCC 41.3					

Special Conditions (SCC) No.	GCC Clause Ref., if any	Special Conditions		
			is lower, Charges subject to documentary evidence.	
		Rate applicable for Insurance Charges : as per table below :		
		(I) Basic Rates*:		
		Sl. No.	Extended Period	Rate
		1	Up to 6 months	May be granted on Pro-rata 20% basis of the original premium
		Sl. No.	Extended Period	Rate
		2	Exceeding 6 months but not exceeding 9 months	Rs 0.56/per thousand of sum insured
		3	Exceeding 9 months but not exceeding 12 months	Rs 0.64/per thousand of sum insured
		4	Exceeding 12 months but not exceeding 15 months	Rs 0.72/per thousand of sum insured
		5	Exceeding 15 months but not exceeding 18 months	Rs 0.80/per thousand of sum insured
6	Exceeding 18 months but not exceeding 21 months	Rs 0.88/per thousand of sum insured		
7	Exceeding 21 months but not exceeding 24 months	Rs 0.96/per thousand of sum insured		
(II) Additional Cover *:				
In addition to above the rate of premium applicable for 'Earthquake' and 'Terrorism' cover shall be as under:				
Description		Rate		
Earthquake				

Special Conditions (SCC) No.	GCC Clause Ref., if any	Special Conditions	
5	New GCC Clause 47	Zone-I Zone-II Zone-III	Rs 1.00/thousand of sum insured / annum Rs 0.50/thousand of sum insured / annum NIL
		Terrorism	Rs 0.30/thousand of sum insured / annum
6	New GCC Clause 48	*These rates are applicable for standard deductible as specified in GCC Clause 34 (Insurance). The extension shall be done on the same terms and conditions as that of the original policy. Accordingly, the insurance charges shall be reimbursed on the rates as above or actual, whichever is lower, subject to the documentary evidence. Taxes shall be paid over and above the rates as indicated. Integrity Pact If the Employer has terminated the contract pursuant to Section-3 of the Integrity Pact (IP), the Employer shall encash the Contract Performance Bank Guarantee, in accordance with Section 4 of Integrity Pact. Independent External Monitors The Nodal Officer for necessary coordination with Independent External Monitors (IEMs) shall be as under:	
		(i) GM(CS)/AGM(CS) heading : the concerned group (ii) Head of Contracts & : Materials (iii) Head of concerned : department (iv) Head of Project :	if the issue pertains to Contract Services if the issue pertains Department to regional office if the issue pertains to other departments if the issue pertains to Project/Station

Special Conditions (SCC) No.	GCC Clause Ref., if any	Special Conditions
7	New GCC Clause 49	Royalty 1. If the Contractor intends to engage itself in quarrying or mining of soil/earth, sand, stone/aggregates, metals, minerals or minor minerals required for the Civil works, as the case may be, it shall obtain necessary permits under the applicable law for such mining or quarrying from the State/Central Government authorities and pay the fee or charges applicable thereto. 2. The Civil works component of the Contract Price shall be inclusive of any Royalties or Seigniorage Fee or Cess or other charges payable on the quarried or mined metal, minerals, or minor minerals, as the case may be, at the rate(s) prevailing as on seven (7) days prior to the deadline set for Price Bid submission. 2.1 It shall be the responsibility of the Contractor to ensure that the Royalties or Seigniorage Fee or Cess or other charges on the quarried or mined metal, minerals or minor minerals are paid to the statutory authorities. 2.2 The component of Royalties or Seigniorage Fee or Cess or other charges, if applicable in a running account bill, shall only be released by the Employer to the Contractor on submission of the following documents in original: A) In case the Contractor is the primary license holder of the quarry / mines: i) Vehicle wise challan / transit permit and proof of payment of royalty, and ii) Any other document required as per the relevant Acts/Rules of the concerned state. B) In case the Contractor is the purchaser of soil/earth, sand, stone/aggregates, metals, minerals or minor minerals: i) Purchase voucher and vehicle wise challan / transit permit and proof of payment of royalty, and

Special Conditions (SCC) No.	GCC Clause Ref., if any	Special Conditions
8	GCC Clause 11.2	ii) Any other document required as per the relevant Acts/Rules of the concerned state. 2.3 In case the Contractor fails to provide the required proof of royalty payment with the RA bill then an amount based on the prevailing rates of the royalty shall be deducted from the respective RA bill, which shall be refunded to the Contractor on submission of proof of royalty payment. However, if the Contractor fails to provide the proof of royalty payment within a period of 60 days from the date of RA bill, NTPC shall issue a notice to the Contractor giving 30 days' time for submission of the proof of royalty payment. In case of non-submission of the proof of payment of royalty by the Contractor, the amount so deducted shall be deposited by NTPC to the concerned authority. Engineer in charge shall be responsible to ensure the compliance of the Royalty payment 2.4 The Contractor shall pay and indemnify the Employer against any default in payment of Royalties or Seigniorage Fee or Cess or other charges by the Contractor or the agency from which the Contractor purchases soil/earth, sand, stone/aggregates, metals, minerals or minor minerals. 2.5 In the event of there being a statutory increase in the rates of royalty charges/fresh levy of royalty on materials, the same shall be reimbursed to the Contractor upon submission of original challan by him of having made the payments at revised rates. In the event of there being a decrease in such rates, the same shall be recovered from the Contractor. The base date for calculating the increase or decrease shall be the rate as on seven (7) days prior to the deadline set for Price Bid submission. The total reimbursement (positive or negative) as specified above, to be paid or recovered, shall however be calculated on the quantity of materials actually considered while making the royalty payments to the concerned authorities, or the theoretical consumption of these materials (calculated on the basis of the volume of concrete or fill accepted for payment), whichever is less, and on the basis of documentary evidence of Govt. Notification. However, the Contractor will settle claims, if any, on account of over charge by the State Authorities. Provision of Price Adjustment is not applicable as specified in Appendix-2 to Form of Contract Agreement, Section-VII. The bidder shall quote the total price for the entire scope of work (covered in the

Special Conditions (SCC) No.	GCC Clause Ref., if any	Special Conditions
9	GCC 7.1 Scope of Facilities (GCC Clause 7)	Bidding Documents) on Firm Price Basis and the price shall remain Firm during entire period of contract. Add the following at the end of GCC Cl 7.1: The scope of work also includes comprehensive Operation and Maintenance (O&M) of entire Battery Energy Storage System for a period of Twenty Five years from the date of successful completion of trial run.
10	GCC Cl. 3.6.1	Replace GCC Clause 3.6.1 with the following: The Contracts to be entered into between the Employer and the successful bidder shall be as under: For Foreign Bidder -- First Contract: For CIF (Indian port-of-entry) supply of all Plant and Equipment including Mandatory Spares to be supplied from abroad -- Second Contract: For Ex-works (India) supply of Plant and Equipment including Mandatory Spares. -- Third Contract : For providing all services i.e. port handling, port clearance and port charges for the imported goods, further loading, inland transportation for delivery at site, inland transit insurance, unloading, storage, handling at site, installation, insurance covers other than inland transit insurance, erection, testing, commissioning and conducting Guarantee tests in respect of all the equipment supplied under the 'First Contract' & the 'Second Contract' and Civil Works, Operation & Maintenance (O&M) for Twenty Five years & and all other services as specified in the Contract Documents. If the foreign bidder has proposed an Assignee in his bid to execute the Second Contract and/or the Third Contract and has also furnished written unequivocal consent of the proposed Assignee to work as independent Contractor on the terms and conditions offered by the bidder and if the Employer is satisfied with capacity and experience of the Assignee, the Employer will enter into the 'Second Contract' and/or

Special Conditions (SCC) No.	GCC Clause Ref., if any	Special Conditions
11	GCC 13.3.1	'Third Contract' with the said Assignee. In case no Assignee has been proposed by the foreign bidder in his bid or if the Assignee fails to enter into the Second Contract and/or Third Contract with the Employer or if the Employer in its judgment does not find acceptance of the proposed Assignee as its Contractor, then the foreign bidder shall be obliged to enter into and execute all the three Contracts with the Employer. For Domestic Bidder -- First Contract: For CIF (Indian port-of-entry) supply of Plant and equipment including Mandatory Spares to be supplied from abroad -- Second Contract: For Ex-works (India) supply of Plant and Equipment including Mandatory Spares. -- Third Contract : For providing all services i.e. port handling, port clearance and port charges for the imported goods, further loading, inland transportation for delivery at site, inland transit insurance, unloading, storage, handling at site, installation, insurance covers other than inland transit insurance, erection, testing, commissioning and conducting Guarantee tests in respect of all the equipment supplied under the 'First Contract' & the 'Second Contract' and and Civil Works, Operation & Maintenance (O&M) for Twenty Five years & all other services as specified in the Contract Documents. Replace the clause 13.3.1 of GCC by the following: The Contractor shall, within twenty-eight (28) days of the Notification of Award, provide securities for the due performance of the Contract for ten percent (10%) of the Contract Price of all the Contracts. The above Security shall be valid upto 90 days beyond the Operation & Maintenance (O&M) period as specified in the Contract. The bidder will furnish above Security with an initial validity upto Five years from the date of NOA. However, the bidder is required to submit the extension of this security(s) every Five years until the ninety (90) days after the end of the Operation & Maintenance (O&M) period as specified in the Contract. In case of failure of the bidder to submit the extension of the bank security as per guidelines, the bank security shall be invoked by the Employer without any further intimation.

Special Conditions (SCC) No.	GCC Clause Ref., if any	Special Conditions
12	GCC 13.4	If the Employer accepts to enter into 'Second Contract' and/or 'Third Contract' with the Assignee of a foreign Contractor, pursuant to GCC Sub-Clause 3.6, the said Assignee, in addition to the Contract Performance Securities to be provided by the foreign contractor for ten percent (10%) of the value of all the Contracts i.e. First Contract, Second Contract and Third Contract, shall provide within twenty eight (28) days of the Notification of Award, separate Contract Performance Security(ies) equivalent to ten percent (10%) of the value of Contract(s) entered into with the Assignee, for the due performance of Contract. The above Security shall be valid upto 90 days beyond the Operation & Maintenance (O&M) period as specified in the Contract. The bidder will furnish above Security with an initial validity upto Five years from the date of NOA. However, the bidder is required to submit the extension of this security(s) every five years until the ninety (90) days after the end of the Operation & Maintenance (O&M) period as specified in the Contract. In case of failure of the bidder to submit the extension of the bank security as per guidelines, the bank security shall be invoked by the Employer without any further intimation. However, in case of delay in completion of the defect liability period, the validity of all the contract performance securities shall be extended by the period of such delay. Add a new GCC Clause 13.4 Performance Security will be reduced in following manner: 1. 10% of the Security/BG value shall be returned after successful completion of PG Test. 2. The Security/BG shall be reduced by 3% each year after adjusting the LD amount applicable after annual O&M tests (Limited to 3% of Contract/Equipment performance bank guarantee submitted by bidder prior to performance guarantee test). In case there is no applicable LD, 3% of the CPBG shall be reduced. 3. Last 15% of BG Value shall be returned at the end of the plant life (25 years), after successful disposal of Battery.

ANNEXURE-I TO SPECIAL CONDITIONS OF CONTRACT

**LIST OF BANKS ACCEPTABLE FOR SUBMISSION
OF BANK GUARANTEE FOR ADVANCE/SECURITY DEPOSIT TO BE FURNISHED BY
BIDDER/CONTRACTOR CAN BE ACCEPTED**

SCHEDULED COMMERCIAL BANKS

A SBI AND ASSOCIATES

1. State Bank of India
2. State Bank of Bikaner & Jaipur
3. State Bank of Hyderabad
4. State Bank of Mysore
5. State Bank of Patiala
6. State Bank of Travancore

B NATIONALISED BANKS

1. Allahabad Bank
2. Andhra Bank
3. Bank of India
4. Bank of Maharashtra
5. Canara Bank
6. Central Bank of India
7. Corporation Bank
8. Dena Bank
9. Indian Bank
10. Indian Overseas Bank
11. Oriental Bank of Commerce
12. Punjab National Bank

13. Punjab & Sind Bank
14. Syndicate Bank
15. Union Bank of India
16. United Bank of India
16. United Bank of India
17. UCO Bank
18. Vijaya Bank
19. Bank of Baroda
20. Bhartiya Mahila Bank

C SCHEDULED PRIVATE BANKS (INDIAN BANKS)

1. Catholic Syrian Bank
2. City Union Bank
3. Dhanlaxmi Bank Ltd.
4. Federal Bank Ltd
5. Jammu & Kashmir Bank Ltd
6. Karnataka Bank Ltd
7. Karur Vysya Bank Ltd
8. Lakshmi Vilas Bank Ltd
9. Nainital Bank Ltd
10. Kotak Mahindra Bank
11. RBL Bank Ltd
12. South Indian Bank Ltd
13. Tamilnad Mercantile Bank Ltd
14. ING Vysya Bank Ltd
15. Axis Bank Ltd.
16. IndusInd Bank Ltd

17. ICICI Bank
18. HDFC Bank Ltd.
19. DCB Bank Ltd
20. Yes Bank Ltd
21. IDFC Bank Ltd.
22. Bandhan Bank Ltd

D SCHEDULED PRIVATE BANKS (FOREIGN BANKS)

1. Abu Dhabi Commercial Bank Ltd
2. Bank of America NA
3. Bank of Bahrain & Kuwait B.S.C.
4. Mashreq Bank p.s.c.
5. Bank of Nova Scotia
6. Crédit Agricole Corporate and Investment Bank
7. BNP Paribas
8. Barclays Bank
9. Citi Bank N.A.
10. Deutsche Bank A.G.
11. The HongKong Shanghai Banking Corporation Ltd
12. Societe Generale
13. Sonali Bank Ltd.
14. Standard Chartered Bank
15. J.P. Morgan Chase Bank, National Association
16. State Bank of Mauritius Ltd.
17. DBS Bank Ltd.
18. Bank of Ceylon
19. PT Bank Maybank Indonesia TBK

20. A B Bank
21. Shinhan Bank.
22. CTBC Bank Co. Ltd.
23. Mizuho Bank Ltd
24. Krung Thai Bank Public Company Ltd.
25. KBC Bank N.V.
26. The Bank of Tokyo-Mitsubishi UFJ Limited.
27. Australia & New Zealand Banking Group Limited
28. Sumitomo Mitsui Banking Corporation
29. American Express Banking Corporation
30. Common Wealth Bank of Australia
31. Credit Suisse A.G.
32. First Rand Bank Ltd.
33. Industrial & Commercial Bank of China Ltd.
34. JSC VTB Bank
35. National Australia Bank
36. Cooperative Centrale Raiffeisen-Boerenleen Bank B.A.
37. Sberbank
38. United Overseas Bank Ltd.
39. Westpac Banking Corporation
40. Woori Bank
41. The Royal Bank of Scotland N.V.
42. Doha Bank Qsc
43. Industrial Bank of Korea
44. KEB Hana Bank

45. National Bank of Abu Dhabi PJSC

E OTHER PUBLIC SECTOR BANKS

1. IDBI Bank Ltd

* Bidder to take note of NTPC letter Ref. NTPC/FC/CS/BG/01 dated 03.09.2014 and SBI letter Ref. CAG-I/AMT-1/2014-15/370 dated 04.09.2014 enclosed herewith.



एन टी पी सी लिमिटेड
(भारत सरकार का उद्यम)

NTPC Limited
(A Govt. of India Enterprise)

केन्द्रीय कार्यालय/Corporate Centre

Date : 03rd September 2014

Ref. No.: NTPC/FC/CS/BG/01
Deputy General Manager,
State Bank of India,
CAG Branch,
12 th floor, Jawahar Vyapar Bhavan, 1, Tolstoy Marg,
New Delhi 110 001

Kind Atten: Sh. Sandeep Mishra

Sub: Format of the Bank Guarantee (BG) issued by State Bank of India – reg.

Dear Sir,

NTPC Limited is India's largest Power Company and a 'Maharatna PSU' with a significant presence in the entire value chain of power generation business. The procurement process of NTPC requires its participating Bidders to submit Bank Guarantees (BGs) as Bid security/other securities in a fixed format provided by NTPC.

It has been observed recently that BGs issued by various branches of State Bank of India are inserting the following additional clause.

QUOTE

Notwithstanding anything contrary contained in any law for the time being in force or banking practice, this guarantee shall not be assignable or transferable by the beneficiary. Notice or invocation by any person such as assignee, transferee of agent of beneficiary shall not be entertained by the bank. Any invocation of guarantee can be made only by the beneficiary directly.

UNQUOTE

The inclusion of the aforesaid clause in the BGs restricts the rights of NTPC under the BG and it may not be possible for NTPC to accept the aforesaid clause in the BGs submitted to us by our Bidders. It may also be mentioned that incorporation of the above additional clause in the BG results in the BG being returned by NTPC and consequently rejection of the bids of parties that have submitted such BGs.

In view of the above, it is requested that please take up at appropriate levels so that suitable instructions are issued to all your branches not to incorporate any such additional clause and henceforth BGs may be issued strictly as per NTPC format only.

Kindly acknowledge the receipt of this letter

Yours faithfully,

(K.P.Gupta)
General Manager (Finance)

Copy for Kind information: ED(CC&M) for kind info + u.s

एन टी पी सी भवन स्कोप कॉम्प्लेक्स, 7, इन्स्टीट्यूशनल एरिया, लोधी रोड, नई दिल्ली-110003 टेल/टेल. : 24300100, फैक्स/Fax : 011-24361018
NTPC Bhawan, SCOPE Complex, 7, Institutional Area, Lodhi Road, New Delhi-110003, वेबसाइट/Website : www.ntpc.co.in

Policy & Procedure for Withholding and Banning of Business Dealings

INDEX

S.No.	TOPIC																								
1	Introduction																								
2	Scope																								
3	Definitions																								
4	Withholding of business dealings																								
	<table><tr><td>4.1</td><td>Grounds</td></tr><tr><td>4.2</td><td>Procedure</td></tr><tr><td>4.3</td><td>Notice of Default</td></tr><tr><td>4.4</td><td>Area of Operation</td></tr><tr><td>4.5</td><td>Effect of Withholding</td></tr><tr><td>4.6</td><td>Duration of Withholding</td></tr><tr><td>4.7</td><td>Revocation of Orders</td></tr></table>	4.1	Grounds	4.2	Procedure	4.3	Notice of Default	4.4	Area of Operation	4.5	Effect of Withholding	4.6	Duration of Withholding	4.7	Revocation of Orders										
4.1	Grounds																								
4.2	Procedure																								
4.3	Notice of Default																								
4.4	Area of Operation																								
4.5	Effect of Withholding																								
4.6	Duration of Withholding																								
4.7	Revocation of Orders																								
5	Banning of Business Dealings																								
	<table><tr><td>5.1</td><td>Grounds</td></tr><tr><td>5.2</td><td>Procedure</td></tr><tr><td>5.3</td><td>Show Cause Notice</td></tr><tr><td>5.4</td><td>Speaking Orders</td></tr><tr><td>5.5</td><td>Communication to Agencies</td></tr><tr><td>5.6</td><td>Period of banning</td></tr><tr><td>5.7</td><td>Area of operation</td></tr><tr><td>5.8</td><td>Effect of Banning</td></tr><tr><td>5.9</td><td>Process of reply</td></tr><tr><td>5.10</td><td>Hosting at NTPC Website</td></tr><tr><td>5.11</td><td>Appeal</td></tr><tr><td>5.12</td><td>Revocation</td></tr></table>	5.1	Grounds	5.2	Procedure	5.3	Show Cause Notice	5.4	Speaking Orders	5.5	Communication to Agencies	5.6	Period of banning	5.7	Area of operation	5.8	Effect of Banning	5.9	Process of reply	5.10	Hosting at NTPC Website	5.11	Appeal	5.12	Revocation
5.1	Grounds																								
5.2	Procedure																								
5.3	Show Cause Notice																								
5.4	Speaking Orders																								
5.5	Communication to Agencies																								
5.6	Period of banning																								
5.7	Area of operation																								
5.8	Effect of Banning																								
5.9	Process of reply																								
5.10	Hosting at NTPC Website																								
5.11	Appeal																								
5.12	Revocation																								
6	Participation of Agency under Different Name																								
7	Participation of Agency as an Associate/Collaborator/Sub-Vendor & Procurement in Operating Stations																								

1. Introduction

- 1.1 NTPC Ltd. deals with Agencies, who are expected to adopt ethics of highest standards and a very high degree of integrity, transparency, commitments and sincerity towards the work undertaken. It is not in the interest of NTPC to deal with any Agency who commit deception, fraud or other misconduct of whatsoever nature in the tendering process and/or execution. NTPC is committed for timely completion of the projects within the awarded value without compromising on quality.
- 1.2 Since suspension/banning of business dealings involves civil consequences for an Agency concerned it is incumbent that adequate opportunity of hearing is provided and the explanation, if tendered, is considered before passing any order in this regard keeping in view the facts and circumstances of the case.

2. Scope

- 2.1 NTPC reserves its right to withhold or ban business dealings with any Agency, if such Agency is found to have committed misconduct or any of its action(s) fall into any such categories as laid down in this policy.
- 2.2 The procedure for (i) Withholding and (ii) Banning of Business Dealing with any Agency, has been laid down in these guidelines.
- 2.3 The provisions of this Policy supersede and will have overriding effect on all earlier guidelines, procedures & system circulars issued for the similar purpose.
- 2.4 This policy comes into force from the date of its issuance.
- 2.5 The provisions of this policy will be effective on investigations conducted or misconduct/irregularities noticed on the part of any Agency in all contracts awarded on or after the date of implementation of this policy and in the contracts under execution or contracts not yet closed, on the date of the implementation of this policy.

3. Definitions

In these Guidelines, unless the context otherwise requires:

i) **Agency** shall mean Contractor / Supplier / Purchaser / Bidder/ NTPC approved Sub-contractor of a Contractor' to whom work has been awarded. It shall include, but not limited to, a public limited company or a private limited company, a firm whether registered or not, any individual, a cooperative society or an association or a group of persons engaged in any commerce, trade industry, or constituents of an unincorporated Joint Venture Company, etc.

ii) **Competent Authority and 'Appellate Authority'** shall mean the following :-

- a) For Company (entire NTPC) wide Banning/Contracts awarded from Corporate Centre The CMD shall be the 'Competent Authority' for the purpose of these guidelines. Board of Directors / Sub-committee of the Board of Directors / Group of Directors, nominated for the said purpose shall be the 'Appellate Authority' in respect of such cases.
- b) For Region wide Banning /Contracts awarded from Regions The Regional ED shall be the Competent Authority for the purpose of these guidelines. The CMD shall be Appellate authority in respect of such cases.
- c) For Contracts awarded from individual Projects / Units The Head of Project shall be the 'Competent Authority' for the purpose of these guidelines. The Regional Executive Director shall be the 'Appellate Authority' in respect of such cases.

iii) **'Investigating Department'** shall mean any Department or Unit of NTPC, investigating into the conduct of the Agency and shall include the NTPC Vigilance Department, Central Bureau of Investigation, the State Police or any other department set up by the Central or State Government having powers to investigate.

iv) **'List of Enlisted Agencies** –shall mean and include list of Enlisted Parties / Contractors / Suppliers / Bidders, etc.

v) **State** – includes the Government and Parliament of India and the Government and the Legislature of each of the States and all local or other authorities within the territory of India or under the control of the Government of India.

vi) **Fraud Prevention Policy** – shall mean the policy related to prevention of fraud displayed on NTPC tender website <http://www.ntpctender.com>.

vii) **Contractor Performance Feedback and Evaluation System** – The guidelines outlined in relevant NTPC circular for evaluating the Contractor's performance by the Screening Committee in respect of Contracts awarded by Corporate Contracts Services.

viii) **Completion of Facilities** shall mean the term '**Completion of Facilities**' as defined in the Contract.

ix) **Standing Committee** shall mean the following :-

a) For Contracts awarded from Corporate Centre

A Committee constituted for the purpose of these guidelines and comprising members from CC&M (Convener), Finance and Engineering/Indenting department. Additional member(s) from any other deptt/site/region as considered appropriate may also be co-opted on case to case basis. The level of the committee members shall be E8 and above.

b) For Contracts awarded from Regions

A Committee constituted for the purpose of these guidelines and comprising HODs (not below E-7 level) from C&M (Convener), Finance and Indenting department. Additional member(s) from any other deptt/site as considered appropriate may also be co-opted on case to case basis.

c) For Contracts awarded from individual Projects / Units

A Committee constituted for the purpose of these guidelines and comprising HODs (not below E-7 level) from C&M (Convener), Finance and Indenting department. Additional member(s) from any other deptt as considered appropriate may also be co-opted on case to case basis.

x) **Suspension/Banning** – In the context of these guidelines, the words suspension and banning are interchangeable and shall have same connotation & meaning.

4. Withholding of business dealings

4.1 Grounds

The business dealing with the Agency may be withheld, if they are found to be in breach of the terms & conditions of the Contract, on account of the reasons attributable to them, which shall include, but not be limited to the following:
if the Agency

- a) Either fails to commence work on the Facilities in terms of contract or suspends the progress of Contract performance.
- b) Fails to achieve the 'Completion of Facilities' or execute the contract milestones within time schedule stipulated in the contract
- c) Suspends/stops work on any unfounded pretext including seeking higher compensation.
- d) Fails to conduct the Guarantee test in the time limit stipulated in the contract.
- e) Diverts funds advanced to the Contractor for purpose other than the Contract.
- f) Does not deploy or withdraws the technical staff or equipment considered necessary as per the terms & conditions of contract;
- g) Fails to furnish the required documents / information as required under the terms & conditions of contract;
- h) Does not fulfill the obligations as required under the Contract .
- i) Violates terms & conditions of the contract.
- j) Does not Supply material /supplies material of inferior quality with respect to Technical Specifications under the Contract.
- k) On prima-facie scrutiny, work executed found to be of poor quality beyond acceptable limits stipulated in the Technical Specifications under the Contract.
- l) If a disaster / major failure / accident / collapse of a structure/ system caused during erection or during defect liability period prima facie appears to be due to negligence of contractor or design deficiency or poor quality of execution.
- m) Assigns, transfers, sublets or attempts to assign, transfer or sublet the entire Works or any portion thereof without the prior written approval of the Employer;

- n) Misbehavior or physical manhandling by the Agency or his representative or any person acting on his behalf with any official of the company dealing with the concerned contract.
- o) If NTPC prima-facie of the view that the Agency is guilty of an offence involving corrupt, fraudulent practices including misrepresentation of facts as per NTPC Fraud Prevention Policy, moral turpitude in relation to the business dealings.
- p) If the Central Vigilance Commission, Central Bureau of Investigation or any other Central Government investigation Agency or any other Central Government Department recommends such a course in respect of a case under investigation;
- q) If the security consideration, including questions of loyalty of the Agency to the state, so warrants ;
- r) The finished work either prematurely fails or fails to give the desired output/service during the defect liability period and the Agency fails to rectify it.
- s) On any ground as per which doing business dealings with the Agency is not in the public interest in the opinion of Competent Authority.
- t) If the Agency fails to comply with any of the statutory laws and regulations in force, in totality, even after completion of work.

4.2 Procedure

- (a) For Site/Regional/Corporate Packages The concerned department at Site/Region/Corporate Centre on noticing any non/under performance and/or irregularities and/or misconduct and/or unethical practice as mentioned above, shall refer the matter to Convener of the Standing Committee along with relevant details. The Standing Committee shall analyze the referred case and if considered appropriate, shall put up the proposal for issuing Notice of Default for the purpose of withholding of business dealings with the Agency for approval of the Head of Project (for Site packages)/RED (for Regional packages)/CMD (for Corporate Packages).

In case the Standing Committee recommends waiver of withholding of business dealings with the Agency, the proposal along with reasons thereof shall be put up for approval of the RED (for Site packages)/CMD (for Regional packages)/CMD (for Corporate packages).

All the above proposals shall be routed through Vigilance department. Besides the Standing Committee, Vigilance Department of each Project / Unit / Corporate Vigilance may also be competent to initiate the proposal for withholding.

4.3 Notice of Default

Once the proposal for issuance of Notice of default is approved by the Competent Authority, a 'Notice of Default' duly vetted by legal deptt shall be issued by the Competent Authority himself or by a person authorized for the said purpose to the Agency giving them a period of twenty eight (28) days to remedy the default.

If Agency fails to remedy or take adequate steps to remedy the default to the satisfaction of NTPC within the notice period mentioned above, then business dealings shall be withheld with the Agency after approval of the Competent Authority. The order of such withholding of business dealings shall be communicated to the Agency (after vetting by legal deptt) by the Competent Authority himself or by a person authorized for the said purpose.

4.4 Area of Operation

A decision to withhold business dealings with any Agency for Regional/Site awarded contracts shall be restricted to such Regions/Sites only and for Corporate awarded contracts withholding shall apply throughout the Company.

For Regional/Site wise withholding of any Agency, circular for such withholding shall be issued by respective Regions/Sites under intimation to RED and ED (CC&M) and also uploaded at intranet of respective Regions/Sites. However, in case of company wide withholding of any Agency, circular shall be issued by Corporate Contracts and uploaded at intranet of CC&M.

4.5 Effect of Withholding

The Agency, after issue of order of withholding of business dealings, would not be allowed to participate in any future tender enquiry and if the Agency has already participated in any tender process and the price bids are not opened, his techno-commercial bid will be rejected and price bid will be returned unopened. However, where the price bids of Agency have been opened prior to order of withholding, bids of the Agency shall not be rejected.

4.6 Duration of Withholding

Duration of withholding the Agency shall be for a period of one year. Within this period, if the Agency rectifies the reason / ground on which the Agency has been withheld, to the satisfaction of the Competent Authority, then on written representation of the Agency, the Competent Authority can review and, if satisfied, may revoke the order of withholding

of business dealing. Provided further that, even till completion of one year of withholding period, if the Agency does not rectify, then the Competent Authority after reviewing the situation may issue order extending the period of withholding for one more year or advise initiation of action for banning of business dealings with Agency in accordance with the procedure prescribed in Para 5.2 below.

4.7 Revocation of Orders

An order for withholding of business dealing passed for a certain specified period, including extension thereof, shall not be revoked automatically. Such withholding shall be revoked only after order in this respect is issued with the approval of Competent Authority.

5. Banning of business dealings

5.1 Grounds on which Banning of business dealings can be initiated

Banning of business dealings can be initiated against Agency, on following grounds :-

- a) If the Agency fails to accept the award of contract or has abandoned or repudiated the Contract.
- b) If the Contractor is found to be non-performing in execution of contract by the Screening Committee (nominated as per NTPC established 'Contractor Performance Feedback and Evaluation System').
- c) If a disaster / major failure / accident / collapse of a structure / system is caused during erection or during defect liability period due to negligence of contractor or design deficiency or poor quality of execution.
- d) Misbehavior or physical manhandling by the Agency or his representative or any person acting on his behalf with any official of the Company dealing with the concerned contract is established.
- e) If the Director / Owner of the Agency, proprietor or partner of the Agency, is convicted by a court of law for offences involving corrupt and fraudulent practices including moral turpitude in relation to its business dealings with the government or NTPC or NTPC's group companies, during the last five years.
- f) If the proprietor of the Agency have been guilty of malpractices such as bribery, corruption, fraud, substitution of the tenders, interpolations, etc.
- g) If the Agency continuously refuses to return / refund the dues of NTPC or NTPC's group companies, without showing adequate reason and this is not due to any reasonable dispute which would attract proceedings in arbitration or court of Law;
- h) If the Agency employs a public servant dismissed / removed or employs a person convicted for an offence involving corruption or abetment of such offences ;

- i) If business dealings with the Agency have been banned by the Ministry of Power or Government of India and the ban is still in force,
 - j) If it is established that Agency has resorted to corrupt, fraudulent practices including misrepresentation of facts;
 - k) If the Agency uses intimidation/threatening or brings undue outside pressure on the NTPC or NTPC's group companies, or its official in acceptance / performance of the job under the contract.
 - l) If the Agency indulges in repeated and / or deliberate use of delay tactics in complying with contractual stipulations;
 - m) If the Agency is found to be involved in cartel formation during bidding.
 - n) On willful indulgence by the Agency in supplying sub-standard material with respect to Technical Specifications under the Contract irrespective of whether pre-dispatch inspection was carried out by Company (NTPC) or not;
 - o) Based on the findings of the investigation report of CBI/Police against the Agency for malafide/unlawful acts or improper conduct on his part in matters relating to the Company (NTPC) or even otherwise;
 - p) If the Agency is declared bankrupt or insolvent or its financial position has become unsound, and in the case of a limited company, it is wound up or liquidated.
 - q) Established litigant nature of the Agency to derive undue benefit;
 - r) Continued poor performance of the Agency;
 - s) If the Agency violates the provisions of the Integrity Pact provided in the Contract.
 - t) If the Agency commits fraud as defined under the Fraud Prevention Policy of NTPC.
 - u) If the Agency has assigned or transferred the contract or engaged subcontractor(s) without the prior approval of the Competent Authority in violation of the provisions of the contract.
 - v) If the Agency misuses the premises or facilities of the NTPC forcefully occupies, tampers or damages the Company's properties including land, water resources, forests / trees, etc.
 - w) If the security consideration, including questions of loyalty of the Agency to the state, so warrants;
- (Note: The examples given above are only illustrative and not exhaustive. The Competent Authority may decide to ban business dealing for any good and sufficient reason).

5.2 Procedure

(a) For Site/Regional Packages where banning is proposed at Site/Regional level respectively

The concerned department on noticing any non/under performance and/or

irregularities and/or misconduct and/or unethical practice as mentioned above, shall refer the matter to Convener of the Standing Committee along with relevant details. The Standing Committee shall analyze the referred case and if considered appropriate, shall put up the proposal for issuing Show Cause Notice for the purpose of banning of business dealings with the Agency for approval of the Competent Authority. In case the Standing Committee recommends waiver of banning of business dealings with the Agency, the proposal along with reasons thereof shall be put up for approval of one level above the Competent Authority.

All the above proposals shall be routed through Vigilance department. Besides the Standing Committee, Vigilance Department of each Project / Unit / Corporate Vigilance may also be competent to initiate the proposal for banning.

(b) For Site Packages where Region wide banning is proposed

For Site cases, if the gravity of the misconduct is such that it would not be in the interest of the concerned Region as a whole to deal with such an Agency, the Competent Authority of the Site may put up his recommendation to RED.

(c) For Site/Regional Packages where Company wide banning is Proposed

For Regional/Site cases, if the gravity of the misconduct is very serious and it would not be in the interest of NTPC as a whole to deal with such an Agency, the Competent Authority of the Site/Region may put up his recommendation to CMD through RED (for site cases), ED(CC&M) and Chief Vigilance Officer (CVO), NTPC.

(d) For Corporate Packages

The concerned department on noticing any non/under performance and/or irregularities and/or misconduct and/or unethical practice as mentioned above, shall refer the matter to Convener of the Standing Committee along with relevant details. The Standing Committee shall analyze the referred case and if considered appropriate, shall put up the proposal for issuing Show Cause Notice for the purpose of banning of business dealings with the Agency for approval of the Competent Authority.

In case the Standing Committee recommends waiver of banning of business dealings with the Agency, the proposal along with reasons thereof shall be put up for approval of CMD.

All the above proposals shall be routed through Vigilance department. Besides the Standing Committee, Corporate Vigilance and Screening

Committee (under Contractor Performance Feedback and Evaluation System) may also be competent to initiate the proposal for banning.

5.3 Show Cause Notice

Once the proposal for issuance of Show Cause Notice is approved by the Competent Authority, a 'Show Cause Notice' duly vetted by legal department shall be issued by the Competent Authority himself or by a person authorized for the said purpose to the delinquent Agency. The Agency shall be asked to submit the reply of Show Cause Notice within 15 days of its issuance. Further, the Agency shall be given an opportunity for Oral hearing to present its case in person, if it so desires, and the date for Oral Hearing shall be necessarily indicated in the Show Cause Notice.

In cases where investigation has been carried out by Vigilance Department or CBI etc., the show cause notice will also be vetted by Vigilance Department before issuance. Statement containing the imputation of misconduct or misbehavior may be appended to the Show Cause Notice.

The purpose of issuing the Show Cause Notice is only that the Agencies concerned shall be given an opportunity to explain their stand before any action is taken. All that is required in such cases is that the grounds on which action is proposed to be taken shall be disclosed to the Agency inviting representation and after considering that representation, orders may be passed. Such orders require only the subjective satisfaction of the authority that passed the final orders.

If the Agency requests for inspection of any relevant document in possession of NTPC, necessary facility for inspection of documents may be provided.

In cases processed by Vigilance deptt, oral hearing shall be conducted by a separate committee (constituted on case to case basis) comprising members from C&M and Vigilance deptt. Additional member(s) from any other deptt/site as considered appropriate may also be co-opted on case to case basis.

During the conductance of oral hearing, only the regular employees of Agency will be permitted to represent the Agency and no outsider shall be allowed to represent the Agency on its behalf.

Reply to the Show Cause Notice given by the Agency and their submissions in oral hearing, if any, will be processed by the Standing Committee for obtaining final decision of the Competent Authority in the matter. Further, reply to the Show Cause Notice given by the Agency and submissions in oral hearing, if any, with regards to Vigilance cases shall be processed by a Separate Committee which shall put up its final recommendations to the Competent Authority in the matter.

In case, no reply to Show Cause Notice is received from the Agency within

stipulated time, action for processing ex-parte against the concerned Agency shall be initiated

5.4 Speaking Order

The speaking order for banning the business dealing with the Agency shall be issued (after vetting by legal deptt) by the Competent Authority himself or by a person authorized for the said purpose. In cases where investigation has been carried out by Vigilance Department or CBI etc., the speaking order will also be vetted by Vigilance Department before issuance.

5.5 Communication to Agencies

The decision regarding banning of business dealings taken after the issue of a Show Cause Notice and consideration of representation, if any, in reply thereto, shall be communicated to the Agency concerned along with a reasoned order. The fact that the representation has been considered shall invariably be mentioned in the communication. Also the fact that if no reply was received to the Show Cause Notice shall invariably be indicated in the final communication to the Agency.

5.6 Period of banning

The period for which the ban would be operative may be mentioned in the order. The banning shall normally be for a period of three years. However, in cases processed under provisions of Integrity pact and Contractor Performance Feedback and Evaluation System, the banning would be operative for a period as specified therein.

In case the information/documents submitted by Agency in competing for the tender found to be false/forged then NTPC, without prejudice to any other rights or remedies it may possess, shall recover from Agency the cost incurred in carrying out physical assessment for establishing veracity of such information/documents. In case Agency refuses to reimburse such cost to NTPC then banning period of Agency shall be extended by another one year.

5.7 Area of Operation

For contracts awarded by Site, banning shall be restricted to such Site only except where approval has been obtained for Region/Company wide banning.

For contracts awarded by Region, banning shall be restricted to such Region only except where approval has been obtained for Company wide banning.

For contracts awarded by Corporate Centre banning shall apply throughout the Company.

For Regional/Site wise banning of any Agency, circular for such banning

shall be issued by respective Regions/Sites under intimation to RED and ED (CC&M). However, in case of company wide banning of any Agency, circular shall be issued by Corporate Contracts

5.8 Effect of Banning

The Agency, after issue of the order of banning of business dealings, would not be allowed to participate in any future tender enquiry and if the Agency has already participated in tender process and the price bids are not opened, his techno-commercial bid will be rejected and price bid will be returned unopened. However, where the price bids of Agency have been opened prior to order of banning, bids of Agency shall not be rejected.

5.9 Process of reply

The Agency shall be separately advised of the decision regarding banning of business, taken in reply to their representation, if any. As regard any further representation from the Agency, business dealings with whom have been banned, the same shall be processed by the concerned C&M department in consultation with Vigilance department, wherever applicable. If any reply is considered necessary to be sent to the Agency, the same shall be sent by the concerned C&M Department.

5.10 Hosting at NTPC website

a) The names of the Agencies with whom Business Dealings have been banned at Site/Region/Company level shall be hosted at NTPC website by CC&M.

5.11 Appeal against the Decision of the Competent Authority.

The Agency may file an appeal against the order of the Competent Authority banning of business dealing before Appellate Authority. Such an appeal shall be preferred within one month from the date of receipt of the order of banning of business dealing. Appellate Authority would consider the appeal and pass appropriate order which shall be communicated to the Agency as well as the Competent Authority.

5.12 Revocation of Orders

a) The banning under 'Contractor Performance Feedback and Evaluation System' shall not be revoked automatically. Such banning shall be revoked only after re-evaluation of the performance of the Agency by the Screening Committee as detailed under the 'Contractor Performance Feedback and Evaluation System'.

b) In all other cases, an order for banning passed for a certain specified period shall be deemed to have been automatically revoked on the expiry of that specified period and it will not be necessary to issue a specific

formal orders of revocation, except that an order of banning passed on account of doubtful loyalty or security consideration shall continue to remain in force until it is specifically revoked. c) An order of banning for the reasons mentioned at para 5.1 (e) above may be revoked if, in respect of the same facts, the accused has been wholly exonerated by a Court of Law.

6.0 During the banning/withholding period, if it is found at any stage that Agency has participated in tender enquiry under a different name then such Agency would immediately be debarred from the tender/contract and its Bid Security/Performance Security would be forfeited. Payment, if any, made shall also be recovered.

7.0 Further in case of banning/withholding following would also be applicable:

(i) Participation of Agency as an Associate/Collaborator of the Main Contractor

Where Stage-I bids have been opened prior to banning/withholding of Agency and such Agency has been proposed as Associate/Collaborator by any of the bidders, in such cases the tendering process shall not be annulled on this ground and the Agency shall be permitted to continue as Associate/Collaborator for such bidding.

However where opening of Stage-I bids (Two Stage Bidding) / Envelope-I Techno-Commercial bids (Single Stage Two Envelope Bidding) has not taken place prior to banning/withholding of Agency then in such case Agency shall not be permitted to participate as Associate/Collaborator in such bidding.

(ii) Participation of Agency as an approved Sub-Vendor of the Main Contractor

After banning/withholding order, the banned/withheld Agency shall not be allowed to participate as Sub-Vendor in the tenders for supplying/manufacturing equipment (s)/component (s)/service if it has been banned on grounds of supplying sub-standard material/equipment/service.

Further, if the banned/withheld agency is an approved Sub-vendor under any Contract for such equipment/component/service, the Main Contractor shall not be permitted to place work order/Purchase order/Contract on the banned/withheld agency as a sub-vendor after the date of banning/withholding even though the name of the party has been approved as a sub-vendor earlier. (iii) **Procurement of spares/awarding of Contracts in operating stations**

There would be no bar on procuring the spares and awarding Contracts towards Annual Maintenance (AMC)/ O&M/ Repair works on Agencies pertaining to the packages for which they have been banned provided the Equipment has been supplied by such Agency.

TERMS AND PROCEDURES OF PAYMENT

In accordance with the provisions of NTPC GCC Clause 12 (Terms of Payment), the Employer shall pay the Contractor in the following manner and at the following times, on the basis of the Price Break down given in the Section on Price Schedules. Payments will be made in the currencies quoted by the Bidder unless otherwise agreed between the parties. Application for payment in respect of part deliveries may be made by the Contractor as work proceeds.

TERMS OF PAYMENT

A. Schedule No.1: Plant and Equipment (excluding Replacement Equipment, Mandatory Spares) from Abroad

In respect of Plant and Equipment supplied from abroad the following payments shall be made :

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A1. For FOB Price Component of Plant and Equipment (excluding Replacement Equipment Cost, Mandatory Spares) :

(I) Five Percent (5%) of the total FOB price component as Initial Advance Payment on:

(i) Acceptance of Notification of Award and Signing of the Contract Agreement.

(ii) Submission of an unconditional Bank Guarantee covering the advance amount which shall be initially kept valid upto (ninety) 90 days beyond the schedule date of Completion of the Facilities under the Package. However, in case of delay in completion of facilities, the validity of this Bank Guarantee shall be extended by the period of such delay. Proforma of Bank Guarantee is enclosed in Section - VII - Bank Guarantee Form for Advance Payment.

(iii) Submission by main Contractor of an unconditional Bank Guarantee(s) towards Performance Security(s) in respect of all Contracts including contract(s) entered with assignee (if applicable) and submission by the assignee (if applicable) of unconditional bank guarantee(s) towards Contract Performance Security(ies) in respect of the contract(s) entered into with the assignee, all valid upto ninety (90) days after the end of Defects Liability Period of all equipment covered under the contract. The proforma of Bank Guarantee is enclosed in Section - VII - Form of Performance Security.

(iv) In case Joint Deed of Undertaking by the Contractor alongwith his Collaborator/Associate forms part of the contract then submission of an unconditional Bank Guarantee from such Collaborator/Associate towards faithful performance of the Joint Deed of Undertaking for an amount and with validity as specified in the respective format of Deed of Joint Undertaking. The proforma of Bank Guarantee(s) shall be as enclosed in Section - VII. - **IF APPLICABLE**

(v) Submission of a detailed PERT Network based on the work schedule stipulated in Appendix - 4 to Form of the Contract Agreement and its approval by the Employer.

(II) **Sixty percent (60%)** of FOB price component of the Contract price for each identified equipment upon dispatch of equipment from manufacturer's works on pro-rata basis on production of invoices and satisfactory evidence of shipment (which shall be 3 of 3 original Bill of Lading) including Material Despatch Clearance Certificate (MDCC) issued by the Employer's Corporate QA & I representative.

(III) **Twenty Percent (20 %)** of FOB price component of the Contract Price for each identified equipment on receipt of equipment at site on prorata basis and physical verification and certification by the Project Manager for the equipment received and stored at site.

(IV) **Two Point Five Percent (2.5%)** of FOB Price Component of the contract price on successful commissioning of entire Battery Energy Storage System on certification by the Project Manager.

(V) **Two Point Five Percent (2.5%)** of FOB Price Component of the contract price on Completion of the Facilities, as specified, and issuance of Completion Certificate by the Project Manager.

(VI) **Ten Percent (10%)** of FOB Price Component of the contract price on successful completion of the Performance Guarantee Tests, as specified, and issuance of Operational Acceptance Certificate by the Project Manager.

Note: 1. The prorata payment will be based on the detailed price break-up furnished by the Contractor and approved by the Employer.

2. In case the Contractor is a nonresident/foreign company, the release of first progressive payment shall also be subject to submission of certificate/Ruling determining the applicable rate of Income Tax in terms of relevant provisions of GCC clause on Taxes & Duties and acceptance of same by the Engineer-in- Charge.

3. In case installation Price (excluding civil/structural works price) is less than 15% of the cumulative total FOB & Ex-works Price of Main Equipment, the amount by which it is lower shall be retained proportionately from the FOB and EX-works component of the Contract price while releasing payment due to receipt of equipment, and no interest payment shall be payable on retained amount. The aforesaid amount shall be paid on pro-rata basis upon completion of installation of the respective equipment and its certification by the project manager.

(If prices are quoted in foreign currency then SBI bill selling exchange rate as on the date set for opening of price bids shall be considered for the purpose of computing installation percentage/retention amount).

A2. Ocean Freight and Marine Insurance Charges (excluding Replacement Equipment Cost and Mandatory Spares parts) for Plant & equipment and structural covered in Sl. A1 above :

Hundred percent (100%) Ocean Freight and Marine Insurance charges covered in Schedule-1 shall be paid upon shipment of equipment (**excluding Replacement Equipment Cost and Mandatory spares**) on pro-rata basis to the FOB price of the equipment shipped. The aggregate of all such pro-rata payments shall not exceed the total amount identified in the Contract. However, wherever equipment wise Ocean Freight and Marine Insurance charges have been identified in the Contract the payment of Ocean Freight and Marine Insurance Charges shall be based on such charges identified in the Contract against shipment of equipment.

B. Schedule No. 2: Plant and Equipment (excluding Replacement Equipment Cost, Mandatory Spares) supplied from within the Employers country

In respect of Plant and Equipment supplied from within the Employer's country the following payment shall be made :

B1. For Ex-works Price component of Plant and Equipment excluding Replacement Equipment Cost, Mandatory Spares:

(I) **Five Percent (5%)** of the total Ex-works price component as Initial Advance Payment on:

(i) Acceptance of Notification of Award and Signing of the Contract Agreement.

(ii) Submission of an unconditional Bank Guarantee covering the advance amount which shall be initially kept valid upto (ninety) 90 days beyond the schedule date for successful Completion of the Facilities under the Package. However, in case of delay in completion of facilities the validity of this Bank Guarantee shall be extended by the period of such delay. Proforma of Bank Guarantee is enclosed in Section - VII - Bank Guarantee Form for Advance Payment.

(iii) Submission by the main contractor of an unconditional Bank Guarantee(s) towards Contract Performance Security(s) in respect of all Contracts including contract(s) entered with assignee (if applicable) and submission by the assignee (if applicable) of unconditional bank guarantee(s) towards contract performance security(ies) in respect of the contract(s) entered into with the assignee, all valid upto ninety (90) days after the end of Defects Liability Period of all the equipment covered under the contract. The proforma of Bank Guarantee is enclosed in Section - VII Form of Performance Security.

(iv) In case Joint Deed of Undertaking by the Contractor alongwith his Collaborator forms part of the contract then submission of an unconditional Bank Guarantee from such Collaborator towards faithful performance of the Joint Deed of Undertaking for an amount specified in the deed and valid upto ninety (90) days after the end of Defect Liability Period of all equipment covered under the contract. The proforma of Bank Guarantee shall be as enclosed in Section - VII. - **IF APPLICABLE**

(v) Submission of a detailed PERT Network based on the work schedule stipulated in Appendix - 4 to Form of the Contract Agreement and its approval by the Employer.

(II) **Sixty Percent (60%)** of Ex-works price component of the Contract price for each identified equipment upon despatch of equipment from manufacturer's works on pro-rata basis on production of invoices and satisfactory evidence of shipment which shall be original Goods Receipt or receipted GR/Rail Receipt including Material Despatch Clearance Certificate (MDCC) issued by the Employer's Corporate QA & I representative).

(III) **Twenty Percent (20%)** of Ex-works price component of the Contract Price for each identified equipment for each identified equipment on receipt of equipment at site on prorata basis and physical verification and certification by the Project Manager for the equipment received and stored at site.

(IV) **Two Point Five Percent (2.5%)** of Ex-works price component of the Contract successful commissioning of entire Battery Energy Storage System on certification by the Project Manager.

(V) **Two Point Five Percent (2.5%)** of Ex-works price component of the Contract Price on Completion of the Facilities, as specified, and issuance of Completion Certificate by the Project Manager.

(VI) **Ten percent (10%)** of Ex-works price component of the Contract Price on successful completion of the Performance Guarantee Tests, as specified, and issuance of Operational Acceptance Certificate by the Project Manager.

Note: 1. The prorate payment will be based on the detailed price break-up furnished by the Contractor and approved by the Employer.

2. In case the Contractor is a non-resident/foreign company, the release of first progressive payment shall also be subject to submission of certificate/Ruling determining the applicable rate of Income Tax in terms of relevant provisions of GCC clause on Taxes & Duties and acceptance of same by the Engineer-in-Charge.

3. In case installation Price (excluding civil/structural works price) is less than 15% of the cumulative total FOB & Ex-works Price of Main Equipment , the amount by which it is lower shall be retained proportionately from the FOB and EX-works component of the Contract price while releasing payment due to receipt of

equipment , and no interest payment shall be payable on retained amount. The aforesaid amount shall be paid on pro-rata basis upon completion of installation of the respective equipment and its certification by the project manager.

(If prices are quoted in foreign currency then SBI bill selling exchange rate as on the date set for opening of price bids shall be considered for the purpose of computing installation percentage/retention amount).

C) Schedule 1, 2 and 6: Payment Terms for Mandatory Spares and Recommended Spares (When ordered)

The CIF price component of spares to be supplied from abroad and Ex-works price component of spares to be manufactured or fabricated within the Employer's country shall be paid as under.

- (i) **Seventy five percent (75%)** of CIF/Ex-works price component of the spares to be paid on pro-rata basis: upon despatch to site and against invoices and shipping documents along with Material Despatch Clearance Certificate (MDCC) issued by the Employer's QA&I representative.
- (ii) **Twenty-five percent (25%)** of CIF/Ex-works price component of the spares to be paid on pro-rata basis: on receipt and storage at site and on physical verifications and certification by the Project Manager for the spares received and stored at site.

D) Schedule No. 3 : Local Transportation

a) All Plant & Equipment excluding spares

Hundred Percent (100%) Local Transportation (including port clearance and port charges, and inland transit insurance charges) for the equipment covered in Schedule-1 and Schedule-2 shall be paid to the Contractor pro-rata to the value of the equipment received at site and on production of invoices by the Contractor. The aggregate of all such prorata payments shall, however, not exceed the total amount identified in the Contract for Local Transportation. However, wherever equipment wise local transportation charges (including inland transit insurance charges, Port clearance, Port handling and Port charges) have been identified by the Contractor, the payment shall be made after receipt of equipment at site based on the charges so identified in the Contract.

The above terms of payment shall be applicable for Foreign currency portion as well as Local currency portion of the Local Transportation component of the Contract Price, if any.

(b) Mandatory Spares & Recommended spares (when ordered).

Hundred percent (100%) Local Transportation charges (including inland transit insurance, port clearance and port charges) for the spares shall be paid to the contractor pro-rata to the value of spares received at site and on production of invoices by the contractor. The aggregate of all such pro-rata payments shall, however, not exceed the total amount identified for the contract of Local Transportation. However, wherever itemwise local transportation charges (including transit insurance, port clearance, port handling and port charges) have been identified by the Contractor, the payment shall be made after receipt of spares at site based on the charges so identified in the contract.

The above terms of payment shall be applicable for Foreign currency as well as Local currency portion of the Local Transportation component of the Contract Price, if any.

E-1 Schedule No. 4: Installation Services excluding Replacement Equipment Cost, operation and maintenance.

(a) Erection Portion (All Plant and Equipment excluding Replacement Equipment Cost, Mandatory Spares)

The Foreign currency portion as well as Local currency portion of the Erection Portion of Installation Services component of the Contract Price and Civil Works Component Price shall be paid as under:

(I)(A) (a) **Five percent (5%)** of the Installation Services Component of the Contract Price will be paid to the Contractor, bearing interest at the rate of 12.60% per annum as advance payment on:

(i) Acceptance of Notification of Award and Signing of Contract Agreement.

(ii) Establishing their office at site preparatory to mobilisation of their erection establishment.

(iii) Submission of an unconditional Bank Guarantee for an amount equivalent to 110% of the advance amount, which shall be initially kept valid upto ninety (90) days beyond the schedule date for successful 'Completion of the Facilities' under the Package. However, in case of delay in completion of the facilities, the validity of this advance Bank Guarantee shall be extended by the period of such delay. The proforma of the Bank Guarantee is enclosed in Section-VII - Bank Guarantee Form for Advance Payment.

(iv) Submission of unconditional Bank Guarantees towards Contract Performance Securities in respect of Contracts, initially valid upto ninety (90) days after the end of scheduled Defect Liability Period of the last equipment covered under the package. The proforma of Bank Guarantee is enclosed in Section-VII - Form of Performance Security.

(v) In case of Joint Deed of Undertaking by the contractor alongwith his Collaborator/Associate forms part of the contract then submission of an unconditional Bank Guarantee from such Collaborator(s)/Associate(s) towards faithful performance of the Joint Deed of Undertaking for an amount specified in the deed and valid upto ninety (90) days after the end of defect liability period of all equipment covered under the contract. The proforma of Bank Guarantee is enclosed in Section-VII- Form of Performance Security. --if Applicable--

(vi) Submission of a detailed PERT Network based on the work schedule stipulated in Appendix - 4 to the Form of Contract Agreement and its approval by the Employer.

(I) (B) **Five Percent (5%)** of the Installation Services Component of the Contract Price will be paid to the Contractor, bearing interest at the rate of 12.60% per annum as advance payment on:

- (i) Fulfillment of conditions mentioned at Clause E-1 (I)(A)) (i), (ii), (iii), (iv), (v) and (vi) above.
- (ii) T&P mobilisation as identified along with PERT network for start of Erection and Certification thereof by the Engineer-in-Charge.
- (ii) Submission of an unconditional **Bank Guarantee for an amount equivalent to 110% of the advance amount**, which shall be initially kept valid upto ninety (90) days beyond the schedule date for successful 'Completion of the Facilities' under the Package. However, in case of delay in completion of the facilities, the validity of this advance Bank Guarantee shall be extended by the period of such delay. The proforma of the Bank Guarantee is enclosed in Section-VII - Bank Guarantee Form for Advance Payment.

Advance Payment for Installation services/ works price components shall be released after certification of Engineer-in-Charge that the Contractor has brought to site the Safety equipments & Safety Personal Protective Equipments as per minimum quantity specified in the Bidding Documents.

In case the Contractor decides not to take advance payment, the first progressive payment for Installation services price component shall be released after certification of Engineer-in-Charge that the Contractor has brought to site the Safety equipments & Safety Personal Protective Equipments as per minimum quantity specified in the Bidding Documents.

(II) **Seventy-Five Percent (75%)** of the Installation Services component of contract price shall be paid on pro-rata basis on completion of installation of equipments on certification by the Project Manager for the quantum of work completed and by the certification of Project Manager's field quality assurance & surveillance representative for the successful completion of quality check points involved in the quantum of work billed.

(III) **Two Point Five Percent (2.5%)** of total Installation price of the Contract shall be paid on successful commissioning of entire Battery Energy Storage System on certification by the Project Manager.

(IV) Two Point Five Percent (2.5%) of total Installation price of the Contract shall be paid on Completion of the Facilities, as specified, and issuance of Completion Certificate by the Project Manager.

(V) Ten Percent (10%) of total Installation price of the Contract shall be paid on successful completion of the Performance Guarantee Tests, as specified, and issuance of Operational Acceptance Certificate by the Project Manager.

(VI) Recovery of the interest component on the advance amount shall be made from the progressive payments released to the Contractor as per E (II) above. The amount of interest to be recovered from a particular bill shall be calculated @ 12.60% per annum on the value of advance corresponding to the %age of total progressive payment being released. The period for which the interest is to be calculated shall be reckoned from the date of release of the advance payment to the actual date of release of the said progressive payment or the expiry of the stipulated time frame for release of such progressive payment under the contract, whichever is earlier. The interest on the advance payment shall stand fully recovered on release of all the progressive payments. If the amount payable under any interim bill is not sufficient to cover all deductions to be made for interest on the advance payment and other sums deductible therefrom, the balance outstanding shall be recovered from the next payments immediately falling due.

- Notes:**
1. The bidder shall furnish a detailed break-up for the Erection Price Component of the package which shall be mutually discussed and finalized with the Owner. Progressive payment for Erection will be made against monthly bills based on certification by the Project Manager the work completed.
 2. In case, the Contractor decides not to take interest bearing advance payment as on E (I), the advance payment shall be proportionately adjusted in the balance payments excluding final payments.
 3. The release of first progressive payment for Installation Services shall also be subject to submission of documentary evidence by the Contractor towards having taken the insurance policy(ies) in terms of relevant provisions of GCC Clause 34 (Insurance) and acceptance of same by the Project Manager.

E.2 Schedule No. 4: Civil Works and Allied Works etc.

The Civil Works Price Component of the Contract Price shall be paid as under:

(I)(A) Five Percent (5%) of the total Civil works Price component of the Contract Price will be paid to the Contractor, bearing interest at the rate of Twelve point Six percent (12.60%) per annum as advance payment on:

- (i) Establishing their office at site in preparatory to commencement of Civil works.

(ii) Submission of an unconditional Bank guarantee **for an amount equivalent to 110% of the advance amount**, which shall be initially kept valid upto ninety (90) days beyond the schedule date for successful 'Completion of all Facilities under the Package. However, in case of delay in completion of facilities, the validity of this advance Bank Guarantee shall be extended by the period of such delay.

(iii) Acceptance of Notification of Award and Signing of Contract Agreement.

(iii) Submission of an unconditional Bank Guarantee(s) towards Performance Security(s) in respect of all Contracts initially valid upto (ninety) 90 days after the end of Defects Liability Period of the last equipment covered under the contracts. The proforma of Bank Guarantee is enclosed in Section-VII, Form of Performance Security.

(v) In case of Joint Deed of Undertaking by the contractor alongwith his Collaborator/Associate forms part of the contract then submission of an unconditional Bank Guarantee from such Collaborators/ Associates towards faithful performance of the Joint Deed of Undertaking for an amount specified in the deed and valid upto ninety (90) days after the end of defect liability period of all equipment covered under the contract. The proforma of Bank Guarantee is enclosed in Section-VII- Form of Performance Security.

(vi) Submission of a detailed PERT Network based on the work schedule stipulated in Appendix-4 to Form of the Contract Agreement and its approval by the Employer.

(I)(B) **Five Percent (5%)** of the total Civil works Price component of the Contract Price will be paid to the Contractor, bearing interest at the rate of Twelve point Six percent (12.60%) per annum as advance payment on:

(i) Fulfillment of conditions mentioned at Clause E2 (I)(A) (i), (ii), (iii), (iv), (v) and (vi) above.

(ii) T&P mobilisation as identified along with PERT network for start of Civil Works and Certification thereof by the Engineer-in-Charge.

(iii) Submission of an unconditional Bank guarantee for an for an amount equivalent to 110% of the advance amount, which shall be initially kept valid upto ninety (90) days beyond the schedule date for successful 'Completion of all Facilities under the Package. However, in case of delay in completion of facilities, the validity of this advance Bank Guarantee shall be extended by the period of such delay.

Advance Payment for Civil works price components shall be released after certification of Engineer-in-Charge that the Contractor has brought to site the Safety equipments & Safety Personal Protective Equipments as per minimum quantity specified in the Bidding Documents.

In case the Contractor decides not to take advance payment, the first progressive payment for Installation services price component shall be released after certification of Engineer-in-Charge that the Contractor has brought to site the Safety equipments & Safety Personal Protective Equipments as per minimum quantity specified in the Bidding Documents.

(II) **Seventy-Five Percent (75%)** of the total Civil Works Price Component of Contract Price shall be paid progressively on certification by the Project Manager for the quantum of work completed/Milestones achieved and by Project Manager's field quality surveillance representative for the successful completion of quality check points involved in the quantum of work / Milestones billed.

The release of first progressive payment for Civil Works shall also be subject to submission of documentary evidence by the Contractor towards having taken the insurance policy(ies) in terms of relevant provisions of GCC Clause 34 (Insurance) and acceptance of same by the Project Manager.

(III) **Two Point Five Percent (2.5%)** of Civil Works Component of contract price shall be paid on successful commissioning of entire Battery Energy Storage System on certification by the Project Manager.

(IV) **Two Point Five Percent (2.5%)** of Civil Works Component of contract price shall be paid on Completion of the Facilities, as specified, and issuance of Completion Certificate by the Project Manager.

(V) **Ten Percent (10%)** of Civil Works Component of contract price shall be paid on successful completion of the Performance Guarantee Tests, as specified, and issuance of Operational Acceptance Certificate by the Project Manager.

Note: Further break-up of the above percentages for making payments for the billing period shall be furnished by you and will be discussed and agreed to by the Employer in the Billing Break-up.

F. Operation and Maintenance Charges

After completion of trial run as defined in bid documents, operation and maintenance charges including all consumable, spares and equipments included in operation and maintenance charges shall be paid on pro-rata basis every three month on the certification of completion of work by Project Manager.

G Payment terms for Price Adjustment Amount ---Not Applicable

H Schedule - 7a & 7b: Payment Terms for Taxes & Duties

i) Indian Custom Duties or levies including Stamp Duty and Import Licence Fee if imposed in future, by the Government of India or any

State Government in India on the Plant and Equipment including Type Test and Spares covered in Schedule-1 supplied from abroad and

recommended spares as per Schedule-6 (when ordered) to be imported into India and which will become the property of the Employer shall be paid directly by the Employer to the Government of India or the concerned authorities. However, if the local laws require such payment of the custom duty to be made by the Contractor, the same shall be reimbursed to the Contractor on production of satisfactory evidence of having paid the custom duty amount to the concerned authorities. However, the Custom Duties or levies including Stamp Duty and Import Licence Fee should not be more than as quoted in **Schedule-7**. IF Custom Duties or levies including Stamp Duty and Import Licence Fee is more than as specified in Schedule-7, Contractor will bear the same.

ii) Notwithstanding the above, if the Contractor chooses to ship the equipment in Shipper's Containers, then the custom duty levied on such Containers shall not be borne by the Employer and shall be borne and payable by the Contractor himself.

iii) 100% of applicable Taxes and Duties (other than the custom duty payable as in Para (i) above) which are payable by the Employer under the Contract shall be reimbursed to the Contractor/assignee of foreign Contractor (if applicable) upon receipt of equipment/spares at site and on production of satisfactory documentary evidence by the Contractor/Assignee, as applicable, including sub-vendor's invoice in case of Bought Out items (to be supplied directly from sub-vendor's work to NTPC site).

I. Schedule No.1: Plant and Equipment (only Replacement Cost) from Abroad

In respect of Plant and Equipment supplied from abroad the following payments shall be made : -

I (1). For FOB Price Component of Plant and Equipment (only Replacement Equipment Cost):

(I) **Sixty percent (60%)** of FOB price component of the Contract price for each identified equipment upon dispatch of equipment from manufacturer's works on pro-rata basis on production of invoices and satisfactory evidence of shipment (which shall be 3 of 3 original Bill of Lading) including Material Despatch Clearance Certificate (MDCC) issued by the Employer's Corporate QA & I representative.

(II) **Twenty Percent (20 %)** of FOB price component of the Contract Price for each identified equipment on receipt of equipment at site on prorata basis and physical verification and certification by the Project Manager for the equipment received and stored at site.

(III) **Twenty Percent (20%)** of FOB Price Component of the contract price on successful commissioning of Identified Battery Energy Storage System Equipments on certification by the Project Manager.

Note: 1. The prorate payment will be based on the detailed price break-up furnished by the Contractor and approved by the Employer.

2. In case the Contractor is a nonresident/foreign company, the release of first progressive payment shall also be subject to submission of certificate/Ruling determining the applicable rate of Income Tax in terms of relevant provisions of GCC clause on Taxes & Duties and acceptance of same by the Engineer-in- Charge.

(If prices are quoted in foreign currency then SBI bill selling exchange rate as on the date set for opening of price bids shall be considered for the purpose of computing installation percentage/retention amount).

I (2). Ocean Freight and Marine Insurance Charges (only Replacement Equipment Cost) for Plant & equipment and structural covered in Sl. I(1) above:

Hundred percent (100%) Ocean Freight and Marine Insurance charges covered in Schedule-1 shall be paid upon shipment of equipment (**only Replacement Equipment Cost**) on pro-rata basis to the FOB price of the equipment shipped. The aggregate of all such pro-rata payments shall not exceed the total amount identified in the Contract. However, wherever equipment wise Ocean Freight and Marine Insurance charges have been identified in the Contract the payment of Ocean Freight and Marine Insurance Charges shall be based on such charges identified in the Contract against shipment of equipment.

J. Schedule No. 2: Plant and Equipment (only Replacement Equipment Cost) supplied from within the Employers country

In respect of Plant and Equipment supplied from within the Employer's country the following payment shall be made :

J(1) For Ex-works Price component of Plant and Equipment (only Replacement Equipment Cost):

a. **Sixty Percent (60%)** of Ex-works price component of the Contract price for each identified equipment upon despatch of equipment from manufacturer's works on pro-rata basis on production of invoices and satisfactory evidence of shipment which shall be original Goods Receipt or receipted GR/Rail Receipt including Material Despatch Clearance Certificate (MDCC) issued by the Employer's Corporate QA & I representative).

b. **Twenty Percent (20%)** of Ex-works price component of the Contract Price for each identified equipment for each identified equipment on receipt of equipment at site on prorata basis and physical verification and certification by the Project Manager for the equipment received and stored at site.

c. **Twenty Percent (20%)** of Ex-works price component of the Contract successful commissioning of identified Battery Energy Storage System equipment's on certification by the Project Manager.

Note: 1. The prorate payment will be based on the detailed price break-up furnished by the Contractor and approved by the Employer.

2. In case the Contractor is a non-resident/foreign company, the release of first progressive payment shall also be subject to submission of certificate/Ruling determining the applicable rate of Income Tax in terms of relevant provisions of GCC clause on Taxes & Duties and acceptance of same by the Engineer-in- Charge.

(If prices are quoted in foreign currency then SBI bill selling exchange rate as on the date set for opening of price bids shall be considered for the purpose of computing installation percentage/retention amount).

PAYMENT PROCEDURES

The Procedures to be followed in making application for, certifying and making payments shall be as follows :

1. Payment Schedule/Price Break-up for Payments

1.1 The Contractor shall prepare and submit to the Project Manager for approval, a break-up of the Contract Price in the currencies of the Contract. It is expected that the Contractor shall indicate the price of a single item in one currency only. However, if the Contractor intends to receive payment for some items in more than one currency, the Contractor would be required to furnish a separate breakup and the payment for such items shall be made based on the agreed rates. The tonnage rate, wherever applicable, shall then be applicable for the balance items. **The Contract Price break up shall indicate the component of Entry tax included in the contract price separately.** The Contract Price break-up shall be interlinked with the agreed detailed PERT network of the Contract setting forth starting and completion dates for the various key phases of the Facilities. Any payment under the Contract, subsequent to Advance payment, shall be made only after the Contractor's price break-up is approved by the Employer. The aggregate sum of the Contractor's price break-up shall be equal to the total Contract price.

1.2 The Billing Breakup for Mandatory Spares shall be submitted to the Employer for approval as per the format enclosed as Annexure-I to this Appendix indicating therein the details such as Make, Model number, Drawing/Datasheet number and Part number of all spare items. The relevant drawings/ documents shall be submitted along with the Billing Break Up.

1.3 The Contractor shall, by the 15th April of every year, furnish the BBU value of supplies sourced from Micro and Small Enterprises (MSEs) along with the total BBU value of supplies dispatched by it during the preceding financial year as per the format enclosed as Annexure-II to this Appendix-1.

2. Currency of Payment

2.1 The Contract Price shall be paid in the currency or currencies in which the various price components have been stated and as incorporated in the Contract.

3. Application for Payment

3.1 The Contractor shall submit application for the payment in the proforma enclosed. The Contractor shall submit to the Project Manager separate application for payment in different currencies whenever payment is to be made in more than one currency.

3.2 Each such application shall state the amount claimed and shall set forth in details, the order of the Payment Schedule, particulars of the Facilities including the Facilities executed at Site and of the equipment shipped/brought on to the Site pursuant to the Contract upto the date mentioned in the application and for the period covered since the last preceeding certificate, if any.

3.3 Every interim payment certificate shall certify the Contract Value of the Facilities executed upto the date mentioned in the application for the payment certificate, provided that no sum shall be included in any interim payment certificate in respect of the Facilities that according to the decision of the Project Manager, does not comply with the Contract, or has been performed, at the date of certificate prematurely.

4. Due Dates for Payment

4.1 The advance payment amount shall be payable after fulfillment of all the conditions laid down in the Terms of Payment (Appendix 1 to the Contract Agreement) and receipt of the Contractor's invoice alongwith all necessary supporting documents for such advance payment. Employer will make progressive payment as and when the payment is due as per the Terms of Payment set forth in Appendix 1 to the Contract Agreement. Progressive payment other than that under the letter of credit will become due and payable by the Project Manager within forty five (45) days from the date of receipt of Contractor's bill/invoice/debit note by the Employer, provided the documents submitted are complete in all respects.

5. Mode of Payment

5.1 The Employer will establish an irrevocable Letter of Credit (L/C) in favour of the Contractor through the Employer's Bank in Employer's country for payments due, as per Terms of Payment, on dispatch of equipment including Mandatory spares i.e. Ex-works/CIF despatch of equipment including Mandatory spares (including due payments towards ocean freight and marine insurance). The value of L/C will be as per payment schedule for each quarter and valid for a quarter. It will be the responsibility of the Contractor to utilise the L/C to the fullest extent. In case L/C has been established by the Employer and not utilised by the Contractor, for reasons of delay attributable to him, all reinstatement charges for the L/C for further period necessitated due to non-utilisation of L/C will be to the account of the Contractor.

5.2 The Payment of the advance amount, Type Test Charges if any, price adjustment amounts, all other supply payments, taxes and duties (wherever admissible), inland transportation (including port handling if any), insurance and the Installation Portion of the Facilities including AMC shall be made direct to the Contractor by the Employer and no L/C shall be established by the Employer for such payments. Wherever technically feasible such payments shall be made electronically only as per details of bank account indicated in the contract. In case of any changes to the bank account indicated in the contract, the Contractor shall immediately inform the Employer. The Contractor shall hold the Employer harmless and Employer shall not be liable for any direct, indirect or consequential loss or damage sustained by the Contractor on account of any error in the information or change in bank details provided to the Employer in the prescribed form without intimation to the Employer duly acknowledged.

6. For payments related to Erection/Civil/structural works

(i) The Contractor shall maintain a separate account with a Scheduled Bank at Site for the purpose of receiving all the payments under the Contract(s) and for utilization of payments received from the Employer for disbursement to sub-contractors, sub-vendors, PRW's etc., of the Contractor. The Contractor shall maintain separate books of accounts for all payments under this Contract and the Project Manager shall have access to these at all times.

(ii) Account Tracking Mechanism

In case the Contractor wants to withdraw funds from the above bank account for any purposes other than the Contract, he shall be required to submit an undertaking to the Project Manager certifying that all due statutory payments, labour payments and payments to all his sub-contractors have been disbursed corresponding to the total payment received by him under the Contract. For tracking of payments received from the Employer, the Contractor shall also submit a monthly statement by 7th of every month certifying the transactions pertaining to the above account along with the purpose of such transactions. In case the Contractor transfers funds for any purposes other than the Contract, without prior consent of the Employer, it will constitute a breach of Contract by the Contractor.

(iii) In case the Contractor violates the above provisions, NTPC will have the right to give suitable instructions to the Bank to regulate/freeze the account.

7. Based on the authorization from the Contractor , NTPC may also consider the direct payment to the Sub-Contractor(s)/ Sub-vendor(s) from the due payments to the Contractor.

FORM OF APPLICATION FOR PAYMENTS

Project :
Equipment Package : Date :
Name of Contractor : Contract No. :
Contract Value : Contact Name :
Unit Reference : Application Serial Number :

To

..... *
(Name of Employer)

Dear sir

APPLICATION FOR PAYMENT #

1. Pursuant to the above referred Contract Agreement dated the undersigned hereby applies for payment
(Specify amount and currency in which claim is made).
2. The above amount is on account of : (check whichever applicable)

Advance payment (Schedule **) Interim payment as advance (Schedule **)

Progressive payment against despatch of equipment (Schedule **)

Progressive payment against receipt of equipment (Schedule **)

Progressive payment against Installation (Schedule **)

Ocean freight & marine insurance (Schedule **)

Inland transportation (Schedule **)

Inland insurance Price adjustment

Extra work not specified in contract
(Ref. Contract change order

No.....) Others (specify)
Final payment (Schedule **)

as detailed in the attached schedule(s) which form an integral part of this application.

3. The payment claimed is as per item(s) No (s) of the payment schedule annexed to the above mentioned Contract.

4. The application consists of this page, a summary of claim statement (Schedule **), and the following signed schedules

1 -----
2 -----
3 -----

The following document are also enclosed :

1-----
2 -----
3 -----

Signature of Contractor/
authorised Signatory

* Application for payment will be made to 'Project Manager' as to be designated for this purpose at the time of Notification of Award.

Prepare separate application for claims in different currencies.

** Proforma for the Schedules will be mutually discussed and agreed to during the finalisation of the Contract Agreement.

CLIENT :

CONTRACTOR :

.....

[illegible]

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN A&N ISLANDS							
Bidder's Name and Address :							
SCHEDULE OF RATES AND PRICES							
Schedule No. 1 (Rev.01) : PLANT AND EQUIPMENT INCLUDING TYPE TEST CHARGES AND MANDATORY SPARES TO BE SUPPLIED FROM ABROAD.							
Item	Description	Unit	Qty. to be mentioned by Bidder	UNIT PRICE (IN INR) (FOB)	UNIT PRICE (IN INR) (CIF) (Indian port of entry)	TOTAL PRICE (IN INR) (FOB)	TOTAL PRICE (IN INR) (CIF) (Indian port of entry)
1	2		3	4	5	(6) = (4) x (3)	(7) = (5) x (3)
A	Main Equipment						
1	Battery Bank & Battery Management System			Lot			
2	PCS			Lot			
3	DC Cables			Lot			
4	HT Switchgear			Lot			
5	LT Switchgear			Lot			
6	PCS Transformer			Lot			
7	Energy Management System with SCADA			Lot			
8	LT Cable			Lot			
9	HT Cables			Lot			
10	Battery Charger/UPS with Battery Bank			Lot			
11	Fire Detection and Protection System			Lot			
12	Solar Generation Forecasting	No.	1				
13	Misc. Equipments (Other than specified above)			Lot			
	TOTAL (A) (MAIN EQUIPMENT)						
B	Mandatory Spares						
1	Electronic Cards for PCS	5% of total population for each type		Lumpsum	Lumpsum		
2	IGBT Unit for PCS	5% of total population for each type		Lumpsum	Lumpsum		
3	Semiconductor Fuse	5% of total population for each type		Lumpsum	Lumpsum		
4	PCS Contactor, cooling fan, SPD, Aux transformer, current sensor, current transformer, Power fuse, semiconductor fuse, control fuse, AC filter chock & capacitor, DC capacitor, SMPS (power supply unit), MCB	5% of total population for each type		Lumpsum	Lumpsum		
5	AC Fuse of all type	5% of total population for each type		Lumpsum	Lumpsum		
6	Ethernet switch	5% of total population for each type		Lumpsum	Lumpsum		
7	DC Cable of highest size	KM	1				
8	LT Cable of highest size	KM	1				
9	HT Cable of highest size	KM	1				
10	PCS Transformer	No.	1				
11	Set of Valves for Inverter transformer	No.	2				
12	WTI with contacts of Inverter transformer	No.	2				
13	OTI with contacts of Inverter transformer	No.	2				
14	Buchholz relay complete of Inverter transformer	No.	2				
15	Pressure Relief Device of Inverter Transformer	No.	2				
16	Magnetic Oil Gauge (MOG) of Inverter Transformer	No.	2				
17	HV/LV Bushing with metal parts and gaskets for PCS transformer	Set	1				
18	Numerical Protection Relay (each type)	No.	1				
19	Energy Meter, MFM and transducer (each type)	No.	1				
20	MCB and MCCB (each type)	No.	1				
21	LT Breaker (if supplied) (each type)	No.	1				
22	33kV Circuit Breakers (each type)	No.	1				
23	33 kV Current Transformer (each type)	Set	1				
24	33 kV Voltage Transformer (each type)	Set	1				
25	33 kV Surge Arrestor (if supplied) (each type)	Set	1				
26	33kV Switchgear Aux Relays, contactors, fuses, MCBs , power packs, trip coils, closing coils and spring charging motors	5% of total population for each type					
27	33kV Earthing Trolley (each type)	No.	1				
	TOTAL (B) (MANDATORY SPARES)						
C	Year-wise Replacement Equipment cost for complete 25 years life of plant##						
1	Year-1	Lot / Number					
2	Year-2	Lot / Number					
3	Year-3	Lot / Number					
4	Year-4	Lot / Number					
5	Year-5	Lot / Number					
6	Year-6	Lot / Number					
7	Year-7	Lot / Number					
8	Year-8	Lot / Number					
9	Year-9	Lot / Number					
10	Year-10	Lot / Number					
11	Year-11	Lot / Number					
12	Year-12	Lot / Number					
13	Year-13	Lot / Number					
14	Year-14	Lot / Number					
15	Year-15	Lot / Number					
16	Year-16	Lot / Number					
17	Year-17	Lot / Number					
18	Year-18	Lot / Number					
19	Year-19	Lot / Number					
20	Year-20	Lot / Number					

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN A&N ISLANDS							
Bidder's Name and Address :							
SCHEDULE OF RATES AND PRICES							
Schedule No. 1 (Rev.01) : PLANT AND EQUIPMENT INCLUDING TYPE TEST CHARGES AND MANDATORY SPARES TO BE SUPPLIED FROM ABROAD.							
Item	Description	Unit	Qty. to be mentioned by Bidder	UNIT PRICE (IN INR) (FOB)	UNIT PRICE (IN INR) (CIF) (Indian port of entry)	TOTAL PRICE (IN INR) (FOB)	TOTAL PRICE (IN INR) (CIF) (Indian port of entry)
1	2		3	4	5	(6) = (4) x (3)	(7) = (5) x (3)
21	Year-21	Lot / Number					
22	Year-22	Lot / Number					
23	Year-23	Lot / Number					
24	Year-24	Lot / Number					
25	Year-25	Lot / Number					
	TOTAL (C) Year-wise Replacement cost for complete 25 years life of plant						
	TOTAL (A+B+C) (Total of Schedule-1 to be filled in Item Data)						
Local Agent's Commission (if any).....							
(i)	(included in FOB Price indicated above)						
Total Weight of Main Equipment (Excluding Mandatory Spares).....MT.							
(ii)							
Total Weight of Mandatory Spares.....MT.							
(iii)							
	Stands for (Indian port of Entry)						
#	Please state the currency and fill in the amount in figures and words.						
*							
* Bidder shall enter a code representing the country of origin of all plant and equipment including mandatory spares. The names of the countries with their respective codes shall be given as under:							
Sl.No.	Code	Country					
1							
2							
3							
4							
5							
Notes							
1. Item listed above but priced in Schedule 2 will be struck off by the Bidders in this Schedule 1.							
2. Wherever quantity has been specified as percentage (%), the quantity of mandatory spares to be provided by the bidder shall be the specified percentage (%) of the total population required to meet the specification requirements. In case the quantity of mandatory spares so calculated happen to be a fraction, the same shall be rounded off to next higher whole number.							
3. Wherever the quantities have been indicated for each type, size, thickness, material, radius, range etc. these shall cover all the items supplied and installed and the breakup for these shall be submitted in the bid.							
4. In case spares indicated in the list are not applicable to the particular design offered by the bidder, the bidder should offer spares applicable to offered design with quantities generally in line with approach followed in the above list.							
5. In case the description/quantity for any items mentioned in this schedule is at variance from what has been stated in the technical specifications and its subsequent clarifications the stipulations of the Technical Specification and its subsequent amendment and clarification shall prevail.							
6. Interchangeability and Packing: All spares supplied under this contract shall be strictly interchangeable with parts for which they are intended replacements.							
7. Identification : Each spare shall be clearly marked and labeled on the outside of the packing with its description when more than one spare part is packed in single case, a general description of the contents shall be shown on the outside of such case and a detailed list enclosed. All cases, containers and other packages must be suitably marked and numbered for the purpose of identification.							
8. ##Payment not to be released before declared replacement schedule.							
9. Bidders are required to indicate the Main Equipment prices including Type Test Charges as per provisions of Technical Specifications Documents, no separate charges for Type Test will be paid.							
10. As such the Item Schedule includes all items/equipment necessary to complete the entire scope of works indicated in the Technical Specification & drawings and Bidding Documents , Bidder shall ensure that items not covered here but required to make the equipment / system complete in all respect for its safe and reliable, efficient and troublefree working / operation without any extra cost to NTPC.							

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN A&N ISLANDS

Bidder's Name and Address :

SCHEDULE OF RATES AND PRICES

Schedule No. 2 (Rev.01) : EX-WORKS SUPPLY OF PLANT AND EQUIPMENT INCLUDING TYPE TEST AND MANDATORY SPARES

Item	Description	Unit	Qty. to be mentioned by Bidder	* UNIT PRICE (IN INR) (Ex-Works)	* TOTAL PRICE (IN INR) (Ex-Works)
1	2		3	4	(5) = (4) x (3)
A Main Equipment					
1	Battery Bank & Battery Management System	-----Lot-----			
2	PCS	-----Lot-----			
3	DC Cables	-----Lot-----			
4	HT Switchgear	-----Lot-----			
5	LT Switchgear	-----Lot-----			
6	PCS Transformer	-----Lot-----			
7	Energy Management System with SCADA	-----Lot-----			
8	AC Cable	-----Lot-----			
9	HT Cables	-----Lot-----			
10	Battery Charger/UPS with Battery Bank	-----Lot-----			
11	Fire Detection and Protection System	-----Lot-----			
12	Solar Generation Forecasting	No. 1			
13	Misc. Equipments(Other than specified above)	-----Lot-----			
TOTAL (A) (MAIN EQUIPMENT)					
B Mandatory Spares					
1	Electronic Cards for PCS	5% of total population for each type		Lumpsum	
2	IGBT Unit for PCS	5% of total population for each type		Lumpsum	
3	Semiconductor Fuse	5% of total population for each type		Lumpsum	
4	PCS Contactor, cooling fan, SPD, Aux transformer, current sensor, current transformer, Power fuse, semiconductor fuse, control fuse, AC filter chock & capacitor, DC capacitor, SMPS (power supply unit), MCB	5% of total population for each type		Lumpsum	
5	AC Fuse of all type	5% of total population for each type		Lumpsum	
6	Ethernet switch	5% of total population for each type		Lumpsum	
7	DC Cable of highest size	KM 1			
8	LT Cable of highest size	KM 1			
9	HT Cable of highest size	KM 1			
10	PCS Transformer	No. 1			
11	Set of Valves for Inverter transformer	No. 2			
12	WTI with contacts of Inverter transformer	No. 2			
13	OTI with contacts of Inverter transformer	No. 2			
14	Buchholz relay complete of Inverter transformer	No. 2			
15	Pressure Relief Device of Inverter Transformer	No. 2			
16	Magnetic Oil Gauge (MOG) of Inverter Transformer	No. 2			
17	HV/LV Bushing with metal parts and gaskets for PCS transformer	Set 1			
18	Numerical Protection Relay (each type)	No. 1			
19	Energy Meter, MFM and transducer (each type)	No. 1			
20	MCB and MCCB (each type)	No. 1			
21	LT Breaker (if supplied) (each type)	No. 1			
22	33kV Circuit Breakers (each type)	No. 1			
23	33 kV Current Transformer (each type)	Set 1			
24	33 kV Voltage Transformer (each type)	Set 1			
25	33 kV Surge Arrestor (if supplied) (each type)	Set 1			
26	33kV Switchgear Aux Relays, contactors, fuses, MCBs , power packs, trip	5% of total population for each type		Lumpsum	
27	33kV Earthing Trolley (each type)	No. 1			
TOTAL (B) (MANDATORY SPARES)					
C Year-wise Replacement Equipment cost for complete 25 years life of plant##					
1	Year-1	Lot / Number			
2	Year-2	Lot / Number			
3	Year-3	Lot / Number			
4	Year-4	Lot / Number			
5	Year-5	Lot / Number			
6	Year-6	Lot / Number			
7	Year-7	Lot / Number			
8	Year-8	Lot / Number			
9	Year-9	Lot / Number			

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN A&N ISLANDS

Bidder's Name and Address :

SCHEDULE OF RATES AND PRICES**Schedule No. 2 (Rev.01) : EX-WORKS SUPPLY OF PLANT AND EQUIPMENT INCLUDING TYPE TEST AND MANDATORY SPARES**

Item	Description	Unit	Qty. to be mentioned by Bidder	* UNIT PRICE (IN INR) (Ex-Works)	* TOTAL PRICE (IN INR) (Ex-Works)
1	2		3	4	(5) = (4) x (3)
10	Year-10	Lot / Number			
11	Year-11	Lot / Number			
12	Year-12	Lot / Number			
13	Year-13	Lot / Number			
14	Year-14	Lot / Number			
15	Year-15	Lot / Number			
16	Year-16	Lot / Number			
17	Year-17	Lot / Number			
18	Year-18	Lot / Number			
19	Year-19	Lot / Number			
20	Year-20	Lot / Number			
21	Year-21	Lot / Number			
22	Year-22	Lot / Number			
23	Year-23	Lot / Number			
24	Year-24	Lot / Number			
25	Year-25	Lot / Number			

TOTAL (C) Year-wise Replacement cost for complete 25 years life of plant

TOTAL (A+B+C) (Total of Schedule-2 to be filled in Item Data)

Notes
1. Item listed above but priced in Schedule 1 will be struck off by the Bidders in this Schedule 2.
2. Wherever quantity has been specified as percentage (%), the quantity of mandatory spares to be provided by the bidder shall be the specified percentage (%) of the total population required to meet the specification requirements. In case the quantity of mandatory spares so calculated happen to be a fraction, the same shall be rounded off to next higher whole number.
3. Wherever the quantities have been indicated for each type, size, thickness, material, radius, range etc. these shall cover all the items supplied and installed and the breakup for these shall be submitted in the bid.
4. In case spares indicated in the list are not applicable to the particular design offered by the bidder, the bidder should offer spares applicable to offered design with quantities generally in line with approach followed in the above list.
5. In case the description/quantity for any items mentioned in this schedule is at variance from what has been stated in the technical specifications and its subsequent clarifications the stipulations of the Technical Specification and its subsequent amendment and clarification shall prevail.
6. Interchangeability and Packing: All spares supplied under this contract shall be strictly interchangeable with parts for which they are intended replacements.
7. Identification : Each spare shall be clearly marked and labeled on the outside of the packing with its description when more than one spare part is packed in single case, a general description of the contents shall be shown on the outside of such case and a detailed list enclosed. All cases, containers and other packages must be suitably marked and numbered for the purpose of identification.
8. ##Payment not to be released before declared replacement schedule.
9. Bidders are required to indicate the Main Equipment prices including Type Test Charges as per provisions of Technical Specifications Documents.
10. As such the Item Schedule includes all items/equipment necessary to complete the entire scope of works indicated in the Technical Specification & drawings and Bidding Documents , Bidder shall ensure that items not covered here but required to make the equipment / system complete in all respect for its safe and reliable, efficient and troublefree working / operation without any extra cost to NTPC.

**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT
MANGLUTAN IN A&N ISLANDS**

Bidder's Name and Address :

SCHEDULE OF RATES AND PRICES

**Schedule No. 3(Rev.01) : LOCAL TRANSPORTATION AND INLAND TRANSIT INSURANCE
AND OTHER LOCAL COSTS INCIDENTAL TO DELIVERY OF PLANT & EQUIPMENT AND
MANDATORY SPARES**

S. No.	Description	Total Price (INR)	Remarks
A	Main Equipment		
B	Replacement Equipment		
C	Mandatory Spares		
	Total (A+B+C) (Total of Schedule-3 to be filled in Item Data)		

All taxes, duties & leves including GST as applicable on local transportation, Inland Transit Insurance, port clearance, port handling, Port Charges, and custom reconsillation and other local costs incidental to delivery of plant & equipment including mandatory spares shall be included in above price quoted by bider within
Schedule-3.

Note

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN A&N ISLANDS					
Bidder's Name and Address :					
SCHEDULE OF RATES AND PRICES					
Schedule No. 4 (Rev.01): Installation Services including Erection and Civil/Structural Works (as applicable), Insurance covers other than inland transit insurance and other services as specified in the bidding documents.					
Item	Description	Unit	Qty. to be mentioned by Bidder	* UNIT PRICE (IN INR)	* TOTAL PRICE (IN INR)
1	2		3	4	(5) = (4) x (3)
A	Installation Services Main Equipment				
1	Battery Bank & Battery Management System		-----Lot-----		
2	PCS		-----Lot-----		
3	DC Cables		-----Lot-----		
4	Switchgear		-----Lot-----		
5	PCS Transformer		-----Lot-----		
6	Energy Management System with SCADA		-----Lot-----		
7	AC Cable		-----Lot-----		
8	HT Cables		-----Lot-----		
9	Battery Charger/UPS with Battery Bank		-----Lot-----		
10	Fire Detection and Protection System		-----Lot-----		
11	Solar Generation Forecasting	No	1		
12	Time Synchronising Equipment	No	1		
13	Misc. Equipments(Other than specified above)		-----Lot-----		
	TOTAL (A)- Main Equipments				
B	Civil Works				
1	Battery Control Room		LUMPSUM		
2	Battery bank container		LUMPSUM		
3	Transformer yard		LUMPSUM		
	TOTAL (B)- Civil & Allied Works				

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN A&N ISLANDS					
Bidder's Name and Address :					
SCHEDULE OF RATES AND PRICES					
Schedule No. 4 (Rev.01): Installation Services including Erection and Civil/Structural Works (as applicable), Insurance covers other than inland transit insurance and other services as specified in the bidding documents.					
Item	Description	Unit	Qty. to be mentioned by Bidder	* UNIT PRICE (IN INR)	* TOTAL PRICE (IN INR)
1	2		3	4	(5) = (4) x (3)
C	Year-wise cost which includes O&M including disposal cost for complete 25 years life of plant				
1	Year-1	LUMPSUM			
2	Year-2	LUMPSUM			
3	Year-3	LUMPSUM			
4	Year-4	LUMPSUM			
5	Year-5	LUMPSUM			
6	Year-6	LUMPSUM			
7	Year-7	LUMPSUM			
8	Year-8	LUMPSUM			
9	Year-9	LUMPSUM			
10	Year-10	LUMPSUM			
11	Year-11	LUMPSUM			
12	Year-12	LUMPSUM			
13	Year-13	LUMPSUM			
14	Year-14	LUMPSUM			
15	Year-15	LUMPSUM			
16	Year-16	LUMPSUM			
17	Year-17	LUMPSUM			
18	Year-18	LUMPSUM			
19	Year-19	LUMPSUM			
20	Year-20	LUMPSUM			
21	Year-21	LUMPSUM			
22	Year-22	LUMPSUM			
23	Year-23	LUMPSUM			
24	Year-24	LUMPSUM			
25	Year-25	LUMPSUM			
	TOTAL (C)- Operation & Maintenance (O&M) including disposal cost for Twenty Five Years				
	TOTAL SCHEDULE- (A + B + C) (Total of Schedule-4 to be filled in Item Data)				
The prices quoted in Schedule No. 4 shall be inclusive of all Taxes, Duties, Levies and Charges including GST payable in the Employer's country as of seven (7) days prior to the deadline for submission of Price Bids.					

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN A&N ISLANDS

Bidder's Name and Address :

Schedule of Rates and Prices

Schedule No. 6 (Rev.01): Recommended Spare Parts

Item	Description	Qty	Unit Price		Total Price		*Local transportation charges (including inland insurance, port handling, port clearance & port charges)	*Total price (as	
			*CIF (Indian Port of entry) [For spares to be supplied from abroad]	*Ex-Works (India) [For domestically manufactured spares]	*CIF (Indian Port of Entry)	*Ex-Works (India)		FOR (for spares to be supplied from abroad)	FOR (for domestic ally manufactured spares)
1	2	3	4	5	6=3x4	7=3x5	8	9=6+8	10=7+8
TOTAL PRICE									
We also confirm that the items of Recommended spares with same specification having same identification number but with different item code have been quoted by us at the same price. Further all such items of spares have been clubbed together and enclosed separately at Annexure-..... to our offer									

Note:

- Continuation sheets of like size and format may be used as per Bidder's requirements and annexed to this Schedule.

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN A&N ISLANDS

Bidder's Name and Address :

Schedule of Rates and Prices**Schedule No. 7B (Rev.01) : Taxes and Duties, applicable on Ex-works (India) price component (Schedule-2), not included in bid price****A: Taxes and Duties applicable on Ex-works (India) price component(Schedule-2), in respect of direct transaction between Bidder and Employer , not included in the Bid Price**

Item	Description of Taxes/Duties/ Levies etc.	Rate of Tax/Duty/Levy applicable (%)	Amount which Taxes/Duties/Levies applicable(Currency)		Taxes/Duties/Levies payable (Currency.)		Total Taxes/Duties/Levies payable (Indian Rs.)
			Main Equipments (under Schedule No. 1)	Mandatory Spares (under Schedule No. 1)	Main Equipments (under Schedule No. 1)	Mandatory Spares (under Schedule No. 1)	
1	GST						
2	Octroi						
3	Any other Taxes/Duties(to be specified by the Bidder)						
4	TOTAL (A)						

Note : 1. For availing concessional rate of sales taxes, the Employer will issue requisite declaration forms.

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN A&N ISLANDS

Bidder's Name and Address :

Schedule of Rates and Prices**Schedule No. 7B (Rev.01) : Taxes and Duties, applicable on Ex-works (India) price component (Schedule-2), not included in bid price****B: Taxes and Duties applicable on Ex-works (India) price component(Schedule-2),in respect of Bought Out items(to be despatched directly from Sub-venodr's works to NTPC Site), not included in the Bid Price**

Item	Description of Taxes/Duties/ Levies etc.	Rate of Tax/Duty/Levy applicable (%)	Amount which		Taxes/Duties/Levies payable		Total Taxes/Duties/Levies payable (Indian Rs.)
			Main Equipments (under Schedule No. 1)	Mandatory Spares (under Schedule No. 1)	Main Equipments (under Schedule No. 1)	Mandatory Spares (under Schedule No. 1)	
1	GST						
2	Octroi						
3	Any other Taxes/Duties(to be specified by the Bidder)						
4	TOTAL (B)						
5	TOTAL (A+B) (Total of Schedule-7B to be filled in Item Data)						

Note : 1. For availing concessional rate of sales taxes, the Employer will issue requisite declaration forms.

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN A&N ISLANDS

Bidder's Name and Address :

Schedule of Rates and Prices

Schedule No. 7A (Rev.01) : Custom Duty, applicable on CIF price component (Schedule- 1), not included in bid price.

A: Taxes and Duties applicable on CIF (India Port of Entry) price component(Schedule-1), in respect of direct transaction between Bidder and Employer , not included in the Bid Price

Item	Description of Taxes/Duties/ Levies etc.	Rate of Tax/Duty/Levy applicable (%)	Amount which Taxes/Duties/Levies applicable(Currency)			Taxes/Duties/Levies payable (Currency.)			Total Taxes/Duties/Levies payable (Indian Rs.)
			Main Equipments (under Schedule No. 1)	Replacement Equipment (under Schedule No. 1)	Mandatory Spares (under Schedule No. 1)	Main Equipments (under Schedule No. 1)	Replacement Equipment (under Schedule No. 1)	Mandatory Spares (under Schedule No. 1)	
1	Custom Duty								
2	GST								
3	Any other Taxes/Duties(to be specified by the Bidder)								
4	TOTAL (A)								

Note : 1. For availing concessional rate of sales taxes, the Employer will issue requisite declaration forms.

B: Taxes and Duties applicable on CIF (India Port of Entry) price component(Schedule-1),in respect of Bought Out items(to be despatched directly from Sub-venodr's works to NTPC Site), not included in the Bid Price

Item	Description of Taxes/Duties/ Levies etc.	Rate of Tax/Duty/Levy applicable (%)	Amount which Taxes/Duties/Levies applicable(Currency)			Taxes/Duties/Levies payable (Currency.)			Total Taxes/Duties/Levies payable (Indian Rs.)
			Main Equipments (under Schedule No. 1)	Replacement Equipment (under Schedule No. 1)	Mandatory Spares (under Schedule No. 1)	Main Equipments (under Schedule No. 1)	Replacement Equipment (under Schedule No. 1)	Mandatory Spares (under Schedule No. 1)	
1	Custom Duty								
2	GST								
3	Any other Taxes/Duties(to be specified by the Bidder)								
4	TOTAL (B)								
5	TOTAL (A+B) (Total of Schedule-7A to be filled in Item Data)								

Note : 1. For availing concessional rate of sales taxes, the Employer will issue requisite declaration forms.

BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT MANGLUTAN IN A&N

Bidder's Name and Address :
Schedule-5

NOT USED

**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT
MANGLUTAN IN A&N ISLANDS**

Bidder's Name and Address :

Schedule of Rates and Prices

Schedule No. 8B : Break up of Type Tests charges quoted in Schedule-2

Not applicable

**BATTERY ENERGY STORAGE SYSTEM FOR 17 MW SOLAR PV PROJECT AT
MANGLUTAN IN A&N ISLANDS**

Bidder's Name and Address :

Schedule of Rates and Prices

Schedule No. 8A : Break up of Type Tests charges quoted in Schedule-1

Not applicable

Technical Amendment No. 01 to Technical Specifications (Section-VI) for Battery Energy Storage System for 17MW Solar PV Project at Manglutan in South Andaman, A&N Island

Sl No.	Sec No.	Part	Chapter	Clause No.	Page No.	Original Clause	Read As
1.	VI	A	A2	1.0	8 of 255	INTENT OF SPECIFICATION Battery Energy Storage System (BESS) shall with minimum 6 MW , 24MWh rated AC discharge capacity at 33KV switchgear interconnection point at PV Plant throughout the life of 25 Years	INTENT OF SPECIFICATION Battery Energy Storage System (BESS) shall with 6 MW , 24MWh rated AC discharge capacity at 33KV switchgear interconnection point at PV Plant throughout the life of 25 Years
2.	VI	A	A2	1.0	10 of 255	• Operation and maintenance for 25 years of the project after commissioning including replacement and disposal of batteries and other BESS equipments.	• Operation and maintenance for 25 years of the project after successful completion of trial run including replacement and disposal of batteries and other BESS equipments.
3.	VI	A	A2	2.2	13 of 255	- Grid interfacing so as to meet statutory requirements and comply with CERC code. All required hardware (AI & DI cards) etc. required for extending data to Load Dispatch Centre (LDC). - Solar PV Plant Generation Forecasting & Scheduling system	- Grid interfacing so as to meet statutory requirements and comply with CERC code. All required hardware required for extending/receiving data to/from Load Dispatch Centre (LDC)/Energy Management Center. - Supply of software suitable for BESS design and sizing calculation during detail engineering stage. - Solar PV Plant Generation Forecasting & Scheduling system
4.	VI	A	A2	2.2	13 of 255	2. Mandatory Spares:- The Bidder shall higher whole number. Existing clause stands deleted	Clause 2.2 (2.) "Mandatory Spares" has been replaced with revised specification and attached in Annexure-A.
5.	VI	A	A2	2.5	15 of 255	TRAINING OF EMPLOYERS PERSONNEL The bidder shall provide training (free of cost) to the personnel of NTPC for 50 man-days at his manufacturing works, design office and at site for erection, testing ,FAT, commissioning and O&M. Expenses towards travel, lodging, and boarding and other expenses for the personnel shall be borne by NTPC.	TRAINING OF EMPLOYERS PERSONNEL The bidder shall provide training (free of cost) to the personnel of NTPC for 40 man-days at manufacturing works/design office/site for design & engineering, equipment details, erection, testing, commissioning and O&M. Expenses towards travel, lodging, and boarding and other expenses for the personnel shall be borne by NTPC.
6.	VI	B	B1	1.0 to 5.0	21 to 28 of 255	Chapter B-1 Title " BATTERY AND BATTERY MANAGEMENT SYSTEM " Existing Chapter stands deleted	Chapter B-1 Title " BATTERY AND BATTERY MANAGEMENT SYSTEM " has been replaced with revised specification and attached in Annexure-B.
7.	VI	B	B3		30 of 255	The continuous combined rating of all PCSs shall not be less than 6MW at maximum operating temperature (50deg C) at 0.95 pf.	The continuous combined rating of all PCSs shall not be less than 6MW at maximum operating temperature (45deg C) at 0.95 pf.
8.	VI	B	B3	2.0	31 of 255	e) PCS must have provision to be isolated from grid through Air Circuit Breakers which shall be inbuilt with the PCS or located in separate standalone panel	e) PCS must have provision to be isolated from grid through Air Circuit Breakers/MCCBs. The ACBs/MCCBs as required can be provided as a part of PCS/its Modules or separately based on standard design and configuration of PCS manufacturer.
9.	VI	B	B3	2.0	32 of 255	D) PCS shall be designed for operating ambient temperature of 0°C to 50° C.	PCS shall be designed for operating ambient temperature of 0°C to 45° C.

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Technical Amendment No. 01 to Technical Specifications (Section-VI) for Battery Energy Storage System for 17MW Solar PV Project at Manglutan in South Andaman, A&N Island

Sl No.	Sec	Part	Chapter	Clause No.	Page No.	Original Clause	Read As						
10.	VI	B	B3	2.0	32 of 255	w) PCS shall be designed for operating ambient temperature of 0°C to 50° C and humidity of 95% non-condensing.	w) PCS shall be designed for operating ambient temperature of 0°C to 45° C and humidity of 95% non-condensing.						
11.	VI	B	B3	2.0	33 of 255	cc) PCS shall have active power limit control and reactive power and power factor control feature.	cc) PCS shall have active power, reactive power and power factor control feature.						
12.	VI	C	C3	1.0	78 of 255	xv) Bushing rating, Insulation class (Winding & bushing)	As per relevant IS/IEC (However PCS Transformer winding & bushing insulation class shall be at least 52 kV for HV side and 3.6 kV for LV side.)						
13.	VI	C	C3	4.0	88 of 255	xi) Bushing rating, Insulation class (Winding & bushing)	As per relevant IS/IEC (However PCS Transformer winding & bushing insulation class shall be of at least 52 kV for HV side and 3.6 kV for LV side.)						
14.	VI	C	C6	4.0	119 of 255	Conduits/Pipes/Ducts Installation The Contractor shall ensure for properly embedding conduit pipe sleeves wherever necessary for cabling work. All openings in the floor/ roof/ wall/ cable tunnels made for conduit installation shall be sealed and made water proof by the Contractor with Modular multi-diameter cable sealing system consisting of frames, blocks, Compression wedge and its accessories. The Cable sealing system should have been tested for fire insulation for Min. 2 hrs as per BS 476 / UL 1479 / EN 1364 and shall provide water sealing for a continuous pressure of 0.3bar. System shall be rodent proof and shall have valid enclosure protection as per IEC60529.	Conduits/Pipes/Ducts Installation The Contractor shall ensure for properly embedding conduit pipe sleeves wherever necessary for cabling work. All openings in the floor/ roof/ wall/ cable tunnel/ cable trenches made for conduit installation shall be sealed and made water proof by the Contractor either with any proven fire sealing system rated for one hour or Modular multi-diameter cable sealing system consisting of frames, blocks, Compression wedge and its accessories. The Cable sealing system should have been tested for fire insulation for Min. 1 hrs as per BS 476 and shall also provide water sealing. System shall be anti rodent and anti-termite.						
15.	VI	C	C7	1.0	127 of 255	Clause added	h. A forcing facility shall be provided for changing the states of inputs and outputs, timers and flags to facilitate fault finding and other testing requirements. It shall be possible to display the signal flow during operation of the program.						
16.	VI	C	C7	5.0	130 of 255	HISTORICAL STORAGE AND RETRIEVAL SYSTEM (HSRS) The HSRS shall <table><tr><th>Sl.</th><th>Parameter</th><th>Time Interval</th></tr><tr><td colspan="3">The HSRS shall</td></tr></table>	Sl.	Parameter	Time Interval	The HSRS shall			HISTORICAL STORAGE AND RETRIEVAL SYSTEM (HSRS) The HSRS shall
Sl.	Parameter	Time Interval											
The HSRS shall													

Technical Amendment No. 01 to Technical Specifications (Section-VI) for Battery Energy Storage System for 17MW Solar PV Project at Manglutan in South Andaman, A&N Island

Sl No.	Sec	Part	Chapter	Clause No.	Page No.	Original Clause	Read As																																													
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17.	VI	C	C7	12.0	132 of 255	Ethernet Switches used in EMS System shall be Industrial Grade with operating temperature of 0 to 60°C and recovery time less than 50 ms. TELEMETRY REQUIREMENT FOR LDC The arrangement to transmit the BESS data required by the Load Dispatch Centre (LDC), as per as per CERC/Local Utility regulations or procedures for grid management is in the scope of contractor. All necessary software and hardware including laying of Communication/Fiber optic cable/wireless link as required for transmitting the data shall be provided by the contractor at both end (BESS and LDC).	Industrial Grade Managed Ethernet switch shall be used for EMS System and recovery time shall be less than 50 ms. TELEMETRY REQUIREMENT FOR LDC The arrangement to transmit the BESS data (send and receive data & control command signal) required by the Energy Management centre/ Load Dispatch Centre (LDC), as per as per CERC/Local Utility regulations or procedures for grid management is in the scope of contractor. All necessary software and hardware including laying of Communication/Fiber optic cable/wireless link as required for transmitting the data shall be provided by the contractor at both end (BESS and LDC). Communication/Fiber optic cable laying if any shall be limited to within solar PV plant boundary.																																													
18.	VI	C	C7	14.0	136 of 255																																															
19.	VI	C	C7	17.0	137 of 255	Clause added	PARAMETRIC REQUIREMENTS The SCADA control system shall be designed such that under worst case loading conditions the response time shall not be worst than the following:-																																													

Technical Amendment No. 01 to Technical Specifications (Section-VI) for Battery Energy Storage System for 17MW Solar PV Project at Manglutan in South Andaman, A&N Island

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							<table><tr><td>On/Off Command</td><td>-</td><td>The response time for screen update after the execution of the control command from the time the command is issued shall be (1) one seconds (excluding the drive actuation time).</td></tr><tr><td>Adjustment Command</td><td>-</td><td>0.5 to 1 second.</td></tr><tr><td>On screen Updating</td><td>-</td><td>1 second.</td></tr><tr><td>All Control related displays</td><td>-</td><td>1 second.</td></tr><tr><td>Bar Chart displays</td><td>-</td><td>1 to 2 seconds.</td></tr><tr><td>Plant Mimic displays</td><td>-</td><td>1 to 2 seconds.</td></tr><tr><td>Group review displays</td><td>-</td><td>1 to 2 seconds.</td></tr><tr><td>X-T Plot Displays</td><td>-</td><td>1 to 2 seconds.</td></tr><tr><td>Plant Summary Displays</td><td>-</td><td>1 to 2 seconds.</td></tr></table> Even under worst case loading condition of HMIS and system Bus, each HMIS processor shall have 50 % spare time when measured over any one minute period and the system bus shall have at least 50 % spare duty cycle.	On/Off Command	-	The response time for screen update after the execution of the control command from the time the command is issued shall be (1) one seconds (excluding the drive actuation time).	Adjustment Command	-	0.5 to 1 second.	On screen Updating	-	1 second.	All Control related displays	-	1 second.	Bar Chart displays	-	1 to 2 seconds.	Plant Mimic displays	-	1 to 2 seconds.	Group review displays	-	1 to 2 seconds.	X-T Plot Displays	-	1 to 2 seconds.	Plant Summary Displays	-	1 to 2 seconds.
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20.	VI	C	C7	18.0	137 of 255																													

Technical Amendment No. 01 to Technical Specifications (Section-VI) for Battery Energy Storage System for 17MW Solar PV Project at Manglutan in South Andaman, A&N Island

SI No.	Sec	Part	Chapter	Clause No.	Page No.	Original Clause	Read As								
							any fault, fuse failure shall affect the particular drive/equipment system only without affecting other systems. All input/output cards shall have quick disconnect terminations allowing for card replacement without disconnection of external wiring and without switching of power supply. The I/O Module shall have the following features: <table><tr><td>a</td><td>Power supply monitoring.</td></tr><tr><td>b</td><td>Contact bounce filtering.</td></tr><tr><td>c</td><td>Optical isolation between input and output signals with the internal circuits</td></tr><tr><td>d</td><td>In case of power supply failure or hardware fault, the critical outputs shall be automatically switched to the fail-safe mode. The fail-safe mode shall be finalized during detailed engineering.</td></tr></table> Binary Output modules shall be rated to switch ON/OFF coupling relays of approx. 3 VA. Analog output modules shall be able to drive a load impedance of 500 Ohms minimum. Output module shall be capable of switching ON/OFF inductive loads like auxiliary relays etc. without any extra hardware. All input field interrogation voltage shall be finalized during detail engineering In case of loss of I/O communication link with the main processing unit, the I/O shall be able to go to predetermined fail safe mode (to be finalized during detailed engineering) with proper annunciation. The single (i.e. non-redundant) binary & analog signal required for control purposes shall be wired as follows: All single analog & binary inputs including the limit switches of SW/GR check-backs of all drives & information related signals shall be wired to single (i.e. non-redundant) input modules. Inputs and Outputs related to each of the redundant drives / equipments shall be wired to separate input and output modules.	a	Power supply monitoring.	b	Contact bounce filtering.	c	Optical isolation between input and output signals with the internal circuits	d	In case of power supply failure or hardware fault, the critical outputs shall be automatically switched to the fail-safe mode. The fail-safe mode shall be finalized during detailed engineering.
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21.	VI	C	C7	19.0	137 of 255	Clause added	SYSTEM SPARE CAPACITY Over and above the equipment and accessories required to meet the fully implemented system as per specification requirements, Control System shall have spare capacity and necessary hardware/ equipment/ accessories to meet following								

Technical Amendment No. 01 to Technical Specifications (Section-VI) for Battery Energy Storage System for 17MW Solar PV Project at Manglutan in South Andaman, A&N Island

Sl No.	Sec	Part	Chapter	Clause No.	Page No.	Original Clause	Read As
							requirement for future expansion at site: 20 % spare channels in input/output modules fully wired up to cabinets TB. Wired-in "usable" space for 20% modules in each of the system cabinets for mounting electronic modules wired up to corresponding spare terminals in system cabinets. Empty slots between individual modules/group of modules, kept for ease in maintenance or for heat dissipation requirement as per standard practice of Contractor shall not be considered as wired-in "usable" space for I/O modules. Terminal assemblies (if any in the offered system), corresponding to the I/O modules shall be provided for above mentioned 20 % blank space. Each processor / controller shall have 30% spare functional capacity to implement additional function blocks, over and above implemented logic/ loops. Further, each processor / controller shall have spare capacity to handle minimum 30% additional inputs/ outputs of each type including above specified spare requirements, over and above implemented capacity. Each of the corresponding communication controllers shall also have same spare capacity as that of processor/controller. The Data communication system shall have the capacity to handle the additions mentioned above. Twenty (20) percent spare relays of each type and rating mounted and wired in cabinets TB. All contacts of relays shall be terminated in terminal blocks of cabinets. The spare capacity as specified above shall be uniformly distributed throughout all cubicles. The system design shall ensure that above mentioned additions shall not require any additional controller/processor/ peripheral drivers in the system delivered at site. Further, these additions shall not deteriorate the system response time / duty cycle, etc. from those stipulated under this specification DATA COMMUNICATION SYSTEM (DCS) The Data Communication System shall include a redundant Main System Bus with hot back-up. Other applicable bus systems like cubicle bus, local bus, I/O bus etc shall be redundant except for backplane buses which can be non-redundant. a) Redundant communication controllers shall be provided to handle the communication between I/O Modules (including remote I/O), controllers and operator work station. b) The design shall be such as to minimize interruption of signals. It shall ensure that a single failure anywhere in the media shall cause no more than a single message to be disrupted and that message shall automatically be retransmitted. Any failure or physical removal of any station/module connected to the system bus shall not result in loss of any communication function to and from any other station/module. c) If the system bus requires a master bus controller philosophy, it shall employ redundant master bus controller with automatic switchover facility.
22.	VI	C	C7	20.0	137 of 255	Clause added	

Technical Amendment No. 01 to Technical Specifications (Section-VI) for Battery Energy Storage System for 17MW Solar PV Project at Manglutan in South Andaman, A&N Island

Sl No.	Sec	Part	Chapter	Clause No.	Page No.	Original Clause	Read As						
							d) Built-in diagnostics shall be provided for easy fault detection. Communication error detection and correction facility (ECC) shall be provided at all levels of communication. Failure of one bus and changeover to the standby system bus shall be automatic and completely bump less and the same shall be suitably alarmed/logged. e) The design and installation of the system bus shall take care of the environmental conditions as applicable. f) Data transmitting speed shall be sufficient to meet the responses of the system in terms of displays, control etc. plus 25% spare capacity shall be available for future expansion. g) Cat 6 UTP or fiber optic cables shall be employed. The Contractor shall furnish details regarding the communication system like communication protocol, bus utilization calculations etc. Contractor shall provide redundant OFC communication link/ backbone between local SCADA panels and Main control room with Ring Topology or better to be approved during detail engineering. Each Modbus cable shall be provided with Surge protection device at SCADA Panel End .Specification of OFC and Modbus cable has been given elsewhere in this specification						
23.	VI	C	C7	21.0	137 of 255	Clause added	OPERATOR INTERFACE DISPLAYS/LOGS/REPORTS Suitable Operator Interface Displays/Logs/Reports for control operation & monitoring shall be provided. The details shall be finalized during detailed Engg. stage. Minimum quantities shall be as follows:- Various displays on the OWS shall as a minimum include P&ID displays or mimic, bar chart displays, X-Y & X-T plot (trend) displays, operator guidance message displays, group displays, plant start-up/shutdown message displays, system status displays etc. Number of displays and the exact functionality shall be on as required basis and as finalized during detailed engineering subject to the minimum quantities as given in subsequent clauses. For X-T & X-Y plots, the facility of providing a background grid on operator request shall be variable with adequate no. Of divisions in both co-ordinates. The minimum quantity of major types of displays per unit shall be as follows: <table><tr><td>Sl No</td><td>Display</td><td>Minimum Quantity</td></tr><tr><td></td><td></td><td></td></tr></table>	Sl No	Display	Minimum Quantity			
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Technical Amendment No. 01 to Technical Specifications (Section-VI) for Battery Energy Storage System for 17MW Solar PV Project at Manglutan in South Andaman, A&N Island

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24.	VI	C	C-10	4.2	157 of 255	The THD of tube light based LED Luminaires shall be less than 15%. For other type of luminaries it shall be minimum 10%. All Auxiliary loads like illumination, fan, space heater, etc. shall be fed from this ACDB. However auxiliary power supply for Power Conditioning System (if applicable) and other important loads such as EMS, SCADA, Data logger, HMI, control & protection requirement of switchgears, Fire Alarm panel, energy meter/MFM and emergency lighting etc. shall be taken through Suitably rated UPS and/or Battery with charger fed from this ACDB. Size and rating of UPS and Battery with battery charger shall be finalized during details engineering stage. Bidder shall clearly bring out in the proposal the redundancy feature of UPS and Battery with charger system along with configuration diagram, single line diagram and data sheets etc. & this shall be finalized subject to employer's approval during detailed engineering	The THD of tube light based LED Luminaires shall be less than 20%. For other type of luminaries it shall be minimum 10%. All Auxiliary loads like illumination, fan, space heater, etc. shall be fed from this ACDB. However auxiliary power supply for Power Conditioning System (if applicable) and other important loads such as EMS, SCADA, Data logger, HMI, Fire Alarm panel, energy meter/MFM and emergency lighting etc. shall be taken through Suitably rated UPS and/or Battery with charger fed from this ACDB. Size and rating of UPS and Battery with battery charger shall be finalized during details engineering stage. Bidder shall clearly bring out in the proposal the redundancy feature of UPS and Battery with charger system along with configuration diagram, single line diagram and data sheets etc. & this shall be finalized subject to employer's approval during detailed engineering The minimum UPS rating shall be 2KVA and the battery sizing shall be calculated on a minimum load of 1 KW (DC) for 1 hour backup. All UPS having rating 5KVA or more shall have three phase input. In place of UPS, bidder can provide DC supply system of 12V or above upto 220V DC for the above mentioned loads if the auxiliary power supply requirement of these loads are in DC. In this case Bidder shall provide battery,																		
25.	VI	C	C-11	1.0	160 of 255																				

Technical Amendment No. 01 to Technical Specifications (Section-VI) for Battery Energy Storage System for 17MW Solar PV Project at Manglutan in South Andaman, A&N Island

Sl No.	Sec	Part	Chapter	Clause No.	Page No.	Original Clause	Read As																																													
26.	VI	C	C-11	3.0	172 of 255		battery charger and DCDB system. For 33kV switchgear Bidder needs to provide separate Battery Charger, Battery and DCDB to meet the control and protection supply requirement. Battery and charger system shall consist of 1 x 100% charger and 1 x 100% Battery bank for min 1 hour back up and 1 x 100% DCDB, and other necessary Protective devices and accessories. AUXILIARY EQUIPMENTS Manual discharge resistance bank suitable for each type of battery bank of UPS/Battery Charger has to be provided by contractor. Following shall be provide (as per applicability) for maintenance purpose <table><tr><td>a.</td><td>Hydrometer</td><td>2 Nos.</td></tr><tr><td>b</td><td>Set of hydrometer syringes suitable for the vent holes in different cells</td><td>2 Nos.</td></tr><tr><td>c</td><td>Thermometer for measuring electrolyte temperature</td><td>2 Nos.</td></tr><tr><td>d</td><td>Specific gravity correction chart</td><td>2 Nos.</td></tr><tr><td>e</td><td>Wall mounting type holder made of teak wood for hydrometer & thermometer</td><td>2 Nos.</td></tr><tr><td>f</td><td>Cell testing voltmeter (3-0-3 V)</td><td>2 Nos.</td></tr><tr><td>g</td><td>Alkali mixing jar</td><td>2 Nos.</td></tr><tr><td>h</td><td>Rubber aprons</td><td>5 Nos.</td></tr><tr><td>i</td><td>Pair of rubber gloves</td><td></td></tr><tr><td>j</td><td>Set of spanners</td><td>5 Nos.</td></tr><tr><td>k</td><td>No smoking notice for each battery room</td><td>2 Nos.</td></tr><tr><td>l</td><td>Goggles (industrial)</td><td>2 Nos.</td></tr><tr><td>m</td><td>Instruction card</td><td>2 Nos.</td></tr><tr><td>n</td><td>Temperature indicator</td><td>1 No. per room</td></tr><tr><td>o</td><td>Cell lifting facility</td><td>1 Set per room</td></tr></table>	a.	Hydrometer	2 Nos.	b	Set of hydrometer syringes suitable for the vent holes in different cells	2 Nos.	c	Thermometer for measuring electrolyte temperature	2 Nos.	d	Specific gravity correction chart	2 Nos.	e	Wall mounting type holder made of teak wood for hydrometer & thermometer	2 Nos.	f	Cell testing voltmeter (3-0-3 V)	2 Nos.	g	Alkali mixing jar	2 Nos.	h	Rubber aprons	5 Nos.	i	Pair of rubber gloves		j	Set of spanners	5 Nos.	k	No smoking notice for each battery room	2 Nos.	l	Goggles (industrial)	2 Nos.	m	Instruction card	2 Nos.	n	Temperature indicator	1 No. per room	o	Cell lifting facility	1 Set per room
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							27.	VI	C	C-11	4.0	172 of 255	Clause added	SITE TESTS The contractor shall also carry out the site tests on UPS, Battery Charger and Battery system as specified below. However, these shall not be limited to this																																						

Technical Amendment No. 01 to Technical Specifications (Section-VI) for Battery Energy Storage System for 17MW Solar PV Project at Manglutan in South Andaman, A&N Island

Sl No.	Sec	Part	Chapter	Clause No.	Page No.	Original Clause	Read As
							specification only and in case any other site test is required to be conducted as a standard practice of the OEM or deemed necessary by the employer and mutually agreed between the contractor and the employer, the same shall also be carried out. Functional test On completion of installation and commissioning of the equipment the following tests/checks (as applicable for UPS and Battery Charger system) shall be carried out with the max. available load, which does not exceed the rated continuous load. These tests/checks shall include but not limited to the tests as indicated below. a) Light Load Test :- This test is carried out to verify that the UPS/Battery Charger is correctly connected and all functions operate properly. The load applied is limited to some percent of rated value. The following points should be checked: ➤ Output voltage, frequency and the correct operation of meters; ➤ Operation of all control switches and other means to put units into operation. ➤ Functioning of protective and warning devices. ➤ Operation of remote signaling and remote control devices. b) Checking of Auxiliary Devices:- The functioning of auxiliary devices, such as lighting, cooling, pumps, fans, annunciation, etc., should be checked, if convenient, in conjunction with the preliminary light load test. c) A. C. Input Failure Test:- The test is performed with a fully charged battery and is carried out by tripping input circuit breakers or may be simulated by switching off all rectifiers and bypass feeder (applicable for UPS) as at the same time. Output voltage variations are to be checked for specified limits with an oscilloscope/Recorder. d) A. C Input Return Test:- AC input return test is performed by closing AC input circuit breakers, or is simulated by energizing rectifiers. Proper operation of rectifier starting and voltage and frequency variations are to be observed. This test is normally performed with a fully or partially charged battery. e) Simulation of Parallel Redundant UPS Fault:- This test is applicable for UPS with parallel redundant connections. Faults of rectifier or inverter units may be carried out by simulation. Output transients are to be observed.

Technical Amendment No. 01 to Technical Specifications (Section-VI) for Battery Energy Storage System for 17MW Solar PV Project at Manglutan in South Andaman, A&N Island

Sl No.	Sec	Part	Chapter	Clause No.	Page No.	Original Clause	Read As
							f) Transfer Test (for UPS):- This test is applicable for UPS with bypass, particularly in the case of an electronic bypass switch. Transients shall be measured during load transfer to bypass caused by a simulated fault and load retransfer after clearing of the fault. g) Full load test:- Load tests are performed by connecting the actual load to the UPS/Charger output. Load tests are necessary for testing output voltage and frequency, rated stored energy, recharge time, ventilation, temperature rise and determination of efficiency. Load tests are performed to prove transient voltage deviations specified under step load conditions. h) Efficiency:- Efficiency should be determined by the measurement of the active power at input and output. i) Actual Load Test :- Conditions under actual load may differ from those with a dummy load. Steady-state generation of current and voltage harmonics and transients at load switching conditions should be observed. j) Rated Stored Energy Time:- This test is a load test to prove the actual possible time of battery operation. If rated load is not available in the case of large UPS/Battery charger, it is possible to apply a partial load to check the actual battery discharge characteristics and compare these with characteristics specified by the battery manufacturer. Discharge time with rated load shall then be calculated. The test shall be performed with a fully charged battery and also may be done under other battery conditions to be specified, if so agreed. Active power output of the UPS/Battery Charger and the battery voltage shall be recorded during the test. Since new batteries often do not provide full capacity during a starting up period, the discharge test may be repeated after a reasonable recharge time if the original test has failed. k) Rated Restored Energy Time:- Restored energy depends on the charging capacity of the rectifiers and the battery characteristics. If a certain recharging rate is specified, it shall be provided by repeating the discharge test after the specified charging period. l) Battery Ripple Current:- If battery ripple currents are specified, then the ripple current which depends on

Technical Amendment No. 01 to Technical Specifications (Section-VI) for Battery Energy Storage System for 17MW Solar PV Project at Manglutan in South Andaman, A&N Island

Sl No.	Sec	Part	Chapter	Clause No.	Page No.	Original Clause	Read As
							UPS operation shall be checked under normal operating conditions. Rough measuring methods are sufficient. m) On site Ventilation Test:- The test is performed with the actual load. Temperature conditions of all Battery Charger/ UPS cubicles are to be observed
28.	VI	D	D-1	1.0	174 of 255	This specification covers Design, Manufacturing, Supply, construction, Erection, Site Painting etc. including all type Civil for completing the facility of BESS cum control room.	This specification covers Design, Manufacturing, Supply, construction, Erection, Site Painting etc. including all type Civil for completing the facility of BESS cum control room. Borehole location and Soil investigation report are attached in Annexure-C
29.	VI	D	D-1	1.0	174 of 255	BESS Control Building: The construction of RCC single storey BESS control building shall house following 1. Battery room (if applicable) 2. PCS room 3. HT/LT Switchgear 4. Store room 5. Toilet	BESS Control Building: The construction of RCC single storey BESS control building shall house following 1. Battery room (if applicable) 2. PCS room (if applicable) 3. HT/LT Switchgear 4. Store room 5. Toilet 6. BESS EMS control room
30.	VI	E	E-3	6.0	190 of 255	LD for shortfall in Generation during O&M :- Existing clause stands deleted	Clause 6.0 “ LD for shortfall in Generation during O&M ” has been replaced with revised specification and attached in Annexure-D.
31.	VI	E	E-4	2.0 (a)	194 of 255	The efficiency shall be measured as follow $\eta_{BESS} \% = \left(\frac{G_{in} - G_{out}}{G_{in}} \right) \times 100$ Where G_{in} and G_{out} are.....	The efficiency shall be measured as follow $\eta_{BESS} \% = \left(\frac{G_{out}}{G_{in}} \right) \times 100$ Where G_{in} and G_{out} are.....
32.	VI		Tender Drawing #3	BASIC SCHEMATIC DIAGRAM SYSTEM		Existing tender drawing stands deleted. Drg. No- 5728-004(B)-POE-A-001	Revised tender drawing Drg. No- 5728-004(B)-POE-A-001 (Rev-B)

Attachment:-

1. Annexure-A
2. Annexure-B
3. Annexure-C
4. Annexure-D

Drg. No:-

5. **Drg. No- 5728-004(B)-POE-A-001 (Rev-B)**

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9	AMENDMENT No. 1 To TECHNICAL SPECIFICATIONS (SECTION-VI) DOCUMENT NO: RE-CS-5728-004(B)-9--AMDT-01	PAGE 12 OF 12
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Annexure-A

2. Mandatory Spares:-

The Bidder shall include in his scope of supply following spares (as applicable) as described below. The specification of these spares shall be as per relevant chapter. These minimum specified spares shall be in custody of the contractor in healthy condition during complete O&M period. Contractor shall use these spares, replenish the spare(s) of the matching quality, quantity and rating within shortest possible time.

S.No	Description	Unit	Quantity*
1.	Electronic Cards for PCS	5% of total population for each type	
2.	IGBT Unit for PCS	5% of total population for each type	
3.	Semiconductor Fuse for PCS	5% of total population for each type	
4.	PCS Contactor, cooling fan, SPD, Aux transformer, current sensor, current transformer, Power fuse, semiconductor fuse, control fuse, AC filter chock & capacitor, DC capacitor, SMPS (power supply unit), MCB	5% of total population for each type	
5.	AC Fuse of all type	5% of total population for each type	
6.	Ethernet switch	5% of total population for each type	
7.	DC Cable of highest size	KM	1
8.	LT Cable of highest size	KM	1
9.	HT Cable 33kV of highest size	KM	1
10.	PCS Transformer	No.	1
11.	Set of Valves for Inverter transformer	No.	2
12.	WTI with contacts of Inverter transformer	No.	2
13.	OTI with contacts of Inverter transformer	No.	2
14.	Buchholz relay complete of Inverter transformer	No.	2
15.	Pressure Relief Device of Inverter Transformer	No.	2
16.	Magnetic Oil Gauge (MOG) of Inverter Transformer	No.	2
17.	HV/LV Bushing with metal parts and gaskets for PCS transformer	Set	1
18.	Numerical Protection Relay	1 no of each type	
19.	Energy Meter, MFM and transducer	1 no of each type	
20.	MCB and MCCB	1 no of each type	

21.	LT Breaker (if supplied)	1 no of each type
22.	33kV Circuit Breakers	1 no of each type
23.	33 kV Current Transformer	1 set of each type
24.	33 kV Voltage Transformer	1 set of each type
25.	33 kV Surge Arrestor (if supplied)	1 set of each type
26.	33kV Switchgear Aux Relays, contactors, fuses, MCBs , power packs, trip coils, closing coils and spring charging motors	5% of total population for each type
27.	33kV Earthing Trolley	1 no of each type

NOTE:- (i) Wherever quantity has been specified as percentage (%), the quantity of mandatory spares to be provided by the bidder shall be the specified percentage (%) of the total population required to meet the specification requirements. In case the quantity of spares so calculated happen to be a fraction, the same shall be rounded off to next higher whole number.

(ii) Interchangeability and Packing: All spares supplied under this contract shall be strictly interchangeable with parts for which they are intended replacements.

(iii) Identification : Each spare shall be clearly marked and labeled on the outside of the packing with its description when more than one spare part is packed in single case, a general description of the contents shall be shown on the outside of such case and a detailed list enclosed. All cases, containers and other packages must be suitably marked and numbered for the purpose of identification.

B-1 BATTERY AND BATTERY MANAGEMENT SYSTEM

1.0

GENERAL

The primary application of BESS for the current Project shall be energy time shifting and mitigation of intermittent fluctuations of solar power generation (due to cloud, rain, tripping of solar inverter or any other reason) by smoothening of power output from the Solar PV plant. In addition to the above two application requirement, BESS shall also have feature of manual operation, VAR support, anti-islanding operation, black start operation and frequency regulation control mode. The BESS shall remain connected to the grid as per Central Electricity Authority Technical (standards for connectivity to the grid) regulation 2007 with all latest amendments and its components shall be designed accordingly. BMS shall ensure safe operation and mitigate fire risk

BESS shall have at least twenty five (25) years of service life i.e. it should have capabilities for providing services as per specification for twenty five years from the date of successful completion of trial run. The BESS shall be configured to perform multiple charge discharge cycles. Based on the performance and end of life of the battery, the bidder shall consider replacement of the batteries after end of life during the project tenure of 25 years.

A. SOLAR GENERATION SMOOTHENING MODE:-

BESS is required to mitigate the intermittent fluctuations of solar power generation by smoothening the Solar PV plant output power to grid. The BESS shall absorb the short term power variations in Solar PV plant output power by fast charging or discharging the battery and generate a smoother generation curve that can be absorbed in the grid in an easier way. Smoothen action to be carried out by BESS shall be based on 30 minutes moving average algorithm or 30 minutes moving average along with SOC control algorithm. The moving average values is the last 30 minutes average value of Solar PV plant output power. Bidder can also propose other better suitable control algorithm for this application. If alternate algorithm are proposed, then the Bidder needs to submit the supportive technical document including simulation study report for proving the superiority of the proposed alternate control algorithm over algorithm as mentioned above with respect to application requirement. The BESS shall also have suitable control methodology to avoid unwanted charging and discharging of BESS Battery during clear sunny days without intermittency.

BESS shall ensure that the combined Solar PV and BESS output to grid (injected grid power) follows the reference target power and shall be within the band of $\pm 5\%$ of reference target power at any time instant for smooth injection power to grid. The reference target power in this mode shall be the 30 minutes moving average value or grid reference power set point as generated with 30 minutes moving average along with SOC control algorithm. The BESS shall operate continuously and battery SOC needs to be controlled within a certain

range to prevent forced shutdown of the BESS due to overcharging or over-discharging of batteries.

B. ENERGY TIME SHIFT MODE:-

BESS shall automatically charge the battery with power from solar PV plant during solar generation hours and discharge the battery by supplying power to grid during peak load periods or as per grid operator requirement. The operation in this mode shall be based on generation control and scheduling as per CERC regulation. For this the BESS shall have Solar generation forecasting and scheduling system/service and software tool equipment for forecasting of 17MW solar PV plant generation and scheduling of power to grid. Allowable variation in actual injected power to grid with respected scheduled value shall be as per CERC regulation. Scheduling shall be revised as per CERC regulation in case of major variation between forecasted and actual solar PV plant generated power. The Generation Scheduling shall be done in such a way that the BESS Battery shall be fully charged at the end of the solar generation hours (subjected to sufficient power generation from solar PV plant) and BESS shall be able to deliver rated 24MWh energy at PCC. In case the BESS battery discharged due to prolonged intermittency, then the BESS needs to deliver at least 80% of rated 24MWh energy at PCC. The BESS discharge power (MW) level shall be any value as per grid operator requirement based on generation scheduling (maximum upto 6MW continuous at PCC).

In order to mitigate the intermittent fluctuations of solar power generation, the BESS EMS controller shall ensure that the combined Solar PV and BESS output to grid (injected grid power) follows the reference target power and shall be within the band of $\pm 5\%$ of reference target power at any time instant for smooth injection power to grid. The reference target power for EMS controller shall be the scheduled grid power (with variation as per CERC regulation) set point as received from solar generation forecasting and scheduling system/service.

C. MANUAL MODE:-

(i) The BESS operator shall be able to provide grid power set point to EMS controller through BESS SCADA HMI. BESS SCADA shall also have the facility to receive the grid power set point from LDC/Energy Management Centre and provide the same to EMS controller for necessary action.

BESS shall ensure that the combined Solar PV and BESS output to grid (injected grid power) follows the reference target power and shall be within the band of $\pm 5\%$ of reference target power at any time instant for smooth injection power to grid. During this mode the BESS needs to absorb the intermittent fluctuations of solar PV plant power generation by charging and discharging the Battery. The reference target power in this mode shall be the manual grid power set point set through SCADA HMI or set point signal as received from LDC/Energy Management Centre.

(ii) BESS operator shall be able to ramping up or down the BESS power (upto maximum BESS MW rating) by providing BESS power set point to EMS controller through BESS SCADA HMI. Once this mode is initiated, the BESS shall remain at the designated output (or input) power level until terminated by BESS SCADA with manual intervention or battery charging or discharge limit is reached.

Note for clause A, B & C above:-

At a time only one mode shall be active i.e. solar generation smoothening or energy time shift or manual mode as described in clause 1.0 A, B & C above and the BESS operator shall be able to select any one of the above mode based on scheduling/operational requirement. The operational & functional requirement as mentioned under the selected mode shall be applicable.

The BESS shall meet the demand upto its rated MW capacity at PCC only in case sudden dip or rise in PV plant output power more than rated capacity of BESS. Under normal operation the control of solar plant Inverters and circuit breakers are not allowed to achieve the solar power smoothening requirement as described 1.0 A, B & C above. However, as per grid operator requirement or under special emergency grid condition requirement the same shall be allowed for smoothening of solar PV plant output power intermittency. For this, the details control logic shall be finalized during detail engineering stage. Grid power as mentioned in clause 1.0 (A, B, C) shall also include local load through 33/11kV transformer as shown in tender SLD drawing.

In order to facilitate the design of smoothening requirement, the existing 5 MW NTPC- Port Blair PV plant generation output profile has been provided in **Annexure-V** for reference. The Bidder must take care all type of intermittency including seasonal at suitable scale in their BESS design.

D. VAR SUPPORT MODE:-

The BESS shall be required to provide VAR support to grid for voltage regulation purpose. BESS operator shall be able to provide reactive power/power factor set point to EMS controller/PCS through BESS SCADA HMI (manual intervention). BESS SCADA shall also have the facility to receive the reactive power set point from LDC/Energy Management Centre and provide the same to EMS controller/PCS for necessary action. The VAR output of the BESS may be limited based on remaining capacity left after providing real power output.

E. ANTI-ISLANDING MODE:-

The BESS shall have anti-islanding protection as per IEC 62116 or equivalent international standard.

F. BLACK START/ISLAND MODE:-

BESS shall have black start operation feature and shall be able to form a micro-grid with solar PV plant & local loads connected at 11kV A&N switchgear. BESS shall set and automatically control the micro-grid voltage & frequency within acceptable limit and shall charge or discharge the battery based on micro-grid requirement. As per requirement BESS shall also control the active and reactive power (or power factor) of Solar PV plant by providing required set point to solar PV Inverters and also control (close/trip) the 11kV and 33kV circuit breaker located at solar PV plant end for load control purposes. BESS shall have all the required hardware, control and protection feature for safe operation of micro-grid. BESS shall also charge its battery for later use in case excess energy is available in the micro-grid after meeting the load power requirement. If the PV plant generated power is not sufficient to meet the load

power requirement, then BESS shall discharge its battery to support the load power requirement.

G. FREQUENCY REGULATION:-

The BESS shall be able to support grid during very low or high grid frequency by supplying or absorbing power to/from grid. The power support shall be based on power vs frequency droop characteristic for system frequency outside of the pre-defined frequency dead band (say 49.5 to 50.5). The operation in this mode shall be initiated by detection of low or high grid frequency while the BESS is in any other mode. After normalization of grid frequency to normal operating range, the BESS shall return to the mode in which it was operating at the start of frequency regulation mode. Within the dead band frequency range the BESS do not have to participate for frequency regulation operation. During detail engineering the actual value of dead band frequency range shall be finalized based on CEA grid regulation. This mode shall be kept disable after commissioning test and Bidder needs not to consider any additional battery sizing for this application requirement.

H. SOLAR FORECASTING:-

Bidder also has to provide solar forecasting and scheduling system/service and software tool as per CERC requirement for forecasting and scheduling for 17 MW solar PV project. The forecasting & scheduling service shall provide one day prior data and 90 minutes, 15 minutes advance data for intra-day. This system must be able to send the forecasting and scheduling data as above with Load Dispatch Centre/ Energy management Center through BESS SCADA system. The weather station input e.g. GHI, ambient temperature, humidity and wind speed, if required be shall be taken by bidder from Solar PV plant SCADA system. Alternately, Bidder can install own whether monitoring station for solar PV plant power generation forecasting purpose.

2.0

INTEGRATION WITH 17MW SOLAR PV PLANT:

BESS to take CT's (0.2S class) and VT's (0.2 class) input signals directly from 33kV switchgear located at 17MW solar plant side for measurement of voltage, current, active power, reactive power, etc. For this, CTs spare cores at each individual 33kV feeder panels and PTs spare core at bus PT panels shall be provided at Solar PV plant side 33kV SWGR end. In total 11 numbers of 33kV feeders (located at 33kV main switchgear of 17MW solar plant side) needs to be considered for CTs & PTs input to BESS (02nos solar feeder, 02nos BESS feeder, 03 nos feeder to grid & 02 nos of transformer feeder for 11kV local load and 02 nos of spares feeder). Bidder scope also include energy meters, transducers (0.2 class or better) as applicable for EMS controller use and shall be mounted in BESS end. Measurement of load for individual 11kV feeders located at 11kV A&N switchgear (located inside 17MW solar plant boundary) shall be directly from panel mounted MFM meter (over Modbus protocol) or numerical relay (with IEC61850 port). Supply of control & communication cable and associated cabling work (including termination etc) shall be in the BESS bidder scope.

BESS shall have facility for direct control of 17MW Solar Plant Inverters for active and reactive power control and closing and tripping of 33kV and 11kV

circuit breakers for load and generation control purpose. BESS shall also be able to read and write data from/to solar SCADA server/controller as per BESS requirement. In order to meet the above requirement the BESS needs to communication with Solar PV SCADA being commissioned by NTPC. For this the BESS shall have the following provision;

The BESS SCADA LAN shall be directly connected into Solar SCADA redundant LAN at two separate Ethernet Switch located at solar SCADA control room. With this arrangement the BESS shall be able to control solar plant Inverters & VCBs and able to read and write data from/to solar SCADA server/controller.

In case the direct connection with solar SCADA LAN not possible due to protocol issue (or any other reason), then separate redundant LAN connecting solar Inverters only shall be made available by owner for BESS use. The BESS SCADA LAN shall be connected with above Solar Inverter LAN at two separate Ethernet Switch located at solar SCADA control room. In this arrangement the solar Inverters system shall be integral part of BESS SCADA LAN and direct control & monitoring of solar inverters inverter shall be possible from BESS. For solar plant VCBs control and to read and write data from/to solar SCADA server/controller the BESS shall communicate with solar SCADA with alternate (Redundant) arrangement over suitable standard protocol with no direct connection with solar SCADA LAN. In this arrangement the BESS shall also be able to provide solar inverters data including control facility to solar plant SCADA system.

All necessary software's and hardware's including laying of Communication/Fiber optic cable as required for communication with solar SCADA shall be provided by the BESS contractor. Supply of Ethernet switch at solar PV plant end is not included in the scope of BESS contractor (spare ports shall be made available). Solar inverter will have Modbus TCP/IP protocol and solar SCADA will support Modbus TCP/IP, RTU, ASCII, IEC61850, IEC60870-5-101/104, OPC-DA 2.05a protocols for integration with BESS system.

Circuit breaker at 11kV A&N switchgear shall also be control through BESS SCADA with hardwiring & 24V coupling relay or directly through soft signal via numerical relay located at 11kV switchgear. Supply of necessary control & communication cable, coupling relay, Ethernet switch etc as applicable shall be in the scope of the BESS contractor. Detail shall be finalized during details engineering stage.

3.0

BESS PARAMETER:

The following minimum parameters must be provided for technical bid evaluation. Bidder also shall submit all technical parameters so that it can be assess for all BESS functionality as mentioned above. Separate table of Functional parameters is to be submitted for each functional requirement.

S. No	Parameter	Value
1	Rated Discharge AC useful Capacity at PCC	24 MWh

2	Rated AC power at PCC	6 MW (45° C ambient temp) at 0.95 power factor.
3	BESS Round trip AC/AC Efficiency at PCC	To be specified by EPC contractor as per their BESS system in the form as provided in Section-VII (Forms and Procedures)
4	Depth of Discharge (DOD)	To be specified by EPC contractor as per their BESS system
5	Battery Efficiency (DC-DC round trip)	To be specified by EPC contractor as per their BESS system
6	Guaranteed Minimum service life	25 Years
7	Charging Rate	To be specified by EPC contractor as per their BESS system
8	Power factor (Measure at PCC)	Four quadrant capability is required. Operating power factor shall be 0.95 lead or lag.
9	Response time	Response time of BESS system shall not be more than 1 (one) second.
10	Positive and Negative Ramp Rate	BESS shall have suitable positive and negative ramp rate to support smooth injection of Solar PV plant output power into grid.
11	BESS design temperature	0°-45° C ambient

- Point of common coupling (PCC) shall be 33KV metering point located at 17 MW Solar PV Project side.
- Ambient temperature as mentioned above shall be applicable in case of conflict between ambient temperature mentioned above and those specified elsewhere in the specification.

Response time: The design of BESS system should be such that it's respond time shall not be more than 1 (one) sec. Response time is the time interval between need for response (a command or grid event or Solar Plant power generation event, etc) is detected by the BESS and the time when power as measured at the grid has attained that level. This shall include all intermediate response time of system components.

4.0

CODES AND STANDARDS

The BESS shall conform to the all applicable IEC/UL standard. Where an applicable IEC/UL standard is not available, IS/ any applicable international standard shall be referred to as best practice. The BESS shall meet all the

CEA/CEIG and local statutory requirements for interconnection with grid at the required Voltage level.

As a minimum requirement, the following standards as applicable shall be complied with:

IEC-61427	Secondary cells and batteries for renewable energy storage for on-grid applications. Non-chemistry specific (applicable to all secondary battery types)
UL1973	Energy storage for stationary applications such as for PV. Non-chemistry specific (applicable to all secondary battery types)
IEC 62485-2	Safety requirements for secondary batteries and battery installations - to meet requirements on safety aspects associated with the erection, use, inspection, maintenance and disposal: Non-chemistry Specific (applicable to all secondary battery types)
IEC 61508	Functional Safety of Electrical/ Electronic/ Programmable Electronic Safety-related Systems: Applicable for all Battery Energy Storage Systems
UL 1642	Standard of Lithium Batteries (Safety of Lithium Ion Batteries)
IEC 62619	Safety requirements for large scale industrial applications.
IEC 62281	Safety of primary and secondary lithium cells and batteries during transport: Applicable for storage systems using Lithium Ion chemistries
UL9540	Safety of energy storage systems and equipments.
Grid Connectivity	Relevant CEA Regulations (including LVRT/HVRT compliance) and Grid Code as amended and revised from time to time.
Battery management and Handling rules, 2001 Ministry of Environment, Forests and Climate Change.	
E-waste (management) rules-2016 Ministry of Environment, Forest and Climate Change.	

5.0 BATTERY STORAGE SYSTEM :

The energy storage system may consist of one or more type of batteries to meet the application requirement. Battery shall be electrically interconnected in any desirable series and parallel configuration to achieve the overall system storage and power rating requirements. The DC voltage of battery system shall be selected by the Bidder to suit the PCS and battery efficient and safe operational requirement.

- b. The battery cells may be supplied as separate, individual units or as group of cells combined into modules. The design, materials, and method of cell construction shall conform to the applicable code and/or standard.

- c. Cell/module terminals and interconnects shall have adequate current-carrying capacity. Labelling of the cells/modules shall include manufacturer's name, cell/module type, nameplate rating, and date of manufacture, in fully legible characters. All cells/modules shall be traceable to the point of origin for purpose of addressing safety issues. The polarities of cell/module terminal posts shall be embossed on the cover at the terminal.
- d. Each electrically series-connected battery string shall include a means of disconnecting the string from the rest of the system and of providing over-current protection (during a fault). This protection shall be coordinated with the PCS capabilities and battery string protection, and shall take into account switching or other transients and the inductance/resistance (L/R) ratio at the relevant areas of the dc system. These disconnecting devices should be capable of operating with normal load current and provide physical interruption.
- e. The battery system may be ungrounded or grounded. Grounded configurations may be centre or one-pole-grounded and/or solid or high-resistance grounded. However, the battery system shall include a system to detect and alarm excessive ground leakage current levels. Ground fault detection shall be enabled for each container or, if more than one electrical series string is installed in the container, for each series string. The detection/trip level shall be field adjustable.
- f. The cells/modules and battery system shall be supplied with all required and/or recommended accessories.
- g. Cells/modules, wiring, switch gear, and all dc electrical components shall be insulated for the maximum expected voltages plus a suitable factor of safety. The dc bus work and load-carrying cables within the storage subsystem shall have an enough margin for the actual load current. Also, all other components shall have an enough margin for the actual load current according to applicable code and/or standard.
- h. Battery container shall have minimum protection class IP54.
- i. Suitable ventilation/controlled air conditioning and personnel safety measures in battery room/container must be maintained to minimize health hazards to any exposure to hazardous battery elements.
- j. Automatic fire fighting system should be provided as per NFPA.

6.0

BATTERY MANAGEMENT SYSTEM (BMS):

The BMS shall be designed to provide for automatic, unattended operation of the battery storage system. The BMS shall provide the necessary monitoring and control to protect the battery cells/module/string from out of tolerance ambient or unsafe operating conditions. The BMS shall automatically control the charge and discharge of the individual cells/module, balancing between cells/module to optimize energy consumption and range, monitor cell/module health and provide critical safeguards to protect the batteries from damage. BMS shall have the following feature. However Bidder to supply the BMS system as per battery OEM recommendation & requirement and shall be in line with the application requirements.

- (a) Cell/module Protection :-Protecting the battery from out of tolerance operating conditions and BMS must provide full cell/module protection to cover almost any eventuality.

- (b) Charge control: - BMS shall automatically control the charge and discharge of the individual cell/module.
- (c) SOC Determination: - BMS shall automatically determine the State of Charge (SOC) of the individual cell/module.
- (d) SOH Determination: - BMS shall automatically determine the State of Health (SOH) of the individual cell/module.
- (e) Cell Balancing: - BMS shall automatically balancing between cells/modules to optimize energy consumption, range and protecting the battery.
- f) History - (Log Book Function):- Monitoring and storing the battery's parameters and communicating the same to SCADA.
- (g) Alarm and fault generation and communicating the same to SCADA.
- (h) Isolating the battery in cases of emergency.



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Imagery Date: 1/11/2016 11°34'18.56" N 92°39'48.80" E elev 40 m eye alt 1.12 km

7.0 GROUND WATER TABLE

Ground water level was met at depth ranging **2.43 m** to **2.80 m** from the existing ground level in the Bore holes BH 5 & BH 8 and not met within the other bore holes at the time of investigation, during continuous boring from **04.02.2016** to **03.03.2016**.

8.0 DISCUSSION ON RESULTS AND TYPE OF FOUNDATION

Based on the subsoil conditions discussed in Sl. No. 6, the following recommendations are made for suitable type of foundation for the proposed structures.

Two alternative types of foundations, namely, either Open Foundations (individual column footings or combined footings or strip raft combining each row of columns or raft foundation), or Under-reamed pile foundations may be considered

➤ ALTERNATIVE 1: OPEN FOUNDATIONS (Column footings/combined footings/strip raft/raft foundation) are recommended:

- Open foundations (Individual column footings or combined footings or strip raft combining each row of columns or raft foundation) are recommended.
- The estimated safe bearing capacities for a typical foundation size, at different depths of foundation are given in Table No. 19. It is based on Settlement criteria from Shultz & Muhs curves.

Table 19

Location	Minimum Width of Footing	Depth of Footing	Type of Soil at Founding level	Average N-Value	Angle of Internal Friction as per Lab test result (ϕ in degrees & C in Kg/cm ²)		Safe Bearing Capacity from Shear criterion.	Safe bearing capacity from Settlement criterion (for 50 mm permissible Settlement) based on Shultz & Muhs curves.
	(m)	(m)			C	ϕ	(T/m ²)	(T/m ²)
BH 1	1.5	1.5	Silty CLAY	13	0.81		20	20
		2	Silty CLAY	19	1.19		31	33
BH 2	1.5	1.5	Gravely CLAY	5	0.35		9.8	5
		2	Silty CLAY	9	0.563		15	10.7
BH 3	1.5	1.5	Sandy Gravely CLAY	10	0.63		17	13
		2	Sandy CLAY	16	1.0		26	25
BH 4	1.5	1.5	Sandy CLAY	4	0.2		6	2.5
		2	Sandy CLAY	18	1.13		30	26
BH 5	1.5	1.5	Sandy CLAY	6	0.38		10.6	5.8
		2	Sandy Gravely CLAY	6	0.4		11.1	5.8
BH 6	1.5	1.5	Sandy CLAY	8	0.5		13	10
		2	Sandy CLAY	9	0.65		17	11.6
BH 7	1.5	1.5	Gravely Sandy CLAY	19	1.3		34	33
		2	Sandy Gravely CLAY	54	2.0		52	50
BH 8	1.5	1.5	Silty CLAY	7	0.55		15	7.5
		2	Silty CLAY	9	0.63		17	11.6
BH 9	1.5	1.5	Sandy CLAY	13	0.9		24	20
		2	Sandy CLAY	18	1.13		30	31.6
BH 10	1.5	1.5	Silty CLAY	15	0.94		25	35
		2	Silty CLAY	19	1.2		31	33.3
BH 11	1.5	1.5	Silty CLAY	7	0.51		14	7.5
		2	Sandy CLAY	10	0.63		17	13.3
BH 12	1.5	1.5	Gravely Sandy CLAY	12	0.85		22	17.5
		2	Gravely Sandy CLAY	20	1.3		34	35

B – Width of footing in cm

γ - Unit wt. Of soil in Kg/cc

S_c, S_q & S_γ - Shape factors

d_c, d_q, d_γ - Depth factors

i_c, i_q & i_γ - inclination factors

N_c, N_q & N_γ - Bearing capacity factors depending upon the angle of internal friction of the soil.

F – Factor of safety

W' – Correction factor for water table

10.0 RECOMMENDATIONS FOR SUITABLE TYPE OF FOUNDATION AND SAFE BEARING CAPACITY

Based on the subsoil conditions discussed in Sl. No. 6, the following recommendations are made for suitable type of foundation for the proposed structures.

Two alternative types of foundations, namely, either Open Foundations (individual column footings or combined footings or strip raft combining each row of columns or raft foundation), or Under-reamed pile foundations may be considered

➤ **ALTERNATIVE 1: OPEN FOUNDATIONS (Column footings/combined footings/strip raft/raft foundation) are recommended:**

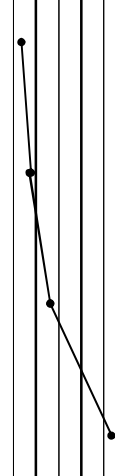
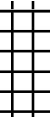
- Open foundations (Individual column footings or combined footings or strip raft combining each row of columns or raft foundation) are recommended.
- The recommended safe bearing capacities for a typical foundation size, at different depths of foundation are given in Table No. 21.

Table 21

Location	Minimum Width of Footing	Depth of Footing	Angle of Internal Friction as per Lab test result (ϕ in degrees & C in Kg/cm ²)		Allowable bearing pressure (smaller of the values obtained from Shear and settlement criterion)	Recommended safe bearing capacity
	(m)	(m)	C	ϕ	(T/m ²)	(T/m ²)
BH 1	1.5	1.5	0.81		20	15
		2	1.19		31	25
BH 2	1.5	1.5	0.35		5	5
		2	0.563		10.7	10
BH 3	1.5	1.5	0.63		13	10
		2	1.0		25	20
BH 4	1.5	1.5	0.2		2.5	2.5
		2	1.13		26	20
BH 5	1.5	1.5	0.38		5.8	5
		2	0.4		5.8	5
BH 6	1.5	1.5	0.5		10	10
		2	0.65		11.6	10
BH 7	1.5	1.5	1.3		33	25
		2	2.0		50	40
BH 8	1.5	1.5	0.55		7.5	6
		2	0.63		11.6	10
BH 9	1.5	1.5	0.9		20	15
		2	1.13		30	25
BH 10	1.5	1.5	0.94		25	20
		2	1.2		31	25
BH 11	1.5	1.5	0.51		7.5	6
		2	0.63		13.3	10
BH 12	1.5	1.5	0.85		17.5	15
		2	1.3		34	30

APPENDIX I

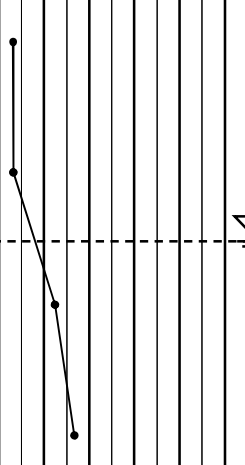
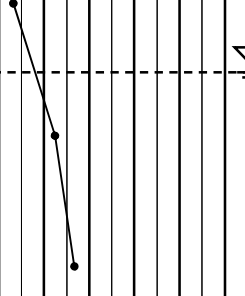
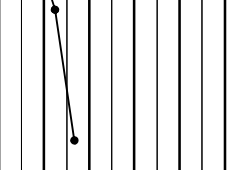
BORELOGS

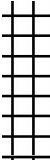
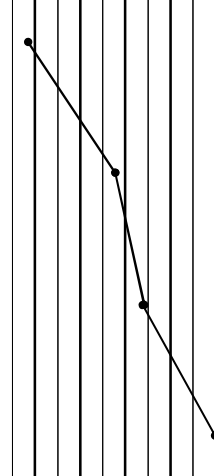
Project: Geotechnical Investigation work for Solar Project at Manglutan in Andaman & Nicobar Islands.																						
 GEO FOUNDATIONS & STRUCTURES PVT. LTD						Bore Hole No : BH-1 Location : Manglutan Type of Boring : Rotary Ground Water Level : Not met with Termination Depth : 5.00 m						Drillhole Record -BH-1										
												Fig No. 1										
												Reduced Level :										
						Start Date : 13.02.2016						End Date : 13.02.2016										
SOIL DESCRIPTION	STRUCTURE	GROUND LEVEL (m)	LEGEND	TEST NO	SAMPLE TYPE	DEPTH (m)	TEST DEPTH(m)	PENETRATION VALUES			SPT 'N' Blows/300mm	SPT 'N' PROFILE					C.R (%)	R.Q.D.(%)	REMARKS			
								15cm	30cm	45cm		20	40	60	80	100						
Gravely Silty CLAY (CI-G)	Stiff, Layered	1.50		SPT-1	SS	0.50	0.50-0.95	3	6	7	13							Sample Slipped				
Silty CLAY (CL)	Very stiff, Layered	3.50		UDS-1	SS	1.50	1.50-1.80	-	-	-	-											
				SPT-2	SS	2.00	2.00-2.45	5	8	11	19											
				UDS-2	SS	3.00	3.00-3.30	-	-	-	-											
Very Stiff, Sandy Gravely CLAY (CL-SC-G)	Very stiff, Layered	4.50		SPT-3	SS	3.50	3.50-3.95	5	10	18	28								Sample Slipped			
Hard, Sandy CLAY (CI-SC)				UDS-3	SS	4.50	4.50-4.80	-	-	-	-											
				SPT-4	SS	5.00	5.00-5.45	13	22	30	52											
G.W.L: Not met with		No of SPT: 04 Nos				No of UDS: 03 Nos					REMARKS											

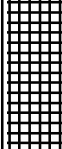
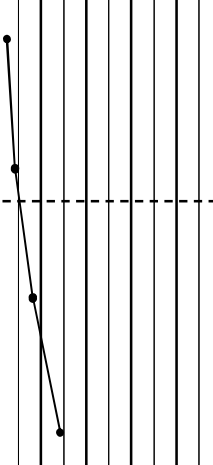
Project: Geotechnical Investigation work for Solar Project at Manglutan in Andaman & Nicobar Islands.																			
 GEO FOUNDATIONS & STRUCTURES PVT. LTD						Bore Hole No : BH-2					Drillhole Record -BH-2								
						Location : Manglutan					Fig No. 2								
						Type of Boring : Rotary					Reduced Level :21.764								
						Ground Water Level : Not met with					Start Date : 19.02.2016								
						Termination Depth : 5.00 m					End Date : 19.02.2016								
SOIL DESCRIPTION	STRUCTURE	GROUND LEVEL (m)	LEGEND	TEST NO	SAMPLE TYPE	DEPTH (m)	TEST DEPTH(m)	PENETRATION VALUES			SPT 'N' Blows/300mm	SPT 'N' PROFILE					C.R (%)	R.Q.D(%)	REMARKS
								15cm	30cm	45 cm		20	40	60	80	100			
Gravely CLAY (CL-G)	Medium stiff, Layered	2.00		SPT-1	SS	0.50	0.50-0.95	2	2	3	5							Sample Slipped	
				UDS-1	SS	1.50	1.50-1.80	-	-	-	-								
Stiff, Silty CLAY (CI)	3.00			SPT-2	SS	2.00	2.00-2.45	3	4	5	9								
				UDS-2	SS	3.00	3.00-3.30	-	-	-	-								
Sandy CLAY (CL-SC)	Very Stiff, Layered	5.00		SPT-3	SS	3.50	3.50-3.95	7	9	12	21								Sample Slipped
				UDS-3	SS	4.50	4.50-4.85	-	-	-	-								
Very Stiff, Silty CLAY (CL)				SPT-4	SS	5.00	5.00-5.45	7	11	14	25								
G.W.L; Not met with		No of SPT: 04 Nos				No of UDS : 03 Nos				REMARKS									

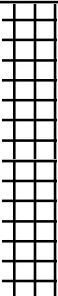
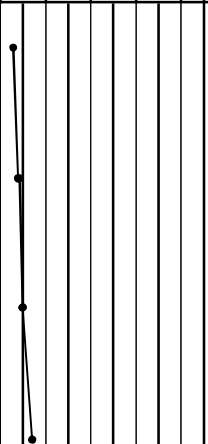
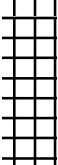
Project: Geotechnical Investigation work for Solar Project at Manglutan in Andaman & Nicobar Islands.																														
 GEO FOUNDATIONS & STRUCTURES PVT. LTD				Bore Hole No : BH-3 Location : Manglutan Type of Boring : Rotary Ground Water Level : Not met with Termination Depth : 5.00 m								Drillhole Record -BH-3																		
												Fig No. 3																		
												Reduced Level :38.25																		
										Start Date : 29.02.2016					End Date : 29.02.2016															
SOIL DESCRIPTION	STRUCTURE	GROUND LEVEL (m)	LEGEND	TEST NO	SAMPLE TYPE	DEPTH (m)	TEST DEPTH(m)	PENETRATION VALUES			SPT 'N' Blows/300mm	SPT 'N' PROFILE					C.R (%)	R.Q.D.(%)	REMARKS											
								15cm	30 cm	45cm		20	40	60	80	100														
Sandy Gravely CLAY (CI-SC-G)	Stiff, Layered	2.00		SPT-1	SS	0.50	0.50-0.95	3	4	6	10																			
				UDS-1	SS	1.50	1.50-1.80	-	-	-	-																	Sample Slipped		
Sandy CLAY (CI-SC)	Very stiff, Layered	5.00		SPT-2	SS	2.00	2.00-2.45	5	7	9	16																Sample Slipped			
				UDS-2	SS	3.00	3.00-3.30	-	-	-	-																		Sample Slipped	
				SPT-3	SS	3.50	3.50-3.95	8	11	14	25																			
				UDS-3	SS	4.50	4.50-4.80	-	-	-	-																			Sample Slipped
				SPT-4	SS	5.00	5.00-5.45	10	13	16	29																			
				Very Stiff, Gravely Sandy CLAY (CI-SC-G)																										
G.W.L: Not met with		No of SPT: 04 Nos				No of UDS: 03 Nos				REMARKS																				

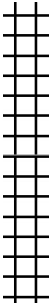
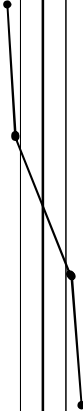
Project: Geotechnical Investigation work for Solar Project at Manglutan in Andaman & Nicobar Islands.																				
 GEO FOUNDATIONS & STRUCTURES PVT. LTD						Bore Hole No : BH-4 Location : Manglutan Type of Boring : Rotary Ground Water Level : Not met with Termination Depth : 5.00 m						Drillhole Record -BH-4								
												Fig No. 4								
												Reduced Level :						Start Date : 04.02.2016 End Date : 05.02.2016		
SOIL DESCRIPTION	STRUCTURE	GROUND LEVEL (m)	LEGEND	TEST NO	SAMPLE TYPE	DEPTH (m)	TEST DEPTH(m)	PENETRATION VALUES			SPT 'N' Blows/300mm	SPT 'N' PROFILE					C.R (%)	R.Q.D.(%)	REMARKS	
								15cm	30cm	45cm		20	40	60	80	100				
Sandy CLAY (CL-SC)	Soft, Layered	1.50		SPT-1	SS	0.50	0.50-0.95	1	1	2	3									Sample Slipped
Sandy CLAY (CI-SC)	Very stiff, Layered	5.00		UDS-1	SS	1.50	1.50-1.80	-	-	-	-									
				SPT-2	SS	2.00	2.00-2.45	6	9	9	18									
				UDS-2	SS	3.00	3.00-3.30	-	-	-	-									
				SPT-3	SS	3.50	3.50-3.95	8	8	16	24									
				UDS-3	SS	4.50	4.50-4.80	-	-	-	-									
				SPT-4	SS	5.00	5.00-5.45	8	12	18	30									
G.W.L: Not met with		No Of SPT: 04 Nos					No of UDS: 03 Nos					REMARKS								

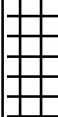
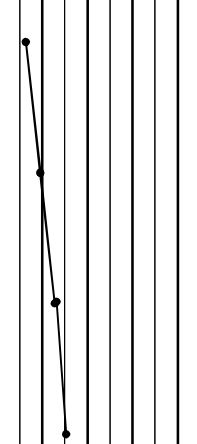
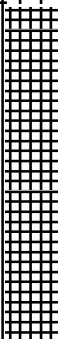
Project: Geotechnical Investigation work for Solar Project at Manglutan in Andaman & Nicobar Islands.																			
 GEO FOUNDATIONS & STRUCTURES PVT. LTD						Bore Hole No : BH-5 Location : Manglutan Type of Boring : Rotary Ground Water Level : 2.80 m from G.L on 23.02.2016 Termination Depth : 5.00 m						Drillhole Record -BH-5							
												Fig No. 5							
						Reduced Level : 17.588						Start Date : 22.02.2016 End Date : 22.02.2016							
SOIL DESCRIPTION	STRUCTURE	GROUND LEVEL (m)	LEGEND	TEST NO	SAMPLE TYPE	DEPTH (m)	TEST DEPTH(m)	PENETRATION VALUES			SPT 'N' Blows/300mm	SPT 'N' PROFILE					C.R (%)	R.Q.D.(%)	REMARKS
								15cm	30cm	45cm		20	40	60	80	100			
Sandy CLAY (CI-SC)	Medium stiff, Layered	2.00		SPT-1	SS	0.50	0.50-0.95	2	2	4	6								Sample Slipped
				UDS-1	SS	1.50	1.50-1.80	-	-	-	-								
Sandy Gravely CLAY (CL-SC-G)	Medium stiff, Layered	3.50		SPT-2	SS	2.00	2.00-2.45	2	3	3	6								G.W.L
				UDS-2	SS	3.00	3.00-3.30	-	-	-	-								
Silty CLAY (CI-SC)	Very Stiff, Layered	5.00		SPT-3	SS	3.50	3.50-3.95	7	11	13	24								Sample Slipped
				UDS-3	SS	4.50	4.50-4.80	-	-	-	-								
Hard, Silty CLAY (CI-SC)				SPT-4	SS	5.00	5.00-5.45	8	14	18	32								Sample Slipped
G.W.L: 2.80 m from G.L on 23.02.2016		No Of SPT: 04 Nos				No of UDS: 03 Nos				REMARKS									

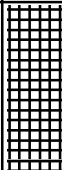
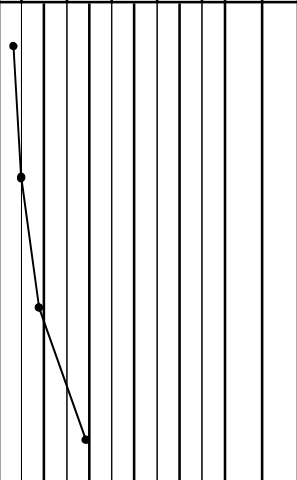
Project: Geotechnical Investigation work for Solar Project at Manglutan in Andaman & Nicobar Islands.																					
 GEO FOUNDATIONS & STRUCTURES PVT. LTD				Bore Hole No : BH-7 Location : Manglutan Type of Boring : Rotary Ground Water Level : Not met with Termination Depth : 5.00 m								Drillhole Record -BH-7									
												Fig No. 7									
Reduced Level :																					
Start Date : 16.02.2016																					
End Date : 17.02.2016																					
SOIL DESCRIPTION	STRUCTURE	GROUND LEVEL (m)	LEGEND	TEST NO	SAMPLE TYPE	DEPTH (m)	TEST DEPTH(m)	PENETRATION VALUES			SPT 'N' Blows/300mm	SPT 'N' PROFILE					C.R (%)	R.Q.D(%)	REMARKS		
								15cm	30cm	45cm		20	40	60	80	100					
Gravely Sandy CLAY (CI-SC-G)	Very stiff, Layered	2.00		SPT-1	SS	0.50	0.50-0.95	5	9	10	19										
				UDS-1	SS	1.00	1.00-1.30	-	-	-	-										
Hard, Sandy Gravely CLAY (CI-SC-G)	3.00		SPT-2	SS	2.00	2.00-2.45	12	21	33	54											
			UDS-2	SS	3.00	3.00-3.30	-	-	-	-											
Silty CLAY (CI)	Hard, Layered	5.00		SPT-3	SS	3.50	3.50-3.95	18	28	41	69										
				UDS-3	SS	4.50	4.50-4.85	-	-	-	-										
				SPT-4	SS	5.00	5.00-5.13	>50	-	-	>100										
G.W.L: Not met with		No Of SPT: 04 Nos				No of UDS: 03 Nos					REMARKS										

Projec: Geotechnical Investigation work for Solar Project at Manglutan in Andaman & Nicobar Islands.																					
 GEO FOUNDATIONS & STRUCTURES PVT. LTD						Bore Hole No : BH-8 Location : Manglutan Type of Boring : Rotary Ground Water Level : 2.43 m from G.L on 21.02.2016 Termination Depth : 5.00 m						Drillhole Record -BH-8									
												Fig No. 8									
						Reduced Level : 19.364						Start Date : 20.02.2016 End Date : 20.02.2016									
SOIL DESCRIPTION		STRUCTURE	GROUND LEVEL (m)	LEGEND	TEST NO	SAMPLE TYPE	DEPTH (m)	TEST DEPTH(m)	PENETRATION VALUES			SPT 'N' Blows/300mm	SPT 'N' PROFILE					C.R (%)	R.Q.D(%)	REMARKS	
									15cm	30cm	45cm		20	40	60	80	100				
Silty CLAY (CL)	Medium stiff, Layered	2.00		SPT-1	SS	0.50	0.50-0.95	3	3	4	7										
				UDS-1	SS	1.50	1.50-1.80	-	-	-	-										
	Stiff, Layered	4.50		SPT-2	SS	2.00	2.00-2.45	3	4	5	9										
				UDS-2	SS	3.00	3.00-3.30	-	-	-	-										
				SPT-3	SS	3.50	3.50-3.95	5	7	8	15										
				UDS-3	SS	4.50	4.50-4.80	-	-	-	-										
				SPT-4	SS	5.00	5.00-5.45	8	13	16	29										
Very stiff, Sandy CLAY (CL-SC)		5.00																			
Very stiff, Sandy Gravely CLAY (CL-SC-G)																					
G.W.L: 2.42 m from G.L on 21.02.2016			No Of SPT: 04 Nos				No of UDS: 03 Nos					REMARKS									

Project: Geotechnical Investigation work for Solar Project at Manglutan in Andaman & Nicobar Islands.																			
 GEO FOUNDATIONS & STRUCTURES PVT. LTD						Bore Hole No : BH-9 Location : Manglutan Type of Boring : Rotary Ground Water Level : Not met with Termination Depth : 5.00 m						Drillhole Record -BH-9							
												Fig No. 9							
												Reduced Level :							
						Start Date : 24.02.2016						End Date : 24.02.2016							
SOIL DESCRIPTION	STRUCTURE	GROUND LEVEL (m)	LEGEND	TEST NO	SAMPLE TYPE	DEPTH (m)	TEST DEPTH(m)	PENETRATION VALUES			SPT 'N' Blows/300mm	SPT 'N' PROFILE					C.R (%)	R.Q.D.(%)	REMARKS
								15cm	30cm	45cm		20	40	60	80	100			
Sandy CLAY (CI-SC)	Stiff, Layered	1.50		SPT-1	SS	0.50	0.50-0.95	3	6	9	15								
				UDS-1	SS	1.50	1.50-1.80	-	-	-	-								
	Very stiff, Layered	3.50		SPT-2	SS	2.00	2.00-2.45	5	8	10	18								
				UDS-2	SS	3.00	3.00-3.30	-	-	-	-								
Gravelly Sandy CLAY (CI-SC-G)	Very stiff, Layered	5.00		SPT-3	SS	3.50	3.50-3.95	7	9	11	20								
				UDS-3	SS	4.50	4.50-4.80	-	-	-	-								
				SPT-4	SS	5.00	5.00-5.45	9	11	13	24								
G.W.L: Not met with		No Of SPT: 04 Nos					No of UDS: 03 Nos					REMARKS							

Project: Geotechnical Investigation work for Solar Project at Manglutan in Andaman & Nicobar Islands.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
 GEO FOUNDATIONS & STRUCTURES PVT. LTD						Bore Hole No : BH-6 Location : Manglutan Type of Boring : Rotary Ground Water Level : Not met with Termination Depth : 5.00 m						Drillhole Record -BH-6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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SOIL DESCRIPTION	STRUCTURE	GROUND LEVEL (m)	LEGEND	TEST NO	SAMPLE TYPE	DEPTH (m)	TEST DEPTH(m)	PENETRATION VALUES			SPT 'N' Blows/300mm	SPT 'N' PROFILE					C.R (%)	R.Q.D(%)	REMARKS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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Sandy CLAY (CL-SC)	Medium Stiff, Layered	2.00		SPT-1	SS	0.50	0.50-0.95	2	3	5	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

Project: Geotechnical Investigation work for Solar Project at Manglutan in Andaman & Nicobar Islands.																			
 GEO FOUNDATIONS & STRUCTURES PVT. LTD						Bore Hole No : BH-10 Location : Manglutan Type of Boring : Rotary Ground Water Level : Not met with Termination Depth : 5.00 m						Drillhole Record -BH-10							
												Fig No. 10							
												Reduced Level :							
						Start Date : 25.02.2016						End Date : 25.02.2016							
SOIL DESCRIPTION	STRUCTURE	GROUND LEVEL (m)	LEGEND	TEST NO	SAMPLE TYPE	DEPTH (m)	TEST DEPTH(m)	PENETRATION VALUES			SPT 'N' Blows/300mm	SPT 'N' PROFILE					C.R (%)	R.Q.D.(%)	REMARKS
								15cm	30cm	45cm		20	40	60	80	100			
Stiff, Sandy CLAY (CI-SC)		1.50		SPT-1	SS	0.50	0.50-0.95	3	5	8	13								
Silty CLAY (CI)	Very stiff, Layered	5.00		UDS-1	SS	1.50	1.50-1.80	-	-	-	-								Sample Slipped
				SPT-2	SS	2.00	2.00-2.45	6	8	11	19								
				UDS-2	SS	3.00	3.00-3.30	-	-	-	-								
				SPT-3	SS	3.50	3.50-3.95	9	12	13	25								
				UDS-3	SS	4.50	4.50-4.80	-	-	-	-								Sample Slipped
				SPT-4	SS	5.00	5.00-5.45	12	15	15	30								
G.W.L: Not met with				No Of SPT: 04 Nos				No of UDS: 03 Nos				REMARKS							

Project: Geotechnical Investigation work for Solar Project at Manglutan in Andaman & Nicobar Islands.																			
 GEO FOUNDATIONS & STRUCTURES PVT. LTD						Bore Hole No : BH-11 Location : Manglutan Type of Boring : Rotary Ground Water Level : Not met with Termination Depth : 5.00 m						Drillhole Record -BH-11							
												Fig No. 11							
												Reduced Level :						Start Date : 26.02.2016 End Date : 27.02.2016	
SOIL DESCRIPTION	STRUCTURE	GROUND LEVEL (m)	LEGEND	TEST NO	SAMPLE TYPE	DEPTH (m)	TEST DEPTH(m)	PENETRATION VALUES			SPT 'N' Blows/300mm	SPT 'N' PROFILE					C.R (%)	R.Q.D.(%)	REMARKS
								15cm	30cm	45cm		20	40	60	80	100			
Silty CLAY (CI)	Medium stiff, Layered	2.00		SPT-1	SS	0.50	0.50-0.95	3	4	3	7								
				UDS-1	SS	1.50	1.50-1.80	-	-	-	-								
Stiff, Sandy CLAY (CI-SC)		3.00		SPT-2	SS	2.00	2.00-2.45	3	4	6	10								
				UDS-2	SS	3.00	3.00-3.30	-	-	-	-								
Gravelly Sandy CLAY (CI-SC-G)	Very stiff, Layered	4.50		SPT-3	SS	3.50	3.50-3.95	7	8	10	18								Sample Slipped
				UDS-3	SS	4.50	4.50-4.80	-	-	-	-								
Hard, Sandy CLAY (CI-SC)		5.00		SPT-4	SS	5.00	5.00-5.45	12	17	21	38								Sample Slipped
G.W.L: Not met with		No Of SPT: 04 Nos				No of UDS: 03 Nos					REMARKS								

Project: Geotechnical Investigation work for Solar Project at Manglutan in Andaman & Nicobar Islands.																			
 GEO FOUNDATIONS & STRUCTURES PVT. LTD						Bore Hole No : BH-12 Location : Manglutan Type of Boring : Rotary Ground Water Level : Not met with Termination Depth : 5.00 m						Drillhole Record -BH-12							
												Fig No. 12							
						Reduced Level : 36.993						Start Date : 02.03.2016 End Date : 03.03.2016							
SOIL DESCRIPTION	STRUCTURE	GROUND LEVEL (m)	LEGEND	TEST NO	SAMPLE TYPE	DEPTH (m)	TEST DEPTH(m)	PENETRATION VALUES			SPT 'N' Blows/300mm	SPT 'N' PROFILE					C.R (%)	R.Q.D.(%)	REMARKS
								15cm	30cm	45cm		20	40	60	80	100			
Very stiff, Gravely Sandy CLAY (CL-SC-G)	Stiff, Layered	2.00		SPT-1	SS	0.50	0.50-0.95	3	5	7	12								
				UDS-1	SS	1.50	1.50-1.80	-	-	-	-								Sample Slipped
	SPT-2	SS		2.00	2.00-2.45	69	9	11	20										
	UDS-2	SS		3.00	3.00-3.30	-	-	-	-									Sample Slipped	
	SPT-3	SS		3.50	3.50-3.95	12	13	15	28										
	UDS-3	SS		4.50	4.50-4.80	-	-	-	-										
	Very stiff, Gravely Sandy CLAY (CL-SC-G)	5.00																	
	Hard, Sandy CLAY (CL-SC)				SPT-4	SS	5.00	5.00-5.45	14	17	22		39						
G.W.L: Not met with		No Of SPT: 04 Nos				No of UDS: 03 Nos				REMARKS									

Annexure-D

6.0 LD for shortfall in Generation during O&M

As per the provision of the bid document, the successful bidder also needs to do Operation & Maintenance of the plant for a period of 25 years from the date of completion of trial run

2.1.1 During O&M period, bidder shall be responsible for following activities but not limited to following.

2.1.2 Maintaining availability of the BESS plant

2.1.3 Carry out preventive maintenance as per OEM practices

2.1.4 Carry out breakdown maintenance.

2.2 During O&M period following parameters shall be tested every year

2.2.1 Outage duration

2.2.2 Fall in Mega Watt Hour(MWH) Capacity from declared

2.2.3 Efficiency of BESS system.

2.3 The loss in revenue due to above components shall be evaluated as follow

2.3.1 **Plant outage:** For deterring availability factor is to be determined

$$\text{Plant availability Factor(PAF)} = (1 - \frac{\sum \text{Unavailable Duration in Hours} \times \text{Corresponding MW Capacity} \times W_t}{6 \times 8760}) 100$$

W_t is the Time slot weightage and depends on the instant of the outage as per following,

Time Slot	Weightage
00:00 Hrs to 06:00 Hrs	0
6:00 Hrs to 8:30 Hrs	0.2
8:30 Hrs to 10:30 Hrs	0.5
10:30 Hrs to 00:00Hrs	1.0
Time duration for which BESS availability is not required (i.e. during outage of grid, solar PV plant or due to any other reason).	0

If yearly Plant availability factor is less than 99%, contractor is liable for LD as follow

$$LD_{av} = (99-PAF)/100 \times 10 \times 0.8 \times 24000 \times 365 \text{ in INR}$$

In case, there more than one equipment in the same branch is out at the same time, then the equipment having higher weightage shall be taken.

2.3.2 LD due to fall of MWH Capacity at PCC:-

LD due to fall in MWH capacity from declared capacity

$$= (\text{Declared kWh}-\text{Measured kWh}) \times 10 \times 0.8 \times 365 \text{ in INR}$$

2.3.3 Efficiency of BESS system:-

Efficiency shall calculated at the end of the year based on total measured cumulative incoming and outgoing energy of BESS system at PCC during entire one year period. Total incoming and outgoing energy for BESS system shall be recorded on daily basis based on reading in TEM energy meter located at solar PV plant 33kV switchgear end.

In case measured efficiency of BESS η_{meas} % is less than declared efficiency η_{decl} % during one year time period, the bidder is liable to pay LD due to fall of efficiency and the LD shall be calculated as follow,

$$LD_{\eta Loss} = G_{Loss} \times R \text{ in INR}$$

Where R is the applicable tariff (Rs 10.00)

$$\text{Where } G_{Loss} = G_{out} \times \left(\frac{1}{\eta_{meas}} - \frac{1}{\eta_{decl}} \right) \times 100 \text{ kWh and}$$

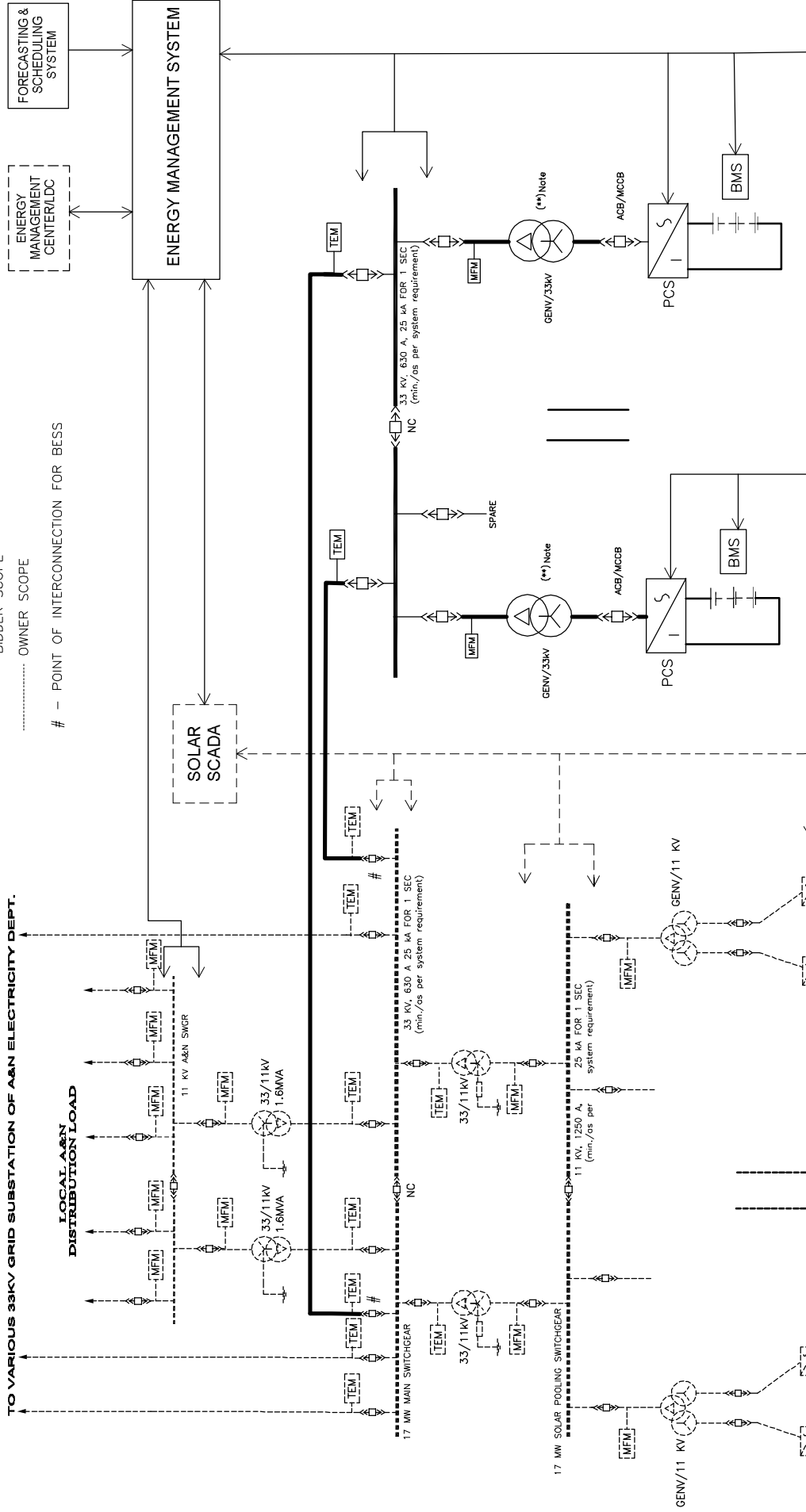
$$\eta_{meas} \% = \left(\frac{G_{out}}{G_{in}} \right) \times 100$$

Where G_{in} and G_{out} are the total measured cumulative incoming and outgoing energy during entire one year period.

All applicable LD shall be first adjusted from the O &M contract value limited up to 10%. In case LD amount exceeds balance amount then it shall be adjusted from the security against **Equipment Performance Bank Guarantee limited** to 3%. In case applicable LD is limited upto 10% O&M contract value, then 3% of the EPBG shall be returned to the bidder.

—— BIDDER SCOPE
----- OWNER SCOPE

- POINT OF INTERCONNECTION FOR BESS



24MWh, 6MW BESS System

(**) NOTE
PCS Transformer Configuration/Vector group as shown here are only indicative in nature and Bidder can adopt any suitable configurations/Vector group based on manufacturer's standard.

(TYPICAL TENTATIVE SCHEME)

FOR TENDER PURPOSE ONLY

NOTES

1.) ALL NECESSARY HARDWARES FOR INTERFACING WITH PV PLANT FOR BESS SYSTEM TO BE FULLY FUNCTIONAL AS PER SPECIFICATION SHALL BE UNDER BIDDER'S SCOPE.

2.) INSTANTANEOUS SOLAR PLANT GENERATION, GRID POWER AND LOCAL LOAD POWER FOR BESS USE ARE TO BE TAKEN FROM 0.2S CLASS FEEDER CTs AND 0.2 CLASS BUS PT OF 17 MW MAIN SWITCHGEAR NECESSARY WIRING AND OTHER HARDWARE FROM 17 MW MAIN SWGR PANEL TO BESS CONTROL ROOM WILL BE UNDER BIDDER'S SCOPE.

3.) BESS POWER CONTRIBUTION THROUGH ONE PCS TRANSFORMER FEEDER SHALL BE LIMITED TO 2MW MAXIMUM.

NTPC Limited
(A COMPANY OF NTPC LTD.)

OWNER
PROJECT
BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV
PROJECT AT MANGUTAN IN SOUTH ANDAMAN, A&N ISLANDS

TITLE
BASIC SCHEMATIC DIAGRAM

FOR TENDER PURPOSE ONLY	SCALE	DATE	APPD	REV. NO.
DESCRIPTION	A3	NTS	5728-004(B)-POE-A-001	B

DATE/REV

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
1.	1.1 Route-1	General Query	As per tender condition, bidder choosing Route – 2, 3, 4 and 5 for qualification then bidder has to make the Joint deed agreement with bidders meeting the QR as mentioned in Route – 1. In our view, very limited parties available which meets the Route-1 QR. Further, it is likely that such parties meeting technical QR cannot be able to meet financial QR. Also such parties have executed the BESS project through their subsidiaries/affiliate/group companies. In short, participation shall get reduced due to non-availability of such parties meeting Route-1 QR. Our Proposal: Associate/Collaborator should be allowed to use the credential of their Parent/Affiliate/Group company for meeting technical and financial QR. This will qualify the lot of bidders and the completion will be significantly increased.	As per QR requirement Bidder seeking qualification through 'Route 2 or 3 or 4 or 5' shall associate/ collaborate with Battery Manufacturer who has manufactured and supplied 3.6 MW (or higher) cumulative capacity with 1.2 MW (or higher) single largest grid interactive battery energy storage capacity which should have been in successful operation for at least six (6) months prior to the date of techno-commercial bid opening. Bidder to refer revised DJU format. Bidder to comply with the provision as per Note (d) for clause 1.0 for Technical Criteria and clause 2.1.1 for financial criteria.
2.	1.1 Route-1	1.0 TECHNICAL CRITERIA 1.1 Route 1: The bidder should have manufactured, supplied, installed/ supervised installation and	We understand from route-1 that the concerned party is battery manufacturer, However the tender is asking the experience of supervision of commissioning of complete grid interactive battery energy storage system. Does it mean that battery manufacturer should have overall system integration supervision experience in addition to supervision of commissioning of only battery? Please clarify	Bidder to note that for integrator separate provenness requirement has been specified (refer technical specification provenness criteria chapter A3)

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 1 OF 18

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
		commissioned/ supervised commissioning of grid interactive battery energy storage system(s)..... the date of techno-commercial bid opening.		
3.	1.1 Route-1	General Query	We understand that Bidder should have the manufacturer of the batteries not the associated items i.e. BMS, EMS & Switchgears & Bidder should have supervised the erection & commissioning BESS	Bidder to note that separate provenness criteria for integrator and power conditioning system has been specified (refer technical specification provenness criteria chapter A3). As per QR requirement Bidder seeking qualification through 'Route 2 or 3 or 4 or 5' shall associate/ collaborate with Battery Manufacturer who has manufactured and supplied 3.6 MW (or higher) cumulative capacity with 1.2 MW (or higher) single largest grid interactive battery energy storage capacity which should have been in successful operation for at least six (6) months prior to the date of techno-commercial bid opening.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV
PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING
DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 2 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
				Bidder to refer revised DJU format.
4.	1.1 Route-1		We at Exide are intending to bid through Route 4. Exide would bid and would have technical collaboration with East Penn, USA who are the manufacturers of Ultra Batteries. Ultra Batteries have been used in various energy storage projects successfully as stipulated in the technical qualifying criteria of the tender and these projects have been executed by Ecoult, Australia, a 100% subsidiary of East Penn, USA. As Route 4 is further linked with Route 1, we at Exide request NTPC to consider above as Exide has a formal technical collaboration with East Penn, USA for manufacturing Ultra Batteries in India which meet the technical qualifying criteria mentioned in the clause no. 1.0 of the tender.	As per QR requirement Bidder seeking qualification through 'Route 2 or 3 or 4 or 5' shall associate/ collaborate with Battery Manufacturer who has manufactured and supplied 3.6 MW (or higher) cumulative capacity with 1.2 MW (or higher) single largest grid interactive battery energy storage capacity which should have been in successful operation for at least six (6) months prior to the date of techno-commercial bid opening. Bidder to refer revised DJU format.
5.	1.1 Route-1	TECHNICAL CRITERIA: Grid interactive battery energy storage system(s) of cumulative installed capacity of 3.6 MW or higher, out of which at least one grid interactive battery energy storage system	Kindly consider for reducing BESS capacity for Successful operation .	The bidder shall meet the stipulated requirement as per the existing QR provision.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 3 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02**CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)**

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
		should be of 1.2 MW capacity or higher		
6.	1.5 Route-5	General Query	Bidders seeking to bid through route 5, can do association /collaboration with more than 1 agency meeting Technical requirement at Clause 1.1 i.e. Bidders are allowed to do more than 1 deed of joint undertaking	As per QR requirement Bidder seeking qualification through 'Route 2 or 3 or 4 or 5' shall associate/ collaborate with Battery Manufacturer who has manufactured and supplied 3.6 MW (or higher) cumulative capacity with 1.2 MW (or higher) single largest grid interactive battery energy storage capacity which should have been in successful operation for at least six (6) months prior to the date of techno-commercial bid opening. Bidder to refer revised DJU format.
7.	1.0 Technical Criteria	General query	Is it to be interpreted that it is mandatory to tie up with a manufacturer of energy storage systems as this seems to be the only difference between clause 1.1, 1.2, 1.3 and 1.4?	As per QR requirement Bidder seeking qualification through 'Route 2 or 3 or 4 or 5' shall associate/ collaborate with Battery Manufacturer who has manufactured and supplied 3.6 MW (or higher) cumulative capacity with 1.2 MW (or higher) single largest grid interactive battery energy storage capacity

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 4 OF 18

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
				which should have been in successful operation for at least six (6) months prior to the date of techno-commercial bid opening. Bidder to refer revised DJU format. Bidder to note that for integrator separate provenness requirement has been specified (refer technical specification provenness criteria chapter A3).
8.	1.1 Route-1	General query	We require the following clarification from your end. A foreign Battery OEM having both the battery technologies and meeting the eligibility criterion with both the technologies; can they bid directly with one technology (like Lead acid) and through Indian partner/s with other technology (say li-ion). Kindly provide clarification. Your early response will be appreciated.	In case, Battery Manufacturer is not participating directly, in that case battery manufacturer (irrespective of technology) can associate/collaborate with one or more bidders.
9.	1.0 Technical Criteria	General query	In case of collaboration, whether a same Battery OEM (with same technology) supplier can collaborate with two or more bidders. In case of collaboration, whether a Battery OEM (with different technology) supplier can collaborate with two or more bidders.	In case, Battery Manufacturer is not participating directly, in that case battery manufacturer (irrespective of technology) can associate/collaborate with one or more bidders.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 5 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02**CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)**

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
10.	1.0 Technical Criteria	General query	Does the technical collaboration have to be with Battery manufacturers only? Can you consider allowing technical collaboration with Solution Providers who are not battery manufacturers as well and cannot participate on their own in India.	As per QR provision association/collaboration shall be only with battery manufacturer.
11.	1.0 Technical Criteria	General query	Is Bidder allowed to make the Joint Deed Agreement with more than 1 associate/collaborator?	If bidder proposes only one battery technology to meet the technical requirement as per specification, only one such DJU with single battery manufacturer shall be acceptable. However, in case Bidder proposes an integrated solution which is combination of two different battery technologies from two different manufacturers so as to meet the technical requirements as per specification, then Bidder has to necessarily submit two separate DJU with two different battery manufacturer. Bidder to refer revised DJU format.
12.	1.5 Route-5	General query	Please clarify and confirm the following scenario in case, Bidder opting Two (2) associate/collaborator (A1 & B1): 1. If, A1 disqualifies and B1 qualifies in the technical bid evaluation then the bid should not be rejected as B1 is qualifying. 2. If A1 and B1 both qualifies in the technical bid evaluation then bidder	If bidder proposes only one battery technology to meet the technical requirement as per specification, only one such DJU with single battery manufacturer shall be acceptable. However, in case

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV
PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING
DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 6 OF 18

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
			should be allowed to choose amongst A1 or B1 for execution of the project.	Bidder proposes an integrated solution which is combination of two different battery technologies from two different manufacturers so as to meet the technical requirements as per specification, then Bidder has to necessarily submit two separate DJU with two different battery manufacturer. Bidder to refer revised DJU format.
13.	1.1 Route-1	Bidder seeking qualification through 'Route 2 or 3 or 4 or 5' shall furnish, along with the bid, an undertaking jointly executed by him and his <u>associate (qualified battery manufacturer)</u> as per NTPC format enclosed in the bidding documents for successful performance of the part of the contract for which he is associated. The deed of	can we have association/collaboration with 2 or 3 parties satisfying the criteria in 1.1 Route 1. please clarify	As per QR requirement Bidder seeking qualification through 'Route 2 or 3 or 4 or 5' shall associate/ collaborate with Battery Manufacturer who has manufactured and supplied 3.6 MW (or higher) cumulative capacity with 1.2 MW (or higher) single largest grid interactive battery energy storage capacity which should have been in successful operation for at least six (6) months prior to the date of techno-commercial bid opening.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
		joint undertaking (DJU) shall be submitted along with the bid, failing which the bidder shall be disqualified and his bid shall be rejected. Further, in case of award, the <u>associate / collaborator</u> will be required to furnish an On Demand Bank Guarantee for a value of 2% (two percent) of Contract Price in addition to the contract performance security to be provided by the bidder as per NTPC format.		If bidder proposes only one battery technology to meet the technical requirement as per specification, only one such DJU with single battery manufacturer shall be acceptable. However, in case Bidder proposes an integrated solution which is combination of two different battery technologies from two different manufacturers so as to meet the technical requirements as per specification, then Bidder has to necessarily submit two separate DJU with two different battery manufacturer. Bidder to refer revised DJU format.
14.	1.1 Route-1	The reference grid interactive battery energy storage system of 1.2 MW or higher capacity must have been in successful operation for at least six (6) months prior to the date	If the collaborator has experienced but not in last 6 months, will he eligible to participate. Kindly consider it for last 1-1.5 years.	Document is clear on the subject. The reference grid interactive battery energy storage system of 1.2 MW or higher capacity must have been in successful operation for at least six (6) months prior to the date of techno commercial bid opening

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 8 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02**CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)**

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
		of techno commercial bid opening		
15.	(a) of “Notes of clause 1.0”	Further, in case of award, the associate / collaborator will be required to furnish an On Demand Bank Guarantee for a value of 2% (two percent) of Contract Price in addition to the contract performance security to be provided by the bidder as per NTPC format.	Can BG amount be a modified to a 2% of scope of supply/work of collaborator rather than contract price?	The bidder is to comply with tender document requirement.
16.	(a) of “Notes of clause 1.0”	Bidder seeking qualification through ‘Route 2 or 3 or 4 or 5’ shall furnish, along with the bid, an undertaking jointly executed by him and his associate (qualified battery manufacturer) as per NTPC format enclosed in the bidding documents for successful performance	When the Bidder is submitting the Bid security and Performance Gurantee, we request NTPC to waive off requirement of Demand Bank Gurantee of 2% of contract price to be provided by the collaborator.	The bidder is to comply with tender document requirement.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV
PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING
DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 9 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02**CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)**

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
		of the part of the contract for which he is associated. The deed of joint undertaking (DJU) shall be submitted along with the bid, failing which the bidder shall be disqualified and his bid shall be rejected. Further, in case of award, the associate / collaborator will be required to furnish an On Demand Bank Guarantee for a value of 2% (two percent) of Contract Price in addition to the contract performance security to be provided by the bidder as per NTPC format.		
17.	(a) of "Notes of clause 1.0"		As Exide is bidding through Route 4, we shall be submitting the Joint Deed of Undertaking too. With reference to Joint Deed of Undertaking, we at Exide request that the BG amount of 2% of the total value of contract , be exempted as our collaborator is based out of USA ; we, the	The bidder is to comply with tender document requirement.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 10 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02**CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)**

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
			bidder are based in India and are already submitting the Contract performance security @ 10%.	
18.	(a) of "Notes of clause 1.0"		We would also request that the JDU should not have any financial implication for the foreign collaborator and should be limited 10% contract performance security to be submitted by us (Exide). In case it is not possible for NTPC waive off the 2% BG for the foreign collaborator, the clause no.2 of JDU format should be modified suitably to restrict the liability of the foreign collaborator within 2% of the contract value. As such the sentence (7th line of cl.no.2 of JDU format) starting with "Further if the Employer sustains against the Associate" should read as "Further if the Employer sustains any loss or damage on account of any breach of the contract in respect of battery system, we the Associate/Collaborator and Bidder jointly and severally undertake to promptly indemnify, and pay such loss/damages, restricted to 2% of the contract value for the foreign Collaborator, caused to the Employer on its written demand without any demur, reservation, contest or protest in any manner whatsoever. This is suggested since the cl.no 1 and cl.no 2 of the JDU format are open ended and cannot be accepted.	The bidder is to comply with tender document requirement. Bidder to refer revised DJU format.
19.	Financial QR 2.1.1		Does not meet turn over financial criteria and requested to re-consider the financial criteria based on absolute value of net	The bidder is to comply with tender document requirement.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 11 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02**CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)**

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
			worth of more than 25% of the contract value rather than turnover.	
20.	Financial QR 2.2.1	The average annual turnover of its Associate/ Collaborator, should not be less than INR 840 Million (Indian Rupees Eight Hundred Forty Million Only) or in equivalent foreign currency, during the preceding three (3) completed financial years as on the date of techno-commercial bid opening.	Our understanding for the collaborator is that it is a qualified battery manufacturer for which this clause is addressed to. Kindly confirm.	Bidder's understanding is correct.
21.	Financial QR 2.2.1	The average annual turnover of its Associate/ Collaborator, should not be less than INR 840 Million (Indian Rupees Eight Hundred Forty Million Only) or in equivalent foreign currency, during the preceding three (3) completed financial years as on the date of	Suggest to remove this clause and allow for fulfilment of financial requirements through lead bidder's financial capabilities	The bidder is to comply with tender document requirement.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 12 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02**CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)**

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
		techno commercial bid opening.		
22.	1.0 Technical Criteria	General query	ABB has executed Energy Storage projects in consortium with Samsung. These projects have been executed in Australia by ABB Australia and Samsung SDI Korea. ABB Australia is a full owned subsidiary of ABB Group. Under the current QR requirement, there is no provision for the BESS supplier who has executed the projects in consortium. Request NTPC to give consideration to projects that have been executed under consortium with battery manufactures.	Bidder to comply with the provision as per Note (d) for clause 1.0 The bidder is to comply with QR requirement
23.	1.1 Route-1	The bidder should have manufactured, supplied, installed/ supervised installation and commissioned/ supervised commissioning of grid interactive battery energy storage system(s) of cumulative installed capacity of 1.9 MW or higher, out of which at least one grid interactive battery energy storage system should be of 0.6 MW	Please clarify if the BESS supplier's reference projects executed in consortium with battery supplier can be used to qualify for this project. 1. If yes, then should the BESS supplier and battery supplier form a consortium to support the EPC through Route 5 option? 2. Also if consortium is allowed then should there be a lead partner in the consortium. 3. Will both the parties in the consortium will be jointly and severally liable to the contract?	As per QR requirement, consortium is not allowed. Bidder seeking qualification through 'Route 2 or 3 or 4 or 5' shall associate/ collaborate with Battery Manufacturer who has manufactured and supplied 3.6 MW (or higher) cumulative capacity with 1.2 MW (or higher) single largest grid interactive battery energy storage capacity which should have been in successful operation for at least six (6) months prior to the date of techno-commercial bid opening.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 13 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02**CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)**

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
		capacity or higher. The reference grid interactive battery energy storage system of 0.6 MW or higher capacity must have been in successful operation for at least six (6) months prior to the date of techno-commercial bid opening.		Bidder to refer revised DJU format.
24.	1.5 Route-5	The bidder should have executed at least one (1) Electrical Sub-station of 33kV or above voltage level, consisting of equipments such as 33kV or above voltage level circuit breakers and power transformer, either as developer or as EPC Contractor which must be in successful operation for at least one (1) year prior to the date of techno-commercial bid opening.	Kindly extend the successful executed period for 1 to 2 Years.	The bidder is to comply with QR requirement.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 14 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02**CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)**

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
25.	1.5 Route-5	The bidder should have executed at least one (1) Electrical Sub-station of 33kV or above voltage level, consisting of equipments such as 33kV or above voltage level circuit breakers and power transformer, either as developer or as EPC Contractor which must be in successful operation for at least one (1) year prior to the date of techno-commercial bid opening.	We are in business of construction of Solar PV Power Projects on EPC basis. As part of Solar Project, we have constructed switchyards for 33 KV and above voltage level, consisting of equipments such as 33kV or above voltage level circuit breakers and power transformer. Please confirm that the construction experience of 33 KV and above switchyards in solar projects which are operational for more than 1 year shall meet the qualification criteria specified under Route 5 (ii).	Construction of solar plant switchyard of 33kV or above voltage level shall meet the qualification criteria subjected to meeting the other requirement as per QR clause 1.5 Route-2 (ii).
26.	1.5 Route-5	1.4 Route 4: The Indian Bidder should have technical collaboration agreement or should be the Battery Manufacturer. 1.5 Route 5: (i) The bidder should have executed in the last ten (10) years an	What is the difference between route 4 and route 5. As per route 4, the bidder should have collaboration with manufacturer and as per route 5, EPC contractor should have collaboration with manufacturer. Please clarify the difference	Document is clear on the subject. The bidder is to comply with QR requirement.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 15 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
		of techno-commercial bid opening. AND (ii) The bidder should have executed at least one (1) Electrical for at least one (1) year prior to the date of techno-commercial bid opening. The works per 'Note (a) for Clause 1.0' below.		
27.	1.5 Route-5	Whether Joint Venture/consortium permitted: NO	Participation form Consortium / JV would provide wider participation from the market participants. In other ESS RFPs also, JV /consortium are allowed to participate. We request NTPC to allow JV/consortiums to participate in this Tender.	The bidder is to comply with QR requirement.
28.	1.5 Route 5 &	The bidder should have executed in the last ten (10) years an industrial project either as	Please note that the as per the existing TBCB (tariff based competitive bidding) model (for transmission sector) adopted by the Ministry of Power, Govt. of India, the projects are floated in name of a Special Purpose Vehicle (SPV). The developers are	The bidder is to comply with QR requirement.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 16 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
	Notes for Clause 1.0: (d)	developer or as EPC Contractor in the area of power/ steel/ oil and gas/ petro-chemical/ fertilizer and/ or any other process industry..... & Note 1.0(d): Projects executed by Bidder's group company, Holding Company or Subsidiary Company shall not be considered as Bidder's experience for meeting the QR.	bidding for these projects and after the successful bidder is selected the SPV is to be acquired by the bidding entity and SPA (Share Purchase Agreement) & TSA (Transmission Service Agreement) needs to be signed. The TSA is signed by the SPV with Long Term Transmission Customers (LTTC) for providing the services for duration of the contract (i.e. 35 Years after the construction of the project) Hence as a developer all the projects under TBCB model in India are executed under the SPV mode only. The note 1.0 (d) is restrictive in nature for the developers as no developer operating in transmission sector in India under TBCB model will be able to qualify. You will appreciate that the experience of developers of building & operating assets (35 years) We request NTPC to review the qualification requirements applicable for developers so as to enable them to participate in the bidding process for BESS.	
29.	Notes for Clause 1.0: (d)		As per this technical QR, for bidders to qualify through route 2,3,4 and 5, bidders have to associate with agency meeting technical requirement of clause 1.1 (route 1). As per definition of	As per QR requirement Bidder seeking qualification through 'Route 2 or 3 or 4 or 5' shall associate/ collaborate with Battery Manufacturer who has manufactured and supplied 3.6

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 17 OF 18

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

Sl. No.	QR Clause No	QR provisions	Bidder Query	NTPC Reply
			Clause 1.1, it is meant only for a battery manufacturer who should have also delivered complete battery energy storage system. We request that this condition shall be modified as -For bidders to qualify through route 2, 3, 4 & 5, they shall associate with agency meeting technical requirement under clause 1.1 in terms of required installation capacities. However, the agency can be a battery manufacturer or a solution provider. Globally, most battery manufacturers' scope is limited to supplying battery/BMS. Other components of BES are engineered/supplied by solution providers who delivers the overall solution. We request NTPC to look into this clause. Further, we request NTPC to consider experience of group companies/ subsidiaries/holding company as bidder's experience. As such, bidders shall be submitting DJUs for associate/collaborator, battery manufacturer, which shall ensure stake involvement of all parties.	MW (or higher) cumulative capacity with 1.2 MW (or higher) single largest grid interactive battery energy storage capacity which should have been in successful operation for at least six (6) months prior to the date of techno-commercial bid opening. Bidder to refer revised DJU format. Bidder to note that for integrator, separate provenness requirement has been specified (refer technical specification provenness criteria chapter A3). Bidder to comply with the provision as per Note (d) for clause 1.0.
30.	Notes for Clause 1.0: (d)	d. Projects executed by Bidder's group company, Holding Company or Subsidiary Company shall not be considered as Bidder's experience for meeting the QR.	d. Projects executed by Bidder's group company, Holding Company or Subsidiary Company for in house demo/Pilot shall not be considered as Bidder's experience for meeting the QR.	Bidder to comply with the provision as per Note (d) for clause 1.0.

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLAND

BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION No.1 TO COMMERCIAL BIDDING DOCUMENTS (QR)

DOCUMENT NO: RE-CS-5728-004(B)-9-CLRF.02

PAGE 18 OF 18

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
1.	A-1 of Sec-VI	7 of 255	5.0	BESS INTERCONNECTION POINT BESS will be interconnected with 33KV switchgear located at 17 MW Solar PV Project side. Bidder scope includes 33kV Switchgear along with interconnecting 33kV cable feeders to 17MW Solar PV Plant main polling switchgear with all associated civil and electrical works required for interfacing as indicated in tender drawing no. 5728-004-POE-A-001.	Bidder understand from the SLD that there EMS controller needs to talk with Solar SCADA & Load & A&N Electricity department(LDC). Please let us know, how we will be getting load details .If there is delay in SCADA/load/LDC then BESS should not be responsible i.e response time of 1 sec should be calculated from the time when it gets communication signal from sources. Also, typically we take signal from the interconnecting points (if that's communicable) . In that case there are two incoming feeder from solar , two incoming feeder for BESS, two outgoing feeder for load i.e EMS controller needs to talk with all this interconnecting points (max 6 feeders in total)	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
2.	A-1 of Sec-VI	7 of 255	5.0	BESS INTERCONNECTION POINT BESS will be interconnected with 33KV switchgear located at 17 MW Solar PV Project side.Bidder scope includes 33kV Switchgear along with interconnecting 33kV cable feeders to 17MW Solar PV Plant main polling switchgear with all associated civil and electrical works required for interfacing as indicated in tender drawing no. 5728-004-POE-A-001.	1) The SLD indicates that after BESS PCS we need t directly interconnect to 33 kV line . The industry max PCS size available is 2 MW , so for 6 MW requirement minimum 3 interconnection point/feeder might be required - Please allow for the same .Else, we should be given liberty to create 11 kV internal bus and the step-us to 33 kV 2) Can we have DC coupled design for the required application or AC coupled design is mandatory	1) The scheme provided in Tender SLD is typical configuration. Bidder to adopt any suitable configuration considering available industrial PCS and transformer. Bidder to refer the note (**) in tender drawing no. 5728-004-POE-A-001 (rev-B). 2) DC Coupled design not acceptable. Bidder to comply with technical specification requirement.
3.	A-1 of Sec-VI	7 of 255	7.0	Water & Power Requirement during construction	Bidder understand that water & power might be available at cost - Please clarify IF we need to create the sources for power & water then please let us know what are the option available a) From where we can taken power b) From where we can take water or we need to establish de-salination plant also for our requirement	Water and power requirement during construction and O&M stage needs to be arranged by the Bidder.
4.	A-1 of Sec-VI	7 of 255	5.0	Bidder scope includes 33kV Switchgear along with interconnecting 33kV cable feeders to 17MW Solar PV Plant main polling switchgear	Kindly provide the location of 17MW Main switchgear room for estimation of 33KV interconnecting cable from 33KV BESS switchgear to existing 17MW Main switchgear since same is not available in tender drawing 5728-004(B)-POC-A001, REV.B. If same is not available then kindly provide the 33KV cable route length to be considered for the estimation purpose at bidding stage. Further also tell us the distance of CMCS room from the BESS control room building for estimation of OFC cables.	17MW Main switchgear and CMCS room shall be within Metering and Control Room Building area. Tentative location of Metering and control Room are marked in Vicinity Map tender drawing 5728-004(B)-POC-A001, REV.B.
5.	A-1 of Sec-	7 of 255	5.0	BESS INTERCONNECTION POINT BESS will be interconnected with 33KV switchgear located at 17 MW Solar PV Project	Kindly let us know the distance between proposed BESS 33KV control room and 33KV switchgear located at 17 MW Solar PV for calculation cable length and cost	17MW Main switchgear shall be located within Metering and Control Room Building area. Tentative location of Metering and control Room and BESS area

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS
BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9

CLARIFICATION NO-1 To TECHNICAL SPECIFICATIONS (SECTION-VI)
DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01

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PAGE 1 OF 36

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
	VI			side.Bidder scope includes 33kV Switchgear along with interconnecting 33kV cable feeders to 17MW Solar PV Plant main polling switchgear.	for implementing this connection.	are marked in Vicinity Map tender drawing 5728-004(B)-POC-A001
6.	A-1 of Sec-VI	7 of 255	2.2 (2)	Mandatory Spares: PCS	For repairs to be carried during O&M period, cards/IGBT and other electrical and electronic accessories are already there, there is no requirement of complete PCS unit as spare, Request to kindly remove this requirement.	Please refer, amendment at S.No-4 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for revised mandatory list.
7.	A-1 of Sec-VI	6 of 255	1.0		Distance between 17MW solar plant and BESS	BESS shall be located inside 17MW Solar plant boundary. Tentative location BESS are marked in Vicinity Map tender drawing 5728-004(B)-POC-A001
8.	A-1 of Sec-VI	7 of 255	5.0	Bidder scope includes 33kV Switchgear along with interconnecting 33kV cable feeders to 17MW Solar PV Plant main polling switchgear with all associated civil and electrical works required for interfacing as indicated in tender drawing no. 5728-004(B)-POE-A-001.	CMES understand that only 2 Nos of 33kV breaker feeders for cable termination are to be considered in scope. Please confirm.	2 nos of 33kV feeders needs to be considered for interconnection with solar PV plant 33kV switchgear as shown tender drawing 5728-004-POE-A-001 (rev-B). Bidder to comply with technical specification requirement.
9.	A-1 of Sec-VI	7 of 255	5.0	BESS will be interconnected with 33KV switchgear located at 17 MW Solar PV Project side. Bidder scope includes 33kV Switchgear along with interconnecting 33kV cable feeders to 17MW Solar PV Plant main polling switchgear with all associated civil and electrical works required for interfacing as indicated in tender drawing no. 5728-004-POE-A-001.	Please clarify Bidder scope includes 33kV Switchgear at BESS along with interconnecting 33kV cables to 17MW Solar PV Plant main polling switchgear. OR Bidder scope includes 33kV Switchgear along with interconnecting 33kV cables & it's feeder at 17MW Solar PV Plant main pooling switchgear.	Bidder scope includes 33kV Switchgear at BESS end along with interconnecting 33kV cables to 17MW Solar PV Plant 33kV main switchgear including associated cabling and termination work. Refer tender drawing 5728-004-POE-A-001 (Rev-B) for better clarity. Bidder to comply with technical specification requirement.
10.	A-1 of Sec-VI	7 of 255	7.0	MNRE Clearances - To be facilitated by bidder	We request you to clarify and define on clearances required from MNRE from Energy storage solution perspective.	Clearance if required for BESS system from MNRE to be facilitated by Bidder.
11.	A-1 of Sec-VI	7 of 255	7.0	MNRE & Chief Electrical Inspector Clearance	Bidder understand the clearnces are only for technichal approval purpose and no commercial/exemption etc are related to it . If any exemptions are allowed from MNRE for this project and we need to take approval/clearance for the same then please let us know	Clearances if required for BESS system from MNRE shall be facilitated by Bidder.
12.	A-1 of Sec-	7 of 255	7.0	05- MNRE Clerance- To be facilitated by bidder	Please detail the clearances required from MNRE	Clearances if required for BESS system from MNRE to be facilitated by Bidder.

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
	VI					
13.	A-2 of Sec-VI	8 of 255	1.0	Comprehensive Operation and Maintenance (O&M) works of BESS system for a period of twenty five (25) years from date successful completion of trial run....	Is NTPC flexible to discuss reducing the commitment from currently asked for 25 years to 10 years? Battery Energy Storage System technologically is changing very drastically and likely to improve a lot in the next 10 years and the present system might be outdated and it does not make sense to include the high cost for 25 years.	Bidder to comply with technical specification requirement.
14.	A-2 of Sec-VI	8 of 255	1.0	The BESS shall comprises of Solar plant generation forecasting & scheduling system/services, ...	Please consider Solar Plant Generation Forecasting as the scope & responsibility of Solar PV plant vendor instead of the BESS vendor. Solar Plant vendor can share the same with BESS vendor.	Bidder to comply with technical specification requirement.
15.	A-2 of Sec-VI	8 of 255	1.0	 integration with the 17MW Solar PV Plant and existing ac grid, ...	Please share details of equipment of 17MW Solar PV Plant so that the additional equipment required for necessary integration can be assessed.	Required details are already include in the tender document. Actual configuration details of 17MW Solar Plant shall be shared with the successful Bidder during detail engineering stage. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
16.	A-2 of Sec-VI	10 of 255	1.0	Decommissioning and disposal of plant.	Please elaborate Decommissioning and disposal of plant	Please refer clause 4.0 Chapter E-3 for clarity on the subject.
17.	A-2 of Sec-VI	12 of 255	2.1	Submission of Simulated study of BESS with PV plant and Grid as per specification for smoothening ,energy shift operation etc. all possible operating condition	Please specify the expectations from Simulated Study of BESS with PV Plant and Grid	Technical Specification Document is clear on the subject. With simulation study operational & functional requirement as outline in chapter B-1 clause-1.0 needs be demonstrated.
18.	A-2 of Sec-VI	17 of 255	6.0	Evaluation criteria	It is mentioned that the evaluation criteria will be, Based on life cycle cost (NPV) for 25 years (Initial cost, O&M, Replacement, Disposal & Energy Losses) with Discount Rate of 12% & Tariff of 10 INR/kWh with Battery Utilization factor of 80%. Please clarify what is meant by Battery Utilization Factor and elaborate with an example on the Evaluation Criteria.	Battery Utilization factor shall be used for Bid evaluation, LD calculation during PG test & O&M period. Bidder to refer Bid evaluation criteria as outline in clause-6.0, chapter-A2.
19.	A-2 of Sec-VI	13 of 255	2.2 (2.)	Mandatory Spares - 01 no of PCS as spare.	Please confirm if the PCS modular in design, one module can be procured as spare irrespective of the capacity.	Please refer, amendment at S.No-4 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for revised mandatory list.

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
20.	A-2 of Sec-VI	17 of 255	6.0	Evaluation criteria	1) Please confirm if the 80% of the battery capacity is 80% of 24MWh and not the design capacity which maybe sized higher (now or at a later stage) to fulfil the energy requirement. 2) Also, if the battery degradation factor of 80% is considered for evaluation of revenue loss, will there be a separate evaluation for bidders who propose a higher battery capacity at an early stage leading to an increased output of ~25% in the beginning.	Bidder to comply with technical specification requirement. Bidder to refer Bid evaluation criteria as outline in clause-6.0, chapter-A2.
21.	A-2 of Sec-VI	8 of 255	1.0	The BESS shall comprises of Battery Storage system, Battery Management System (BMS), Energy Management System (EMS) & SCADA, Power Conditioning System (PCS), Protection system, Solar Plant Generation Forecasting & scheduling System/Service, Communication System, HT & LT System, Auxiliary power system, Monitoring & Control system and all other associated materials and accessories necessary for trouble free operation and maintenance of the BESS system.	Please clarify SCADA , Solar plant generation , Forecasting & scheduling /service Bidder understand solar SCADA and solar plant generation , forecasting & scheduling development is not under bidder's scope and our controller should be able to only take the respective commands and do the requisite application required Solar SCADA and solar plant generation , forecasting & scheduling , if its under scope of bidder's then there might be issue in actually integrating our solar SCADA and solar plant generation , forecasting with actual solar equipments of 17 MW solar PV . Our controller can easily take /communicate with existing solar SCADA and solar plant generation , forecasting and scheduling service but to actually generate these data from solar PV (which is under scope of other party) might create an issue. IF solar plant generation , forecasting & scheduling is only to link with some existing communicable platform then it might not be an issue	Solar Plant SCADA is not included in the BESS Bidder scope. Supply of Solar plant generation forecasting & scheduling system and SCADA for BESS are in the scope of the BESS Bidder. Required details configuration of 17MW Solar Plant shall be shared with the successful Bidder during detail engineering stage. Bidder to comply with technical specification requirement.
22.	A-2 of Sec-VI	13 of 255	2.2 (2.)	Mandatory Spares	DC battery system mandatory parts not mentioned -Though 25 years O&M is in our scope , so we will be definetly needs to have mandatory spares at site for battery but as for other items numbers were mentioned and numbers for battery was not mentioned , so asked	Mandatory spares list as provided are the minimum requirement. Bidder to include the required spares quantity for DC battery system and other BESS equipments considering 25 years of Comprehensive O&M for maintaining the guaranteed performance parameters of BESS system.
23.	A-2 of Sec-VI	13 of 255	2.2	Grid interfacing so as to meet statutory requirements and comply with CERC code. All required hardware (AI & DI cards) etc. required for extending data to Load Dispatch Centre (LDC).	We request NTPC to clarify mode of sending data to LDC and type of data to be sent.	Same shall be finalized during details engineering stage. Bidder to refer clause-14.0, chapter-C7 for clarity on the subject.
24.	A-2 of Sec-	17 of	6.0	Evaluation Criteria The evaluation shall be made on life cycle cost	Request NTPC to clarify ; What if the Replacement year is achieved	If the replacement year is achieved shorter than the declared replacement year, in that case payment related

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
	VI	255		basis (Capex + Opex) for period of 25 years. The Bidder shall quote as per following: a. Initial System Cost which consists of first time supply of equipments, transportation, installation and commissioning including civil works for the BESS plant. b. Year-wise investment cost which includes O&M, replacement and disposal cost year basis for a period of 25 years. c. BESS round trip AC-AC energy conversion efficiency at 33 kV bus of main switchgear of solar PV Plant	shorter/longer from declared replacement ?	to replacement shall be made as per declared replacement year. If replacement year is achieved longer than the declared replacement year, in that case payment related to replacement shall be made at the actual replacement year.
25.	A-2 of Sec-VI	12 of 255	2.1	Battery system sizing calculation for all different functions	A sizing calculation based on the capacity requirement of 28MWh at the BOL will be furnished. Please furnish a sample calculation of BESS for different functions for reference.	All the required calculation of BESS system for meeting technical specification requirement are in the scope of the Bidder.
26.	A-2 of Sec-VI	12 of 255	2.1	Submission of Simulated study of BESS with PV plant and Grid as per specification for smoothening , energy shift operation etc. all possible operating conditions.	The possible operating scenarios may please be elaborated.	Technical Specification Document is clear on the subject. With simulation study operational & functional requirement as outline in chapter B-1 clause-1.0 needs be demonstrated.
27.	A-2 of Sec-VI	8 of 255	1.0	The BESS shall comprises of Battery Storage system, ... Solar Plant Generation Forecasting & scheduling System/Service, ... Bidder shall be responsible ...for its integration with the 17MW Solar PV Plant and existing ac grid, ...	1. We suggest Solar Plant Generation Forecasting & scheduling System/Service shall be in scope of PV plant vendor and related information is shared with BESS on communication interface. 2. Would request for interface details for integration with the 17MW Solar PV Plant and existing AC grid	1) Bidder to comply with technical specification requirement. 2) Bidder to refer clause-1.0, chapter-B1 for clarity on the subject. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01
28.	A-2 of Sec-VI	10 of 255	1.0	Decommissioning and disposal of the plant	NTPC may please elaborate.	Please refer Chapter E-3 for clarity on the subject.
29.	A-2 of Sec-VI	17 of 255	4.0	BESS will be interconnected with 33KV switchgear located at 17 MW Solar PV Project side.Bidder scope includes 33kV Switchgear along with interconnecting 33kV cable feeders to 17MW Solar PV Plant main polling switchgear	Request NTPC to provide cable route length to be considered for 33kV cable interconnecting BESS & 17MW Solar PV plant. And also provide details of any special crossings like road, bridges, culverts etc. We presume that only cable termination in Solar PV plant HT switchgear is in	BESS shall be located inside 17MW solar plant boundary. Location of 17MW solar plant side 33kV switchgear shall be inside metering & control room. Tentative location of Metering and control Room and BESS are marked in Vicinity Map tender drawing

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
				with all associated civil and electrical works required for interfacing as indicated in tender drawing no. 5728-004-POE-A-001.	the scope of bidder and the 33kV feeder with metering & protection is not envisaged as the scope of bidder. Please confirm.	5728-004(B)-POC-A001. Only cable laying and termination for BESS feeders are included in the BESS contractor scope Please refer tender drawing 5728-004(B)-POE-001 (rev-B) for better clarity
30.	A-2 of Sec-VI	8 of 255	1.0	BESS system must be able to communicate with Load Dispatch Centre and control both battery system and PV plant system as per LDC requirement.	The BESS system will communicate with the LDC and pass over the PV plant control set points from LDC to SCADA of PV plant. But the actual control of the inverters of PV plant will not be in the Bidder's scope as the PV plant will be installed, and operated by other Parties. Kindly confirm.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject. Bidder to comply with technical specification requirement.
31.	A-2 of Sec-VI	13 of 255	2.2 (2)	Mandatory PCS: Quantity = 1 Spares	Please confirm if the PCS (1 unit*) is needed as spares because electronic cards, IGBTs, fuses etc. are again asked as mandatory spares (5% of total population). *1 unit: If 6 numbers of 1 MW PCS are supplied, 1 unit means 1 MW PCS. If 12 numbers of 0.5 MW PCS are supplied, 1 unit implies 0.5 MW PCS.	Please refer, amendment at S.No-4 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for revised mandatory list.
32.	A-2 of Sec-VI	14 of 255	2.3	Site Preparation: Minor Levelling & generally graded land for the battery energy storage system area would be provided by NTPC. Roads & Pathways : Construction of Main road, service roads, etc as required for O&M, erection and crane movements	1. What will be the extent of levelling and grading required for preparation of land? 2. Since the land is part of solar PV plant and will be located inside the premises of solar PV plant boundary,these need not be done by successful Bidder. Please confirm.	Solar EPC bidder will clear the vegetation's, provide minor levelling at BESS yard if required as per direction of Engineer-In-charge. Further land improvement, earth cutting as per proposed layout, compactions, road etc. required to be development by BESS bidder.
33.	A-2 of Sec-VI	15 of 255	2.5	TRAINING OF EMPLOYERS PERSONNEL The bidder shall provide training (free of cost) to the personnel of NTPC for 50 man-days at his manufacturing works, design office and at site for erection, testing ,FAT, commissioning and O&M. Expenses towards travel, lodging, and boarding and other expenses for the personnel shall be borne by NTPC.	Training will be provided on preventive maintenance, Operation of plant, Maintenance of plant. Erection, Testing, FAT, Commissioning will be in the scope of the Bidder and training in these areas will not be provided. Kindly confirm.	Please refer, amendment at S.No-5 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
34.	A-2 of Sec-VI	23 of 255	1.0 (H)	Forecasting & scheduling System:	1) Kindly share the Specifications of Forecasting & scheduling System. 2) Please share the excel format which LDC needs to receive from EMS. Kindly share the Weather station scheme, Sensor & Datalogger details for 17 MW project which needs to be Multi-master to share the data to plant SCADA	1) Forecasting & scheduling System shall meet the CEA regulation. 2) same shall be finalized during details engg stage. Required details configuration of 17MW Solar Plant

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
					and EMS. Please confirm.	shall be shared with the successful Bidder during detail engineering stage. Bidder to comply with technical specification requirement
35.	A-2 of Sec-VI	12 of 255	2.1	Submission of Simulated study of BESS with PV plant and Grid as per specification for smoothening ,energy shift operation etc. all possible operating condition	Is the simulation expected for a 17MW system or is a scaled down version also acceptable	Simulation study shall be provided for 17MW PV with 6MW BESS system.
36.	A-2 of Sec-VI	9 of 255	1.0	Instrumentation & Communication cables and all other communication devices (at both end) required for successful integration with Solar PV plant.	Please clarify on scope of providing instrumentation and communication cables, devices at PV plant end. We propose this to be in scope of contractor executing/delivering PV plant.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
37.	A-2 of Sec-VI	10 of 255	1.0	Decommissioning & disposal of plant	The scope already covers disposal of batteries. In that case, please clarify the point - "Decommissioning & disposal of plant"	Please refer Chapter E-3 clause 4.0 for clarity on the subject.
38.	A-2 of Sec-VI	11 of 255	2.1	Engineering	To be able to simulate BESS with PV and grid as per specification, we request NTPC to provide bidders with load profile on the grid throughout the day (15 mins data) along with PV generation data and DG generation data.	For simulation study PV generation data of existing NTPC 5MW plant are shared with tender document.
39.	A-2 of Sec-VI	13 of 255	2.2	Supplies and associated work	Please clarify - 1. Communication protocol supported by LDC for exchanging data between BESS and LDC. 2. Data required from BESS to LDC 3. Solar PV plant generation and forecasting & scheduling system has been asked as part of deliverables. We believe this shall be in scope of contractor providing/delivering 17MW PV plant. Please confirm.	1) Bidder to refer clause 1.0 (xviii) of chapter-C7 for protocol requirement for BESS system. 2) same shall be finalized during detail engineering stage. 3) BESS Bidder scope
40.	A-2 of Sec-VI	18 of 255	6.0	Evaluation criteria	Tariff to be considered for evaluating revenue loss due to clause 6.0 c) is Rs.10/Kwh. Please confirm.	Bidder's understanding is correct..
41.	A-2 of Sec-VI	16 of 255	2.8	All special equipment, tools and tackles instruments, measuring devices required for the successful conductance of PG test shall be provided by the bidder, free of cost.	Should the contractor provide the PG test equipment to NTPC free of cost or can they be used on returnable basis.	Returnable basis.

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
42.	B-1 of Sec-VI	21 of 255	1.0	Solar Smoothing	What is the time instant at which measurements will be done?	Measurement of power ect for BESS use are in the scope of the BESS bidder. Bidder to comply with technical specification requirement.
43.	B-1 of Sec-VI	23 of 255	1.0	Frequency Regulation	1) Does it mean that Frequency Regulation mode will have to be active in the smoothing mode as well? 2)When in Frequency Regulation mode, the smoothing will also have to be done? Which will have priority? 3) Power Ramp rate in time shifting application is not defined?	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
44.	B-1 of Sec-VI	26 of 255	4.0 (c.)	Labelling of the cells or unit batteries shall include manufacturer's name, cell type, nameplate rating, and date of manufacture, in fully legible characters.	It is mentioned that "Labelling of the cells or unit batteries shall include manufacturer's name, cell type, nameplate rating, and date of manufacture, in fully legible characters." However, Battery cells may not be visible directly in case modules are provided. Please clarify the clause.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject
45.	B-1 of Sec-VI	26 of 255	4.0	General Query	Technology: is Lithium battery technology allowed?	Our specification is battery technology neutral and any battery technology meeting the tender specification requirement are acceptable.
46.	B-1 of Sec-VI	23 of 255	2.0	Rated Discharge AC useful Capacity at PCC-24MWh	The system is to be sized as beginning of life, or should it be sized to meet to grant 24MWh at the end of life? If the requirement of battery size for power smoothing and Time shifting has a Cap of 24MWh.	BESS needs to deliver 24MWh of discharge energy at PCC throughout the service life of 25 Years. Bidder to comply with technical specification requirement.
47.	B-1 of Sec-VI	21 of 255	1.0	B. Energy Time Shift	Time shifting: how such functionality should work is not very clear from the specs. Can we have additional information?	Technical Specification Document is very clear on the subject. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
48.	B-1 of Sec-VI	21 of 255	1.0	General Query	We understand that system is to connected with existing DG grid, is there any frequency profile can be shared for sizing?	Bidder can collect the required data directly from A&N Electricity department Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for frequency regulation requirement.
49.	B-1 of Sec-VI	23 of 255	1.0 (H)	Solar Forecasting	The requirement for solar forecasting and scheduling service in this part of the bid is unclear. The solar power plant generation details will be based on the technology and configuration of the solar power plant designed. The solar generation forecasting can be done only by combining the weather data with the actual power plant configuration and performance data. Request to clarify the requirement for the same.	Required details configuration of 17MW Solar Plant shall be shared with the successful Bidder during detail engineering stage. Bidder to comply with technical specification.

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
50.	B-1 of Sec-VI	21 of 255	1.0	The BESS shall have real time PV power generation forecasting equipment and in built control logic/programming to meet the above requirement.	Please clarify the communication point from where we need to take these datas	Supply of Solar plant generation forecasting & scheduling system shall be in the scope of the BESS Bidder. Bidder to comply with technical specification requirement.
51.	B-1 of Sec-VI	21 of 255	1.0 (A)	BESS shall ensure that the combined Solar PV and BESS output to grid follows targets the 30 minute moving average value of the Solar PV plant output and shall be within the band of $\pm 5\%$ of reference 30 minutes moving average value at any time instant.	To do this applications many a times we might require to charge /discharge the battery with more than 6 MW , so through modelling do we need to take the optimal sie of PCS required to meet this or 6 MW capacity is only the requirement.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
52.	B-1 of Sec-VI	23 of 255	1.0 (F)	BLACK START/ISLAND MODE:-	Real time Load data will be provided by LDC or we need to take from the interconnection of load with 33 kv . Our controller can take the signal but it should be communicable from other end . Also to create micro-grid load power capacity should not be more than our system design , so we need to know what's the load. Also, we understand from SLD that our controller need not to maintain DGs - Please clarify and if within microgrid load is met by DGs then we might need to have the real time DG parameters	No DG system shall be part of micro-grid. Only BESS, Solar PV plant and Local load shall be part of microgrid during black start mode operation. Maximum local load shall be less than rated MW of BESS system. All required measurement (for BESS use) for 33kV and 11kV system are in BESS Bidder scope. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
53.	B-1 of Sec-VI	23 of 255	1.0 (H)	H. SOLAR FORECASTING:- The forecasting & scheduling service shall provide one day prior data and 90 minutes, 15 minutes advance data for intra-day. This system must be able to send the forecasting data as above with Load Dispatch Centre through EMS.	Forecasting through EMS controller to LDC -Please clarify These are two different software's , so sending forecasting data to LDC should not be only through EMS	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
54.	B-1 of Sec-VI	24 of 255	2.0 (6)	BESS Parameters - Guaranteed Min Life Time	Typo Error- It should be min service life as a few technology has replacements	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
55.	B-1 of Sec-VI	24 of 255	2.0 (10)	BESS Parameters - Positive and Negative Ramp Rate	Many instances when ramp rate requirement might be more than 6 MW - For power smoothening we might need to take requirement beyond 6 MW charge/discharge as outliers for calculation	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject
56.	B-1 of Sec-	24 of 255	2.0 (11)	BESS Parameters - BESS design Temperature	A&N has ambient temp less than 40 C . Can the requirement be 45 C as a few technologies have standard ambient temp 45 C design . For 50 C design , we	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
	VI				might change a few things but that should be acceptable	
57.	B-1 of Sec-VI	25 of 255	2.0	Response time: The design of BESS system should be such that it's respond time shall not be more than 1 (one) sec. Response time is the time interval between need for response (a command or grid event or Solar Plant power generation event) is detected by the BESS and the time when power as measured at the grid has attained that level. This shall include all intermediate response time of system components.	Bidder demands that response time should be calculated from the moment when EMS controller gets the signal from solar SCADA/LDC and not from the actual power generation i.e the lag in ccount of PV SCADA/LDC should not be on account of EMS controller	Technical specification is clear on the subject. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
58.	B-1 of Sec-VI	25 of 255	5.0 (f)	History - (Log Book Function):- Monitoring and storing the battery's history parameters and communicating the same to EMS.	BMS storage capacity are less or they might be only fetching real time data. The storing capability for historical data are generally withing EMS controller/SCADA .We will request to give the libertilty for the storage of data within BMS or at EMS controller/SCADA	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
59.	B-1 of Sec-VI	21 of 255	1.0 (A)	In order to facilitate the design of smoothening requirement, the existing 5 MW NTPC- Port Blair PV plant generation output profile has been provided in Annexure-V for reference.	Can NTPC provide historical data on the daily load profile over the last few years with similar or better time resolution as the PV generation data provided in Annexure V (enable better understanding of the ancillary services requirements) ?	For simulation study PV generation data of existing NTPC 5MW plant are shared in tender document.
60.	B-1 of Sec-VI	21 of 255	1.0 (A)	SOLAR GENERATION SMOOTHENING:-	1) Is the 'reference' for the smoothed combined PV+BESS output the 30 minute moving average of the unsmoothed PV output, and if not, what is it? 2) Does 30min smoothing means provision of all relevant ancillary services within a 30min timeframe? -	1) Bidder's understanding is correct. (2) Technical Specification Document is clear on the subject.
61.	B-1 of Sec-VI	21 of 255	1.0 (A)	SOLAR GENERATION SMOOTHENING:-	In case we wish to propose an alternative algorithm for smoothing, are there minimum requirements which the combined PV+BESS output must satisfy ?	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
62.	B-1 of Sec-VI	21 of 255	1.0 (A, B & C)	SOLAR GENERATION SMOOTHENING	Purpose of the smoothing is mentioned is to remove cloud intermittency in the PV output. Does this include intermittency due to rain or any other causes ?	BESS is required to mitigate the intermittent fluctuations of solar power generation due to cloud, rain, tripping of solar inverters or any other causes. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
63.	B-1 of Sec-			General Query	Can NTCP provide prioritization guidelines for battery services, i.e. grid frequency regulation service have higher priority than voltage control than,	Same shall be finalized during detail engineering stage

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
	VI				ramping, than load-shifting. Etc.	
64.	B-1 of Sec-VI			General Query	Does the BESS have priority access to the PV output for charging at times of low PV output ?	Same shall be finalized during detail engineering stage. Generation Scheduling is in Bidder scope.
65.	B-1 of Sec-VI	21 of 255		General Query	Can the BESS charge directly from the grid when the PV plant is down/unavailable/producing insufficiently, as required to maintain a healthy state of charge? (we don't include night time charging except maybe if the PV plant has been unavailable all day)	BESS can be charge from grid for maintaining a healthy state of charge if the PV plant is down/unavailable/producing insufficiently energy.
66.	B-1 of Sec-VI	22 of 255	1.0 (D)	VAR SUPPORT MODE:-	What are the specifications for VAR support (we understand that needs to be provided only where possible).	Technical Specification Document is clear on the subject. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
67.	B-1 of Sec-VI	21 of 255	1.0 (A)	In order to facilitate the design of smoothening requirement, the existing 5 MW NTPC- Port Blair PV plant generation output profile has been provided in Annexure-V for reference. The Bidder must take care all type of intermittency including seasonal at suitable scale in their BESS design.	Can NTPC provide the daily solar PV output profiles from the 5MW plant in Port Blair for the entire period that the plant has been in operation? We received the Annexure V solar generation data, and data for the months listed below are missing. In addition some months do not have information on all days k. June-Dec 2014 l. Limited number of days in April 2014 m. April-Dec 2016 n. No information for 2017 Can NTPC provide a list of all days for which the plant was operating in 2014-2017 and reasons for the days without output (maintenance/weather/etc.)?	Available existing NTPC 5MW plant generation data are shared with tender document.
68.	B-1 of Sec-VI	25 of 255	2.0	BESS PARAMETER: 10) Response time:- Response time of BESS system shall not be more than 1 (one) second. 11) Positive and Negative Ramp Rate: 6MW/Minute for energy time shift application.	As per the definition of response time "Response time is the time interval between need for response (a command or grid event or Solar Plant power generation event) is detected by the BESS and the time when power as measured at the grid has attained that level" which is given as 1 second whereas the ramp rate asked is 6MW/minute. We believe these are contradicting requirements. Please clarify.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
69.	B-1 of Sec-VI	23 of 255	1.0 (H)	Solar PV Plant Generation Forecasting and Scheduling system.	We request NTPC to clarify algorithm for forecasting/ interval for Solar PV Plant Generation Forecasting and Scheduling system.	Bidder to decide the suitable algorithm for forecasting purposes. Please refer clause no 1.0 of Chapter B-1 , Section-VI for actual requirement.

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
70.	B-1 of Sec-VI	22 of 255	1.0 (B & C)	During this mode of operation the BESS shall also mitigate the intermittent fluctuations of solar power generation due to cloud intermittency and the combined Solar PV and BESS output to grid shall lies within $\pm 5\%$ of reference target power at any time instant.	The forecasting & scheduling service has been asked for one day prior, 90 minutes, 15 minutes. We request NTPC to clarify the reference target power $\pm 5\%$ with respect to which above mentioned schedule.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
71.	B-1 of Sec-VI	22 of 255	1.0 (B)	BESS shall ensure that the battery shall be fully charged (subjected to availability of solar insolation) at the end of solar generation hours and shall be able to deliver rated 24MWh energy at PCC with continuous 6MW power (or MW as per grid requirement).	We request NTPC to kindly clarify in order to both charge BESS to full capacity for the specified sizing from solar, and to provide solar smoothing during solar hour, does bidder has to consider BESS size more than the stated capacity to ensure fluctuations can still be absorbed as the BESS reaches 100% SOC.	As per specification requirement the BESS needs to mitigate the solar power intermittence issue during entire solar generation hour and also charge the Battery to deliver rated 24MWh energy at PCC during evening & night. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
72.	B-1 of Sec-VI	22 of 255	1.0 (B)	BESS shall ensure that the battery shall be fully charged (subjected to availability of solar insolation) at the end of solar generation hours and shall be able to deliver rated 24MWh energy at PCC with continuous 6MW power (or MW as per grid requirement)	We understand that maximum continuous load which is to be fed to grid from BESS shall be 6MW power only. NTPC to confirm.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
73.	B-1 of Sec-VI	24 of 255	2.0 (8)	The VAR output of the BESS may be limited based on remaining capacity left after providing real power output.	We understand that 24MWh rating of BESS is of active power only. Since the system is grid interactive, kindly provide the reactive power requirement	BESS needs to operate with operating power factor range of 0.95 lead or lag. Actual requirement of reactive power (MVAR) shall be as per grid condition and grid operator requirement. Bidder to comply with technical specification.
74.	B-1 of Sec-VI	21 of 255	1.0 (A)	SOLAR GENERATION SMOOTHENING:-	Between moving average reference and generation forecast curve, which one to be followed as a reference for solar power smoothening application? Moving average is real time parameter and generally supersedes forecast value.	Technical Specification Document is very clear on the subject. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
75.	B-1 of Sec-VI	21 of 255	1.0 (B)	BESS shall ensure that the battery shall be fully charged (subjected to availability of solar insolation) at the end of solar generation hours and shall be able to deliver rated 24MWh energy at PCC with continuous 6MW power (or MW as per grid requirement)	24MWH should be the overall energy delivered by considering solar intermittency corrections and peak time load support. This point should be clearly defined in the tender. If 24MWH should be delivered only during peak time and if there should be additional capacity to be built in to support solar intermittence, then battery size shall be increased and there is no reference to size this portion of battery.	As per specification requirement the BESS needs to mitigate the solar power intermittence issue during entire solar generation hour and also charge the Battery to deliver rated 24MWh energy at PCC during evening & night. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
						subject.
76.	B-1 of Sec-VI	21 of 255	1.0 (A)	Smoothen action to be carried out by BESS shall be based on moving average algorithm of 30 minutes period. Bidder can also propose other better suitable control algorithm for this application. BESS shall ensure that the combined Solar PV and BESS output to grid follows targets the 30 minute moving average value of the Solar PV plant output and shall be within the band of $\pm 5\%$ of reference 30 minutes moving average value at any time instant.	Please furnish sample calculation for reference.	Technical Specification Document is very clear on the subject. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
77.	B-1 of Sec-VI	22 of 255	1.0 (C)	BESS shall be capable of ramping up or down to a predetermined output level (up to full rated MW power) as set by BESS operator through Energy Management System (EMS). During this mode of operation the BESS shall also mitigate the intermittent fluctuations of solar power generation due to cloud intermittency and the combined Solar PV and BESS output to grid shall lie within $\pm 5\%$ of reference target power at any time instant.	If the BESS is engaged in full power discharge operation, it will be able to dedicate the capacity equivalent to its SOC only to mitigate the fluctuations due to cloud. Please confirm.	As per specification requirement the BESS needs to mitigate the solar power intermittence issue during entire solar generation hour and also charge the Battery to deliver rated 24MWh energy at PCC during evening & night. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
78.	B-1 of Sec-VI	22 of 255	1.0 (B)	BESS shall ensure that the battery shall be fully charged (subjected to availability of solar insolation) at the end of solar generation hours and shall be able to deliver rated 24MWh energy at PCC with continuous 6MW power (or MW as per grid requirement).	1. Battery storage shall be used for freq regulation, smoothen PV output, fill intermittency during solar hours and also deliver 24kWh for 4 hrs during non solar hours. What battery capacity should be kept and how to calculate. 2. Solar Power is also catering A&N distribution load as well as charging battery, battery SOC at end of solar generating hours shall depend on solar insolation.	As per specification requirement the BESS needs to mitigate the solar power intermittence issue during entire solar generation hour and also charge the Battery to deliver rated 24MWh energy at PCC during evening & night. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
79.	B-1 of Sec-VI	23 of 255	1.0 (F)	BLACK START/ISLAND MODE:-	As understood, In case of black start/island mode PCS in combination with EMS will work as microgrid to support local loads and will charge batteries as soon as PV becomes available.	BESS, Solar PV plant and Local load shall be part of micro-grid during black start mode operation. Maximum local load shall be less than rated MW of BESS system. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
						the subject.
80.	B-1 of Sec-VI	21 of 255	1.0	The primary application of BESS for the current Project shall be energy time shifting and smoothing of power output from the Solar PV plant (SPV Plant) due to fluctuations in solar radiation. In addition to the above two application requirement, BESS shall also have feature of manual operation, VAR support, anti-islanding operation, black start operation, frequency regulation operation mode. However, BESS battery sizing and technology selection shall be based on solar generation smoothening and energy time shifting application.	If the sizing and technology selection is based on solar generation smoothening and energy time shifting application, then using the same for other applications will deteriorate the life of the battery. Please clarify the extensiveness of other applications envisaged.	Bidder to comply with technical specification. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject
81.	B-1 of Sec-VI	23 of 255	1.0 (F)	As per requirement BESS shall control the active and reactive power (or power factor) of Solar PV plant by providing required set point to solar PV Inverters and also control (close/trip) the 11kV and 33kV circuit breaker located at solar PV plant end for load control purposes.	For doing the same in inverter level, the solar inverter which is in NTPCs scope shall be compatible for this application. Please confirm.	Solar Inverter will be compatible for application requirement.
82.	B-1 of Sec-VI	26 of 255	4.0	The energy storage system may consist of one or more type of batteries to meet the application requirement.	As per clause B/1.0, page No: 21/255 it is mentioned as "BESS battery sizing and technology selection shall be based on solar generation smoothening and energy time shifting application". Please clarify.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
83.	B-1 of Sec-VI	21 of 255	1.0 (A)	A.Rating is to be ensured for worst possible operating temperature	A) Climate data required to make detailed engineering study but preliminary info shows max temp of 28C during summer. B. The output power production forecast from the array should be provided to the BSES as it depends on panel orientation , number pf operational strings ,geographical distribution not just solar irradiation.	A) Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject. B) Detail of 17MW plant shall be shared with successful bidder during detail engineering stage and O&M stage for forecasting purposes..
84.	B-1 of Sec-VI	22 of 255	1.0 (B)	For energy time shift application the BESS shall time shift the excess Solar PV plant output power and make it available to grid when needed.	This indicates the BESS will need to follow load. no load profile data provided.	Operation of BESS in time shift application mode shall be based on generation scheduling. BESS is grid connected system. Bidder to comply with technical specification requirement. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
						for clarity on the subject.
85.	B-1 of Sec-VI	22 of 255	1.0 (B)	BESS shall ensure that the battery shall be fully charged (subjected to availability of solar insolation) at the end of solar generation hours and shall be able to deliver rated 24MWh energy at PCC with continuous 6MW power (or MW as per grid requirement)	Same comment as above, no load profile provided	Operation of BESS in time shift application mode shall be based on generation scheduling. BESS is grid connected system. Bidder to comply with technical specification requirement. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
86.	B-1 of Sec-VI	22 of 255	1.0 (B)	combined Solar PV and BESS output to grid shall lies within $\pm 5\%$ of reference target power at any time instant.	What is reference target power? No load profile data provided.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
87.	B-1 of Sec-VI	21 of 255	1.0	The BESS shall have real time PV power generation forecasting equipment and in built control logic/programming to meet the above requirement.	Please refer to section B - 1, 1.0 Part - H: Solar Forecasting. It is mentioned that forecasting shall be provided one day prior data and 90 minutes, 15 minutes advance data for intra-day. Please clarify as to what real-time solar forecasting means. Please clarify what the scheme is for solar forecasting usage.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
88.	B-1 of Sec-VI	21 of 255	1.0 (A)	BESS shall ensure that the combined Solar PV and BESS output to grid follows targets the 30 minute moving average value of the Solar PV plant output and shall be within the band of $\pm 5\%$ of reference 30 minutes moving average value at any time instant.	1. The BESS cannot suppress the power deviations (power swings between solar PV and 30-minute moving average) beyond 6 MW. Thus we request you to append this clause with the following. "...subject to the PCS rated capacity of 6 MW." 2. For this application, during sunny days, battery will be charged (as per the algorithm specified) in the morning and the same energy is discharged during the evening time leaving without any energy for evening hours for time shift application. For cloudy and rainy days, the power variations are very high that 30-minute moving average cannot be maintained and the battery will be left without energy in the evening hours. Also, if this application is used in the solar PV generation hours, battery will not get charged and the capacity of the BESS will not be used to the fullest. Hence, the scheme of operation of BESS and applications need to be discussed and revised to use BESS effectively. Kindly clarify.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for better clarity on the subject. Bidder to comply with technical specification requirement.
89.	B-1 of Sec-VI	21 of 255	1.0 (A)	Smoothen action to be carried out by BESS shall be based on moving average algorithm of 30 minutes period. Bidder can also propose other better suitable control algorithm for this	If alternate smoothening algorithm is applied during detailed engineering, then the specification in 1.0, A (band of $\pm 5\%$ of moving average) will not be met due to the smoothening nature of the proposed algorithm. Please confirm if this	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for better clarity on the subject.

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
				application.	is acceptable.	
90.	B-1 of Sec-VI	22 of 255	1.0 (B)	BESS shall ensure that the battery shall be fully charged (subjected to availability of solar insolation) at the end of solar generation hours and shall be able to deliver rated 24MWh energy at PCC with continuous 6MW power (or MW as per grid requirement).	If solar PV generation smoothening is used during energy time shift applications, BESS won't be left with enough energy in the evening at the end of the solar generation hours. Hence, the scheme of operation of BESS and applications need to be discussed and revised to use BESS effectively. Kindly clarify.	Technical Specification Document is clear on the application requirement. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for better clarity on the subject. Bidder to comply with technical specification requirement.
91.	B-1 of Sec-VI	22 of 255	1.0 (B)	During this mode of operation the BESS shall also mitigate the intermittent fluctuations of solar power generation due to cloud intermittency and the combined Solar PV and BESS output to grid shall lies within $\pm 5\%$ of reference target power at any time instant.	BESS cannot perform two applications at once. If BESS is used for energy time shift and is charging (at constant power set by operator), then BESS cannot bring PV + BESS output to $\pm 5\%$ of 30-minute moving average of PV power. Kindly confirm. Please clarify what reference target power means.	Technical Specification Document is clear on the subject. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for better clarity on the subject. Bidder to comply with technical specification requirement.
92.	B-1 of Sec-VI	22 of 255	1.0 (C)	Once initiated in this operating mode, the battery energy storage system shall remain at the designated output until terminated by EMS with manual intervention or Battery charging or discharge limit is reached. Operator shall be able to schedule the power dispatch from the BESS with max. power limited to MW ratings of BESS. During this mode of operation the BESS shall also mitigate the intermittent fluctuations of solar power generation due to cloud intermittency and the combined Solar PV and BESS output to grid shall lies within $\pm 5\%$ of reference target power at any time instant.	Please refer to the highlighted sections of the description. If BESS is set in 'Manual Mode' and is operated at a constant power (charge/discharge), BESS will not have enough power capacity to carry out 'PV Smoothening' also. Kindly request you to remove the usage of PV Smoothening during manual mode of operation.	Technical Specification Document is clear on the subject. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for better clarity on the subject. Bidder to comply with technical specification requirement.
93.	B-1 of Sec-VI	22 of 255	1.0 (D)	The BESS will be required to provide VAR support to grid for voltage regulation purpose. The VAR output of the BESS may be limited based on remaining capacity left after providing real power output.	This mode shall not be used whenever efficiency test is being carried out because while providing VAR support, output kWh will not be accounted even though the battery discharges, thus skewing efficiency towards the lower side. Kindly confirm.	Bidder to comply with technical specification requirement. Please refer, amendment at S.No-30 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for revised spec for efficiency test requirement during O&M

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
94.	B-1 of Sec-VI	23 of 255	1.0 (F)	BESS shall set and automatically control the micro-grid voltage & frequency within acceptable limits.	Please define the acceptable limits for voltage, frequency and the power factor range of the loads that will be brought into the micro-grid during 'Island Mode'.	Micro grid voltage and frequency limits shall be as per CEA grid regulation. Supply of required reactive power to load shall not be an issue as the solar PV inverter will also part of microgrid along with BESS PCS. BESS needs to supply reactive power (from BESS end) upto its rated capacity only.
95.	B-1 of Sec-VI	23 of 255	1.0 (F)	As per requirement BESS shall control the active and reactive power (or power factor) of Solar PV plant by providing required set point to solar PV Inverters.	The PV inverters should have this feature of accepting set points via SCADA network and the allowable ramp rates should be high enough for micro-grid stability. Kindly confirm.	The PV inverters will have feature of accepting set points via SCADA network and the ramp rates shall be suitable for the application requirement. BESS needs to have suitable ramp rate in order to maintained the micro-grid stability.
96.	B-1 of Sec-VI	23 of 255	1.0 (F)	BESS shall have black start operation feature and shall be able to form a micro-grid with solar PV plant & local loads. BESS shall set and automatically control the micro-grid voltage & frequency within acceptable limit and shall charge or discharge the battery based on micro-grid requirement.	For ensuring micro-grid stability, the sum total of loads during this application mode should be less than 6 MW. Please confirm.	Sum total of load power shall be always less than BESS rating during microgrid operation.
97.	B-1 of Sec-VI	23 of 255	1.0 (F)	The operation in this mode shall be initiated by detection of low or high grid frequency while the BESS is in any other mode.	Please clarify if the BESS has to be in 'frequency detection mode' even during night time after complete discharge of battery.	Frequency regulation mode during night time after complete discharge of battery is not required. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for actual requirement.
98.	B-1 of Sec-VI	23 of 255	1.0 (H)	Bidder also has to provide solar forecasting and scheduling system/service and software tool as per CERC requirement of scheduling & deviation regulation for 17 MW solar PV project.	The solar PV plant's installation, commissioning, operation and maintenance is not in the scope of the Bidder. The output of solar PV is subject to the plant's operation and maintenance. Hence, scheduling carried out as per forecasting may not be in line with the output of PV power. Kindly request you to exclude this from the Bidder's scope.	Bidder to comply with technical specification requirement. Required data of solar PV plant shall be provided during O&M stage forecasting purpose.
99.	B-1 of Sec-VI	23 of 255	1.0 (H)	The forecasting & scheduling service shall provide one day prior data and 90 minutes, 15 minutes advance data for intra-day.	The forecasting requirements are stated in the specifications. Kindly also specify the scheduling requirements.	Technical Specification Document is clear on the subject. Bidder to comply with technical specification requirement.
100.	B-1 of Sec-VI	25 of 255	3.0	Where an applicable IEC standard is not available, IS/ any applicable international standard shall be referred to as best practice.	Please allow for the following change. Where an applicable IEC/ UL standard is not available, IS/ any applicable international standard shall be referred to as best practice.	Bidder to comply with technical specification requirement. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for better

PROJECT:- BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS BIDDING DOCUMENT NO: RE-CS-5728-004(B)-9	CLARIFICATION NO-1 To TECHNICAL SPECIFICATIONS (SECTION-VI) DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01	PAGE 17 OF 36
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DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
						clarity on the subject.
101.	B-1 of Sec-VI	24 of 255	2.0 (3)	BESS round trip AC-AC energy conversion efficiency at 33 kV bus of main switchgear of solar PV Plant	Provide the AC-AC round trip efficiency of system envisaged.	Bidder to provide AC-AC round trip efficiency as per their offered BESS system.
102.	B-1 of Sec-VI	25 of 255	2.0	Point of common coupling (PCC) shall be 33KV metering point located at 17 MW Solar PV Project side.	Provide distance between 33kV Metering point at 17 MW solar PV plant and proposed BESS location.	17MW Main switchgear shall be located within Metering and Control Room Building area. Tentative location of Metering and control Room and BESS area are marked in Vicinity Map tender drawing 5728-004(B)-POC-A001.
103.	B-1 of Sec-VI			General	Can the BESS sizing be a considered a minimum requirement for the project lifetime, not including BESS and solar degradation?	Bidder to comply with technical specification requirement.
104.	B-1 of Sec-VI			General	Does the specified BESS sizing take into account both energy shifting and solar smoothing, or is the power and energy sizing for energy shifting only, and the bidder needs to model additional capacity for smoothing while still providing this full power and energy after solar generation hours?	As per specification requirement the BESS needs to mitigate the solar power intermittence issue during entire solar generation hour and also charge the Battery to deliver rated 24MWh energy at PCC during evening & night . Bidder to comply with technical specification requirement.
105.	B-1 of Sec-VI			General	Please provide more detail on the 30 minute moving average for smoothed solar output? What will be required in terms of ramp-up and ramp down rates in kW/min or percentage of installed solar capacity per minute?	Technical Specification Document is clear on the subject. Bidder to comply with technical specification requirement. Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for better clarity on the subject.
106.	B-1 of Sec-VI	23 of 255	1.0	H. SOLAR FORECASTING:- Bidder also has to provide solar forecasting and scheduling system/service and software tool as per CERC requirement of scheduling & deviation regulation for 17 MW solar PV project. The forecasting & scheduling service shall provide one day prior data and 90 minutes, 15 minutes advance data for intra-day. This system must be able to send the forecasting data as above with Load Dispatch Centre through	Forecasting capability of software/SCADA is dependent on the availability of satellite data. Is there any specific data source/service needs to be considered. Kindly share the CERC scheduling & deviation requirement.	Bidder to comply with technical specification requirement.

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
				EMS. The weather station input e.g. GHI, ambient temperature, humidity and wind speed, if required be shall be taken by bidder from SCADA of Solar PV plant		
107.	B-1 of Sec-VI	24 of 255	2.0	Point of common coupling (PCC) shall be 33KV metering point located at 17 MW Solar PV Project side. 0.2s for outgoing feeder panel and 0.5 for other VCB panels.	As Tech. specs of HT panels at BESS mentions class 0.2s CT's for outgoing feeder panel and 0.5 for other VCB panels.(Page No. 53). If common point of coupling (PCC) at 17 MW Solar PV Project side, then 0.2S class CT's are not required in HT panel at BESS. Please confirm the scope of Metering and type of arrangement.	Bidder to comply with technical specification requirement.
108.	B-1 of Sec-VI	21 of 255	1.0 (A)	The BESS shall operate continuously and battery SOC needs to be controlled within a certain range to prevent forced shutdown of the BESS due to overcharging or over-discharging of batteries	Is there in any particular SOC limits being targeted?	Bidder to decide particular SOC level based on BESS technology to meet the specification requirement.
109.	B-1 of Sec-VI	21 of 255	1.0	Rating is to be ensured for worst possible operating temperature.	Is there any meteo information available readily to determine worst operating temperature?	Bidder to collect the same from IMD department/A&N authority
110.	B-1 of Sec-VI	21 of 255	1.0 (A)	In order to facilitate the design of smoothening requirement, the existing 5 MW NTPC- Port Blair PV plant generation output profile has been provided in Annexure-V for reference	Annexure – V missing	Already provided with tender document
111.	B-1 of Sec-VI	24 of 255	2.0	The contractor shall ensure that Battery and all other BESS components after their 'end of life'	While replacing the BESS – batteries after its end of life, can the bidder replace an updated or latest version of the batteries of the same type as installed during the time of installation? We prefer a note from NTPC that batteries can be replaced at the end of its life with equivalent models available at the time of replacement, as battery technology is very nascent today and might change in the next 5-10 years drastically.	Bidder can replace Battery after end of life with Battery meeting technical specification and guaranteed parameter requirement and also BESS operational & functional and availability requirement.
112.	B-2 of Sec-VI	29 of 255	1.0	Power cables shall have compacted Aluminum /copper conductor, XLPE insulated, PVC inner-sheathed (as applicable), Armoured/ Unarmoured,	As per stated clause, that DC cables shall be of Armoured/Unarmoured type. We request NTPC to kindly clarify whether bidder to consider armouring for DC cables.	DC cable directly buried in the ground shall be armoured. DC cable on trestle/tray/conduit shall be armoured/unarmoured.

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
113.	B-2 of Sec-VI	29 of 255	1.0	Cables used shall be of min. 1.5 kV (DC) grade. These Power cables shall have compacted Aluminum/copper conductor, XLPE insulated, PVC innersheathed (as applicable), Armoured/Unarmoured, FRLS PVC outer sheathed conforming to IS: 7098 (Part-I).	If cables are not laid underground, only then shall comply to FRLS PVC outer sheathed properties. We suggest to provide FR PVC outer sheath.	Bidder to comply with technical specification requirement.
114.	B-3 of Sec-VI	30 of 255	1.0	Codes & Standards	1) BDEQ 2008 - Not applicable as this is not a generating plant 2) IEC 61000 & IEEE 519 are similar	Bidder to comply with technical specification requirement.
115.	B-3 of Sec-VI	31 of 255	2.0 (e)	PCS must have provision to be isolated from grid through Air Circuit Breakers which shall be inbuilt with the PCS or located in separate standalone panel.	We recommend for AC breaker with shunt trip capability for the safety of plant.	ACB with shunt trip and inbuilt electrical protection capability are acceptable. Please refer, amendment at S.No-8 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for revised specification.
116.	B-3 of Sec-VI	31 of 255	2.0 (v)	PCS current THD value shall be less than 4% at nominal load.	We have already asked for IEEE 1547 compliant, so we should follow that as our requirement	Bidder to comply with technical specification requirement.
117.	B-3 of Sec-VI	31 of 255	2.0 (I)	Internal Surge Protection Device (SPD) shall be provided in the PCU on DC and AC side. It shall consist of Metal Oxide Varistor (MOV) type arrestors. The discharge capability of the SPD shall be at least 10kA at 8/20 micro second wave as per IEC 61643-12. During earth fault and failure of MOV, the SPD shall safely disconnect the healthy system.	- Not complied	Bidder to comply with technical specification requirement.
118.	B-3 of Sec-VI	32 of 255	2.0 (q)	Studies for resonance	- Not complied	Bidder to comply with technical specification requirement.
119.	B-3 of Sec-VI	32 of 255	2.0 (z)	PCS maximum noise level shall be 75dBA.	Requesting NTPC to consider the Noise level of less than 85 dB at 2m.	Bidder to comply with technical specification requirement.
120.	B-3 of Sec-VI	30 of 255	1.0	BDEW 2008: Technical guidelines for generating plant connected to medium voltage network	Please indicate if international alternative standards could be complied with for this standard.	IS/any applicable international standard shall be acceptable.

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
121.	B-3 of Sec-VI	30 of 255	2.0 (g)	The minimum euro efficiency of the PCS as per IEC 61683 shall be 97%.	Please specify if compliance with this clause using CEC efficiency being greater than or equal to 97% is acceptable.	Bidder to comply with technical specification requirement.
122.	B-3 of Sec-VI	33 of 255	2.0	cc) PCS shall have active power limit control and reactive power and power factor control feature	PCS features of controls and response time are subjected to Vendor provision. The same shall be discussed during detailed engineering. Kindly confirm	Bidder to comply with technical specification requirement. Please refer, amendment at S.No-11 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for revised specification
123.	B-3 of Sec-VI	30 of 255	1.0	Codes and standards	Please specify the subdivisions of the IEC standards to which the PCS should comply with. For e.g. IEC60068 has many sub-divisions, but 2 or 3 are relevant to A&N islands like Heat test, dry heat test etc.	Relevant clauses shall be applicable
124.	C-1 of Sec-VI	42 of 255	5.0	SPACE HEATER Panel space heaters shall be fed from separate AC auxiliary bus bars running throughout the switchboard.	Kindly clarify the requirement of space heaters, is it must	Bidder to comply with technical specification.
125.	C-1 of Sec-VI	48 of 255	18.0	Status of both the incomer supply and Bus coupler (if available) of LT Aux Panel shall be provided in SCADA	EMS shall have status monitoring & control (only for VCB) of equipment's (HT Panel, LT Panel) inside Main control room of 17 MW. The switchgear equipment's outside Control room shall not be monitored & controlled by EMS. Kindly confirm	Bidder to comply with technical specification requirement.
126.	C-1 of Sec-VI	38 of 255	3.0 (2)	All switchboard frames and load bearing members shall be fabricated using suitable mild steel structural sections or pressed and shaped cold-rolled sheet steel of thickness 2.0 mm. Frames shall be enclosed in cold-rolled sheet steel of thickness 1.6 mm. The gland plate thickness shall be 3.0 mm for hot / cold-rolled sheet steel and 4.0 mm for non-magnetic material.	Panel fabrication with Aluzinc sheet & Door and End covers are mounted on extreme LHS and RHS of the switchboard with CRCA sheet shall be acceptable as per OEM standards. Gland Plate For Single Core Cable: 4mm thick aluminium. For Three Core Cable: 3mm thick GI Shall be acceptable. please confirm.	Bidder to comply with technical specification requirement.
127.	C-1 of Sec-VI	39 of 255	3.0 (5)	All switchboards shall be of dust-proof and vermin-proof construction and shall be provided with a degree of protection of IP: 5X as per IS/IEC 60947.	Indoor Switchboards with IP 4X shall be acceptable.	Bidder to comply with technical specification requirement.
128.	C-2 of Sec-	49 of 255	1.0	One numbers of spare 33 kV breaker panel with VCB, relay and all other accessories shall be	As per mentioned clause, one number of spare 33KV feeder to be provided at 33KV switchgear. However as per basic schematic diagram (5728-004(B)-PE-	One numbers of spare 33 kV breaker panel with VCB, relay and all other accessories shall be provided at

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
	VI			provided at 33kV Switchgear.	A-001), it requires two numbers of spare 33KV feeders. We request NTPC to kindly clarify.	BESS end 33kV Switchgear.
129.	C-2 of Sec-VI	59 of 255	6.0	All circuit breaker feeders shall be provided with communicable numerical relays (IED, i.e. Intelligent Electronic Device) complying with IEC-61850, having protection, control, measurement and monitoring features.	Bidder request the option to have Modbus protocol in addition to IEC 61850 of communication for Numerical relays Kindly confirm	Bidder to comply with technical specification requirement.
130.	C-2 of Sec-VI	62 of 255	6.0	w) Numerical relays shall have feature for Time synchronization through the SCADA System / networking. The resolution of time synchronization shall be +/- 1.0 millisecond or better throughout the entire system	Please confirm the Time synchronization between existing Plant SCADA and numerical relays. EMS can use existing clock for synchronization subject to vendor provision. Please confirm.	Time synchronization equipment supplied with SCADA can be used for time synchronization of numerical relay.
131.	C-2 of Sec-VI	71 of 255	20.0	(c) ABT meter and MFM shall have suitable communication port for integration with EMS/SCADA system. (d) Meter shall be suitable for interfacing for synchronizing the built-in clock of the meter by GPS time synchronization equipment. Bidder shall synchronize the meter using GPS time synchronization equipment	Monitoring of ABT meters at EMS - are subject to Statutory approvals. Based on that, the same can be established. Time Synchronization of ABT meter is subject to ABT Meter vendor provision. Kindly confirm	Bidder to comply with technical specification requirement.
132.	C-2 of Sec-VI	58 of 255	5.0	The basic control scheme shall be developed in the numerical relay using programmable (soft) logics.	Confirm the requirement of hardwire control scheme along with programmable soft logics	Bidder to comply with technical specification requirement.
133.	C-2 of Sec-VI	53 of 255	2.0	Protection: Class PS for Differential & REF and Core Balance CTs (CBCT); 5P20 for other protection CTs;	Class PS for Differential & REF - If applicable as per standards	Bidder's understanding is correct
134.	C-3 of Sec-VI	78 of 255	1.0	TECHNICAL REQUIRMENTS (OIL FILLED TRANSFORMER): Ref Sr no. i) and ii) VA Rating & Quantity, Voltage Ratio (KV) As per system requirement and SLD.	Kindly confirm SD No. and reference.	Please refer Tender Drawing No 5728-004(B)-POE-A-001 (Rev-B)

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
135.	C-3 of Sec-VI	92 of 255	5.00.00	TYPE TESTS# (To be carried out on one transformer of each rating)	We Understand that, type tests mentioned in section would be carried out, only if vendor fails to submit the type test reports within last 10 years, confirm the same.	Bidder understanding is correct.
136.	C-4 of Sec-VI	98 of 255	5.0	1.1 KV grade XLPE power cables shall have compacted aluminium/ copper conductor, XLPE insulated, PVC inner-sheathed (as applicable), armoured/ unarmoured, PVC outer-sheathed conforming to IS:7098. (Part-I). Cables which are directly buried shall be armoured.	As per stated clause, that 1.1KV LT power cables shall be of type. Armoured/Unarmoured We request NTPC to kindly clarify whether bidder to consider armouring for 1.1KV LT power cables.	LT power cable directly buried in the ground shall be armoured. LT power cable on trestle/tray/conduit shall be armoured/unarmoured.
137.	C-4 of Sec-VI	102 of 255	9.0	1.1 KV Grade Control Cables shall have stranded copper conductor and shall be multicore PVC or XLPE insulated, PVC inner sheathed, armoured / unarmoured, FRLS PVC outer sheathed conforming to IS: 1554. (Part-I).	As per stated clause, that 1.1KV LT control cables shall be of type. Armoured/Unarmoured We request NTPC to kindly clarify whether bidder to consider armouring for 1.1KV LT control cables.	LT control cable directly buried in the ground shall be armoured. LT control cable on trestle/tray/conduit shall be armoured/unarmoured.
138.	C-4 of Sec-VI	95 of 255	2.0	The cables shall be suitable for laying on racks, in ducts, trenches, conduits and underground (buried) installation with chances of flooding by water. All cables shall be flame retardant, low smoke (FRLS) type designed to withstand all mechanical, electrical and thermal stresses developed under steady state and transient operating conditions as specified elsewhere in this specification.	We may consider the LT Power cables without FRLS properties considering the underground (buried) installation with chances of flooding by water and wherever cables exposed to atmosphere, we can apply FR paint on Cables. Please confirm.	Bidder to comply with technical specification requirement.
139.	C-5 of Sec-VI	105 of 255	2.0	In addition to manufacturer's identification on cables as per IS, following marking shall also be provided over outer sheath: (a) Cable size and voltage grade - To be embossed (b) Word 'FRLS' at every 5 metre - To be embossed	We may consider the HT cables without FRLS properties considering the underground (buried) installation with chances of flooding by water and wherever cables exposed to atmosphere, we can apply FR paint on Cables. Please confirm.	Bidder to comply with technical specification requirement.
140.	C-5 of Sec-VI	104 of 255	2.0	The cables shall be suitable for laying on racks, in ducts, trenches, conduits and underground (buried) installation with chances of flooding by	We are considering buried cable trench for laying 33kV HT cable within the BESS plant & outgoing 33kV cable from BESS HT switchgear for interconnecting with Solar PV plant switchgear. Kindly confirm.	Same shall be finalized during details engg stage.

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
				water.		
141.	C-7 of Sec-VI	125 of 255		General Query	SCADA / EMS Architecture drawing	Successful bidder needs to submit the detail SCADA/EMS architecture drawing during detail engineering stage for NTPC review and approval.
142.	C-7 of Sec-VI	127 of 255	1.0 (e)	The SCADA (including EMS) system shall be provided with two processors (Main processing unit and memories) one for normal operation and one as hot standby.	Please clarify if the main servers of SCADA/EMS need to be redundant or local controllers need to be redundant.	Main server and controller. shall be redundant type.
143.	C-7 of Sec-VI	127 of 255	1.0 (e)	The memory shall be field expandable. The memory capacity shall be sufficient for the complete system operation and have a capability for at least 20% expansion in future. Programmed operating sequences and criteria shall be stored in nonvolatile semiconductor memories like EPROM. All dynamic memories shall be provided with buffer battery backup for at least 360 hours. The batteries shall be lithium or Ni-Cd type.	Please clarify if this requirement is for the local controller or the main servers of SCADA/EMS.	This clause is applicable for main server and controller.
144.	C-7 of Sec-VI	125 of 255	1.0 a(i)	All the LV/MV Switchgear Equipments /panels including solar plant and A & N distribution switchgear.	Request for geographical distribution and as understood these are already installed. Kindly provide its hardware/software protocol interface details.	Shall be shared during detail engineering stage. Bidder to comply with technical specification.
145.	C-7 of Sec-VI	136 of 255	13.0	INTERFACE WITH NTPC PI SERVER	Request you to provide distance as envisaged from BESS to NTPC PI server to establish cable link for	Bidder scope limited to cabling work within the Solar Plant boundary only.
146.	C-7 of Sec-VI	136 of 255	14.0	TELEMETRY REQUIREMENT FOR LDC	Request you to provide distance as envisaged from BESS to LDC to establish cable link for estimating the cable length and cost.	Bidder scope limited to cabling work within the Solar Plant boundary only.
147.	C-7 of Sec-VI	125 of 255	1.0	i. All the LV/MV Switchgear Equipments /panels including solar plant and A & N distribution switchgear equipment.	Please clarify if the EMS of BESS needs to monitor only that equipment/ panels indicated in the SLD 5728-004(B)-POE-A-001	Bidder to comply with technical specification requirement.
148.	C-7 of Sec-	126 of	1.0 (b)	xvii. Communication with Solar PV SCADA being commissioned by NTPC. All necessary	Kindly mention the specifications of the PV SCADA i.e., what is the protocol and standards that are complied with by PV SCADA. Please also mention the	The details of the solar PV plant scada shall be shared

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
	VI	255		software and hardware (both end) including laying of Communication/Fiber optic cable as required for communication solar SCADA shall be provided by the contractor.	distance between the PV SCADA hardware and location envisaged for BESS.	with the successful Bidder. SCADA control room shall be within Metering and Control Room Building area. Tentative location of Metering and control Room are marked in Vicinity Map tender drawing 5728-004(B)-POC-A001, REV.B.
149.	C-7 of Sec-VI	126 of 255	3.0	In addition to a desktop based EWS, vendor shall also provide dedicated portable (laptop) based EWS.	Please mention how many such dedicated portable based EWS (laptops) should be provided.	One no of portable based EWS (laptops) shall be provided for EMS.
150.	C-7 of Sec-VI	136 of 255	14.0	The arrangement to transmit the BESS data required by the Load Dispatch Centre (LDC), as per as per CERC/Local Utility regulations or procedures for grid management is in the scope of contractor. All necessary software and hardware including laying of Communication/Fiber optic cable/wireless link as required for transmitting the data shall be provided by the contractor at both end (BESS and LDC).	Kindly share the guidelines, statutory specifications & Location of LDC center for communication to EMS Typical executed project details of LDC communication with details of data sharing & control requirements shall be needed to factor the EMS ports & accessories..	Details shall be finalized during details engineering stage.
151.	C-7 of Sec-VI	127 of 255	3.0	Contractor shall provide engineering workstation (EWS) as programming station of the EMS. It shall be possible to use same EWS as programming station and the Human Machine Interface System. SCADA System shall be provided with redundant OWS. In addition to a desktop based EWS, vendor shall also provide dedicated portable (laptop) based EWS.	Bidder understanding for SCADA servers / Workstation requirements is : At Main control room of 17 MW, OWS (1no), EWS (1no), Historian (1no) and Portable EWS - Laptop (1no) is required for exclusively for EMS. Kindly confirm	Bidder to comply with technical specification requirement. Technical specification document is clear on the subject.
152.	C-7 of Sec-VI	136 of 255	13.0	INTERFACE WITH NTPC PI SERVER For communicating the BESS plant data in NTPC, the BESS system shall be interfaced/ connected PI server of NTPC on OPC Protocol	kindly share the Server Location, communication scheme for Interfacing to PI server	Bidder scope are limited to supply of equipment and software at BESS plant end only. Cabling if any shall be limited within solar PV plant boundary.
153.	C-7 of Sec-VI	130 of 255	5.0	Data storage table showing time interval of 1 second and 1 minute intervals	EMS (SCADA) can store the data in specified time interval but Existing meter, relays ...etc. needs to share the data in specified time interval to Historian	Supply of measurement equipment such as energy meter, transducer etc are in BESS bidder scope.

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
154.	C-7 of Sec-VI	126 of 255	1.0 (b)	(Internet connection for transferring data to web shall be taken by Contractor in the name of NTPC Site for O & M period).	Internet connection details to be provided, i.e. leased line with XX MBPS speed, No of static IP's required, or VSAT connection, etc. Also confirm the location of Internet connection, i.e. at BESS system or 17 MW solar plant control room.	Same shall be finalized during details engg stage.
155.	C-7 of Sec-VI	127 of 255	1.0 (f)	All dynamic memories shall be provided with buffer battery backup for at least 360 hours.	It seems that 360 hours (i.e. 15 days) backup may not require. CMES request to accept back of 6-8 hours instead of 360 hours.	Bidder to comply with technical specification requirement.
156.	C-10 of Sec-VI	153 of 255	3.0	Bidder shall provide indoor and outdoor emergency lighting at control room, battery yard, other building, security room and main gate.	Kindly specify "What are Other Buildings".	Same shall be finalized during details engg stage.
157.	C-11 of Sec-VI	160 of 255	1.0	Auxiliary power supply system comprising of AC distribution board (ACDB) which shall be fed from suitably rated transformers. All ACDB's shall receive at least two incomers from different sources.	We propose that the auxiliary transformer shall be supplied from LV winding of the PCS transformer. Kindly confirm.	Yes, acceptable.
158.	C-11 of Sec-VI	160 of 255	1.0 & 2.0	UPS and BATTERY charger system for important auxiliary load	We are considering only UPS system with battery backup of 1 hour supplied from ACDB for auxiliary requirement as mentioned in the clause and no battery with charger is considered for the same. Please confirm.	Please refer, amendment at S.No-25 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
159.	C-11 of Sec-VI	161 of 255	2.0	(j) Contractor has the option of supplying either Nickel Cadmium type batteries or Lead Acid Plante type batteries. The detailed specification for the batteries has been mentioned in the battery and charger section below in this specification.	We recommend to use MF-VRLA batteries for Aux. supply system. Kindly confirm.	Bidder to comply with technical specification requirement.
160.	D of Sec-VI	174 of 255		General Query	Please furnish the ERT (Soil Resistivity report) & Soil Investigation Report.	Please refer, amendment at S.No-28 Doc. No. RE-CS-5728-004(B)-9-AMDT-01
161.	D of Sec-VI	174 of 255	1.0 & 2.0	h. Battery container shall have minimum protection class IP54. Construction of Storage yard for battery energy storage systems cum Power Conditioning Systems yard/ building, transformer yard with BESS control room development in approx.	From the Cl.2.0, we presume that RCC building is required for PCS room, HT/LT Switchgear, Store room & Toilet. Please confirm whether Containerized solution can be followed for housing Batteries.	Containerized solution for BESS Batteries are acceptable

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
				2500 Sq. m, BESS Control Building: BESS Control Building: The construction of RCC single storey BESS control building shall house following 1. Battery room(if applicable), 2. PCS room 3. HT/LT Switchgear, 4. Store room 5. Toilet		
162.	D of Sec-VI	174 of 255	2.0	All the systems, room and building shall be connected by rigid road/pavement with solar SPV plant internal approach road.	We propose Bitumen road as internal approach road. The road shall be 3.5m wide with 0.5m shoulder on both sides.	Bidder to comply with Technical Specification
163.	D of Sec-VI	181 of 255	6.0	DRAINAGE SYSTEM Drainage system shall be designed considering "maximum hourly rainfall intensity" as 100 mm. The minimum value of surface run off coefficient shall be considered as 0.8 in the design of drainage system. The drainage system shall be designed as per the IRC specifications and prevailing industry practices.	We propose PCC drain trapezoidal type. Kindly confirm. As per site visit the soil type looks like clayey soil stiff and bare and clayey soils lightly covered. For this type of soil as per IS:8835 the runoff coefficient is 0.55 and the same shall be considered in drain design. Kindly confirm.	Bidder shall propose lined rectangle & trapezoidal as per layout and design requirements. Bidder to comply with Technical Specification for minimum parameters as mentioned in specification. Drain and culvert if required shall be design with relevant IS code.
164.	D of Sec-VI	174 of 255	2.0	BESS Control Building:	Tentative plan layout for the BESS control building to be provided.	Design of layout of BESS building shall be in the scope of bidders as per industrial practise.
165.	D of Sec-VI	176 of 255	3.0	Roads & Pathways : Construction of Main road, service roads, etc as required for O&M, erection and crane movements	1. Main approach road connecting from main gate to Main control room will be of Asphalt type as per the relevant codes,with a width of 5m including 0.5m shoulders on either side. 2. All internal roads interconnecting from Main Control Room to all Inverter stations will be of WBM type with 4m wide (including 0.5m shoulders on either side). 3. Peripheral roads which are not connecting to any inverter stations shall be of Roller compacted type of 3m wide without any shoulders shall be provided.	Bidders queries not relevant of BESS scope of work
166.	D of Sec-VI	176 of 255	3.0	Windows, Doors, Ventilators and Rolling Shutters Doors, windows and ventilators of air-conditioned areas, entrance lobby of all buildings, and all windows and ventilators of CMCS building shall have, powder coated	1. Main Door- Aluminum door and frames with half glazed & half opaque single door shutter of size 1m (W) X 2.4m (H) shall be provided 2. For Toilets- Aluminium frames doors with cement particle board (10mm) shutter of size 0.75m (W) X 2.4m (H) shall be provided 3. Windows shall be aluminum framed glazed windows of size 1m (W) X 1.2m	Bidder to comply to Technical Specification

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
				(minimum thickness of powder coating 50 micron) aluminium framework with glazing. Window shall be provided with suitable aluminium grill. Toilet doors will be of fibre reinforced plastic (FRP) type. Minimum size of door provided shall be 2.1 m high and 1.2 m wide.	(H)	
167.	D of Sec-VI	176 of 255	3.0	Doors and windows on external walls of the buildings shall be provided with RCC sunshade over the openings with 300 mm projection on both side of the openings. Projection of sunshade from the wall shall be minimum 450 mm over window openings and 750 mm over door openings except for main entrance door to the control room where the projection shall be 1000 mm.	1. RCC sunshade over the openings shall be projected 150mm on both side of the openings. 2. Projection from the wall shall be 450mm over windows openings, doors and rolling shutter openings	Bidder to comply to Technical Specification
168.	D of Sec-VI	178 of 255	4.0	The height of Building shall be minimum 4 meters and it shall be covered from all four sides. The roof and cladding walls of the building shall be made of permanently color coated galvalume profile sheets with 40 mm PUF. Peripheral brick masonry upto height lintel level shall be provided for building. The minimum BMT (Base material thickness) of roof and side wall sheets shall be 0.5mm. Gate/Door provision shall be made on at least two sides of the building with suitable ramps. The store shall be at least 450mm above NGL. The roof sheet shall have a projection of 500mm on all around. Provision of window & ventilation shall be provided for PEB and suitable turbo vent on roof of building.	1. Steel Framed PEB Building wall shall be of 40mm thick and roof shall be of 50mm thick PUF with glavalum sheet on both sides. Outer layer shall be of 0.5mm thick and inner layer shall be of 0.4mm thick galvalume PPGL sheet and structure member shall be with Hot Rolled & Cold formed sections. Gratin shall be provided for walkway/entry. 2. Louvers will be provided for ventilation instead of turbo vent.	Bidder to comply to Technical Specification
169.	D of Sec-	178 of 255	4.0	The building shall be made of structural steel material as per relevant IS codes. All RCC work & steel work shall be in line with IS: 456 and IS	The building flooring shall be made of 150mm thick RCC (reinforcement of 8 dia at 200mm c/c both side, single layer) laid over 100mm thick PCC	Bidder can also propose 150 mm thick RCC floor laid over 100 mm thick PCC. PCC base shall be laid over

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
	VI			800 respectively. Alternatively, the store shed may also be made with structural steel columns with self-supporting roof truss system. The store shed shall be designed in line with wind loads as per IS: 875, part-III. The building flooring shall be made of 150mm thick RCC (reinforcement of 8 dia at 200mm c/c both side, single layer) laid over 200mm thick well graded and compacted boulders with sand. Top surface of floor shall be provided with suitable flooring as required of indoor PCS facilities. All indoor structural members shall be painted with minimum two coats of synthetic enamel paint over one coat of primer. The design and drawing of the store shed shall be submitted for NTPC approval before start of work.		well compacted subgrade.
170.	D of Sec-VI	179 of 255	5.0	Reinforcement steel shall be of high strength deformed TMT steel bars of grade minimum Fe-500 and shall conform to IS: 1786. Ductile detailing in accordance with IS: 13920 shall be adopted for superstructure and substructure of all RCC buildings / structures	A grade of Fe 415 or Fe 500 based on availability of material near to project site shall be considered.	Bidder to comply to Technical Specification
171.	D of Sec-VI	180 of 255	5.0	All structural steel design shall be carried out as per IS 800. Structural steel shall conform IS 2062, Pipe shall be as per medium/high grade of IS 1161, Chequered plates shall conformed to 3502 and Hollow steel sections for structural use shall conform to IS: 4923. Outdoor structure steel shall be Hot dip galvanization shall be as per IS: 4759 or relevant Indian standard and the coating minimum thickness shall be maintained by 110 micron for all structural steel members.	Structure materials of cold formed hot dipped galvanized steel, pre galvanized steel and Galvalume steel sections and thickness shall be of minimum thickness of 80microns (Hot dipped galvanized), 550GSM (Pre galvanized) and 150GSM (Pre galvanized (Alu-Zinc)) respectively. Galvanizing methods shall be in line with relevant IS standards and ASTM standards	Minimum 110 micron for all structural steel members is considered for A&N project
172.	D of Sec-VI	181 of 255	5.0	Drainage system shall be designed considering "maximum hourly rainfall intensity" as 100 mm. The minimum value of surface run off coefficient shall be considered as 0.8 in the	Run off coefficient shall be taken from IRC specifications and as per the soil type.	Bidder to comply to Technical Specification

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
				design of drainage system. The drainage system shall be designed as per the IRC specifications and prevailing industry practices.		
173.	E-2 of Sec-VI	186 of 255	1.0	During the trial operation, BESS plant shall perform trouble-free operation for cumulative 36 hours during which functionality of all plant components shall be demonstrated and the system shall be in export/import Mode. During trial BESS should be able generate the name plate power continuously for one hours.	In case of delay in completion of solar project, date of trial run shall also get delayed. In such case the start of O&M and start of warranty period shall also get delayed. Please address this issue.	Bidder to comply with technical specification requirement.
174.	E-3 of Sec-VI	187 of 255	2.0	The bidder shall be responsible for supply of all spare parts, repairs / replacement of any defective equipment(s) at his own cost as required from time to time during the O&M period. ...	Spare parts: with a 25 years' duration, it is not confirmed that spare parts will be available and that the same battery model or other equipment components will be still in production from 10 years from now.	Bidder to comply with technical specification requirement.
175.	E-3 of Sec-VI	191 of 255	6.0	LD for shortfall in Generation during O&M If yearly Plant availability factor is less than 99.5%, contractor is liable for LD	99.5% Uptime is very high . Typically it is 95%	Bidder to comply with technical specification requirement.
176.	E-3 of Sec-VI	191 of 255	6.0	LD for shortfall in Generation during O&M If yearly Plant availability factor is less than 99.5%, contractor is liable for LD	The 99.5% availability envisaged in tender document is very stringent. We request NTPC to review & relax the minimum availability condition.	Bidder to comply with technical specification requirement..
177.	E-3 of Sec-VI	187 of 255	1.0	The successful bidder shall provide Operation and maintenance of BESS Plant along with grid connecting system which are presently included in bidder's scope of supply and installation, for a period of twenty five (25) years from date of successful completion of trial run.	NTPC may please consider restricting the O&M period to 10 years. Thereafter, for the subsequent years, the contractor can sign an Annual Maintenance Contract on mutually agreed basis.	Bidder to comply with technical specification requirement.
178.	E-3 of Sec-VI			General Query	Since the O&M period of the project is 25 years, replacement of battery is inevitable. There are possibilities that the battery technology may become obsolete at the time of replacement. Please allow to use battery of prevailing technology at the time of replacement.	Bidder can replace Battery after end of life with Battery meeting technical specification and guaranteed parameter requirement and also BESS operational & functional and availability requirement.
179.	E-3 of Sec-	190 of 255	6.0	availability factor	1. Please clarify if the '17' in denominator corresponds to 17 MW of solar PV plant.	Please refer, amendment Doc. No. RE-CS-5728-004(B)-9-AMDT-01

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
	VI				2. What constitutes as 'Unavailable Duration in Hours'? Is it the plant downtime due to maintenance or equipment defects? Please confirm that the 'stand by time' of BESS does not count as 'unavailable duration'. 3. Please clarify what 'corresponding MW capacity' means. Is it 6 MW of BESS PCS capacity?	Bidder to comply with technical specification requirement.
180.	E-3 of Sec-VI	191 of 255	6.0	LDav = (99.5-PAF)/100×10×0.8×24000×365 in INR In case, there more than one element is out at the same time, the element having higher weightage shall be taken.	Please clarify what the highlighted sentence means in the description part. Does it mean, if the plant downtime occurs across the time-slots (mentioned in the weightage table) within the same day? If so, then weighted sum should be considered than multiplying unavailable hours with the higher weightage value. Kindly confirm.	Please refer, amendment Doc. No. RE-CS-5728-004(B)-9-AMDT-01 Bidder to comply with technical specification requirement.
181.	E-3 of Sec-VI	192 of 255	6.0	Efficiency test shall be conducted when there is any change or replacement of major components e.g. battery, Power conditioning unit, transformer etc. NTPC also insists to carry out the efficiency test.	Efficiency test shall be conducted as the following. 1. If there is no replacement of battery, PCS or transformer: Every year - annually - from the start of O&M period, LD is calculated for the whole year. 2. If there is replacement of battery, PCS or transformer: Efficiency test shall be carried out at the beginning of the year and after replacement of any equipment. The LD (Gloss) is to be calculated in two parts - before and after replacements with 365 in the formula replaced by days in each part (i.e., before and after replacement) in both of them respectively.	Please refer, amendment Doc. No. RE-CS-5728-004(B)-9-AMDT-01 Bidder to comply with technical specification requirement.
182.	E-3 of Sec-VI	192 of 255	6.0	LD for shortfall in Generation during O&M	Please allow for the following change. MWHC here is defined as 24 MWh. This should be 'Measured kWh' as measured in section 6.0, 5.3.2. The penalty is due to NTPC suffering loss of energy due to inefficiency of storing energy in BESS. If the 'Measured kWh' is less than 'Declared kWh', then the energy loss will be limited corresponding to the 'Measured kWh' and not 'Declared kWh' or 24 MWh. This is because, NTPC cannot levy LD for energy loss it did not not suffer because there is no capacity for that energy in the battery in the first place. Otherwise, it'd be double penalty.	Please refer, amendment Doc. No. RE-CS-5728-004(B)-9-AMDT-01 Bidder to comply with technical specification requirement.
183.	E-4 of Sec-VI	194 of 255	1.0	The final acceptance test as to prove the Performance Guarantee shall be conducted at Site by the Contractor in presence of the	Please indicate when the PG test shall be carried out. Is it before trial run or after it?	After trial run

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
				Employer.		
184.	E-4 of Sec-VI	194 of 255	2.0	Efficiency Test of BESS: efficiency formula	Kindly note that the formula is incorrect. This represents the percentage loss of energy due to inefficiency of BESS. Request you to change the formula. Also please confirm that the power factor of the power during charging and discharging shall be identical for the period of the test.	Please refer, amendment Doc. No. RE-CS-5728-004(B)-9-AMDT-01 Bidder to comply with technical specification requirement.
185.	E-4 of Sec-VI	194 of 255	2.0	MWHr Capacity (MWHC) Testing: In order to demonstrate the required MWHC of BESS at the point of interconnection to the grid, this test shall be conducted as per mutually discussed procedure.	The power factor of discharging power during the test shall be unity. If power at lower power factor is discharged, the output energy will not represent the actual usable capacity of the battery due to the reactive power discharge also. Kindly confirm..	Bidder to comply with technical specification requirement.
186.	E-3 of Sec-VI	188 of 255	3.0 (p)	OPERATION AND MAINTENANCE Deployment of Plant in Charge, adequate number of technical support staff and other supporting personnel during the O&M period	Share the organization chart for BESS O & M staff envisaged here.	Bidder to comply with technical specification requirement.
187.	E-3 of Sec-VI	190 of 255	6.0	LD for shortfall in Generation during O&M; 1. If yearly Plant availability factor is less than 99.5%, contractor is liable for LD. 2. LD due to fall in MWH capacity from declared capacity 3. LD from fall of efficiency All applicable LD shall be first adjusted from the O &M contract value limited up to 10%.In case LD amount exceeds balance amount then it shall be adjusted from the security against Equipment Performance Bank Guarantee limited to 3%. In case it is not applicable LD, 3% of the EPBG shall be returned to the bidder.	Please note the LDs that can be levied at the O&M stage which is uncapped.	Bidder to comply with technical specification requirement.
188.	E-3 of Sec-VI	191 of 255	6.0	$LD_{av} = (99.5 - PAF) / 100 \times 10 \times 0.8 \times 24000 \times 365$ in INR In case, there more than one element is out at the same time, the element having higher weightage shall be taken.	Here Element means Time slot?? Please clarify.	Please refer, amendment Doc. No. RE-CS-5728-004(B)-9-AMDT-01

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
189.	E-3 of Sec-VI	191 of 255	6.0	If yearly Plant availability factor is less than 99.5%, contractor is liable for LD	We propose for 99%	Bidder to comply with technical specification requirement.
190.	E-4 of Sec-VI	194 of 255	2.0	Efficiency Test of BESS	What are the parameters against which the result of such efficiency shall be compared. What would be the cap of such loss.	Bidder to comply with technical specification requirement.
191.	E-4 of Sec-VI	195 of 255	2.0	LDh shall be for one year as the efficiency measurement shall be done each year during operation and maintenance.	shall be applicable for round the year average efficiency or only during testing/measuring?	Bidder to comply with technical specification requirement. Please refer, amendment Doc. No. RE-CS-5728-004(B)-9-AMDT-01 efficiency test during O&M
192.	E-4 of Sec-VI	186 of 255	2.0	PG Test	BUF of 0.8 appears to be very high as there are various other factors affecting battery utilization such as insufficient import from PV due to poor solar irradiance during monsoon and cloudy days, solar PV degradation, grid outage, etc.	Bidder to comply with technical specification requirement.
193.	E-3 of Sec-VI	191 of 255	6.0	Plant availability Factor(PAF) calculation methodology	17 in denominator appears to be incorrect and should be 6 MW. Please confirm.	Please refer, amendment Doc. No. RE-CS-5728-004(B)-9-AMDT-01
194.	E-3 of Sec-VI	191 of 255	6.0	If yearly Plant availability factor is less than 99.5%, contractor is liable for LD	Requisite Minimum Plant availability factor of 99.5% is very high. We suggest to consider outage for more than certain time period (e.g. 5 hours) for calculating PAF. 17 in denominator appears to be incorrect and should be 6 MW. Please confirm.	Bidder to comply with technical specification requirement. Please refer, amendment Doc. No. RE-CS-5728-004(B)-9-AMDT-01
195.	E-3 of Sec-VI	192 of 255	6.0	LD due to fall MWH Capacity at connection point	What is being meant by Declared Capacity? Please clarify. We understand it shall be adjusted to irradiance, grid outage, etc. annual at time of evaluation.	BESS MWH capacity. Bidder to comply with technical specification requirement.
196.	H of Sec-VI	237 of 255	8.00.00	Water Contractor shall make all arrangements himself for the supply of construction water as well as potable water for labour and other personnel at the worksite/colony.	Confirm scope of drinking water during O & M period.	Bidder scope

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
197.	J of Sec-VI	254 of 255		Basic schematic diagram (5728-004(B)-POE-A-001)	We understand that 24MWhr battery energy storage system to be divided into two equal portions and shall be connected to 33KV BESS switchgear. Also kindly confirm whether we need to transfer complete 24MWhr capacity by single feeder. Kindly confirm.	The scheme provided in Tender SLD is typical configuration. Bidder to adopt any suitable configuration considering available industrial PCS and transformer. Bidder to refer the note (**) in tender drawing no. 5728-004-POE-A-001 (Rev-B). Each outgoing 33kV feeder shall be able to transfer rated MW & MWh capacity of BESS.
198.	J of Sec-VI	254 of 255		Basic schematic diagram (5728-004(B)-PE-A-001)	Instantaneous solar generation and Load demand from 0.25 class feeder CT and 0.2 Class Bus PT As understood these CTs and PTs already installaed, please inform about no. of CTs and PTs that exist and communication interface/ protocol details.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
199.	J of Sec-VI	254 of 255		Basic schematic diagram (5728-004(B)-PE-A-001)	BESS controller must have control of all 33/11 KV outgoing breaker in PV plant to achieve islanded operation For breaker control Breaker communication interface/ protocol standard details are required. As understood 11KV switchgear is not required if 33KV switchgear control can achieve micro grid functionality.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
200.	J of Sec-VI	254 of 255		Basic schematic diagram (5728-004(B)-PE-A-001)	Control of 17 MW main switchgear breaker may be either through solar SCADA or BESS EMS For all 17MW switchgear to be controller, please provide list of such switchgear and communication interface/ protocol standard details.	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
201.	J of Sec-VI	254 of 255		The list of drawings listed in PartJ of the Technical Specification. These drawings are preliminary drawings for bidding purpose only and subject to changes that may be necessary during the detailed engineering keeping the basic parameters as specified.	Kindly comment on what is extent of change expected.	Bidder to comply with technical specification requirement.
202.	J of Sec-VI	254 of 255		Basic schematic diagram (5728-004(B)-PE-A-001)	Transformer shown with 2 windings Please confirm whether PCS transformer shall be considered with more than 2 windings.	PCS transformer with more than 2 windings are acceptable subjected to recommendation of PCS manufacturer.
203.	J of Sec-	254 of 255		Basic schematic diagram (5728-004(B)-PE-A-001)	Two outgoing feeders are shown from the BESS HT switchgear to integrate with Solar PV plant HT switchgear (not in bidder scope).	Yes, 2 outgoing feeders needs to be considered for interconnection with the Solar PV plant 33kV HT

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01**CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)****PACKAGE: BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder's Clarification	NTPC Reply
	VI				Please confirm whether 2 outgoing feeders to be considered to interconnect with the Solar PV plant 33kV HT switchgear.	switchgear
204.	J of Sec-VI	254 of 255		Basic schematic diagram (5728-004(B)-PE-A-001) Pair of OFC from each Inverter coming to CMCS room of PV Plant shall also to be directly extended to BESS Master controller to achieve real time control and interaction with EMS for safe grid operation	Bidder clarifies that all inverters (including those placed in Inverter rooms and Main control room of 17 MW) shall be available via pair of OFC from CMCS room. Bidder assumes all rooms are on OFC ring topology and Inverters communication on Modbus TCP-IP; Also, All DIRECT communication devices (PCU, Meters, Relays..etc.) are Multi-master in nature and it can respond to existing plant SCADA and EMS. Kindly confirm	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
205.	J of Sec-VI	254 of 255		Basic schematic diagram (5728-004(B)-PE-A-001) Instantaneous solar generation and load demand for BESS is to be taken from 0.2S Class feeder CT's and 0.2 Class BUS PT of 17 MW Main Switchgear	Bidder clarifies that, EMS shall communicate to Meters (TVM) at Main control room instead of CT / PT's which can give voltage, Current, Frequency, Power, Energy..etc.. Kindly confirm	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
206.	J of Sec-VI	254 of 255		Basic schematic diagram (5728-004(B)-PE-A-001) BESS controller shall have control of all 33/11 KV Outgoing breaker in PV Plant so as to achieve Islanded operation as well as Microgrid control mode	Bidder understanding is EMS scope of Switchgear control is limited only within VCB located in Main control room. Kindly confirm	Please refer, amendment at S.No-6 Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
207.	J of Sec-VI	254 of 255		LIST OF TENDER DRAWING	Geotechnical report of the site, contour map, requirement of roads, draining, drinking water pipe line, etc to be provided.	Contour map, Geotechnical reports shall be made available to the bidder. Bidder shall contact Engineer In Charge.
208.	Sec-VI			General Query	Battery life is defined in cycles and to calculate Battery life in years, number of cycles of Battery desired in a year is required. So please specify desired no. of cycles of Battery in a year.	Bidder to comply with technical specification requirement.
209.	Sec-VI			General Query	Request to share the proposed site co-ordinates.	Please refer Vicinity Map tender drawing 5728-004(B)-POC-A001, REV.B.
210.	Sec-VI			General Query	Can NTPC provide a master plan for the electrical system infrastructure and load demand for the next 5-10 years	Bidder to collect the same from A&N electric department

DOCUMENT NO: RE-CS-5728-004(B)-9 -CLRF.01
CLARIFICATION NO-1 TO TECHNICAL SPECIFICATIONS (SECTION-VI)
***PACKAGE:* BATTERY ENERGY STORAGE SYSTEM FOR 17MW SOLAR PV PROJECT AT MANGLUTAN IN SOUTH ANDAMAN, A&N ISLANDS**

Sl No.	Para/ Chapter	Page No.	Clause No.	Requirement as per tender in brief	Bidder’s Clarification	NTPC Reply
211.	Sec-VI			General Query	Can NTPC provide a general operational strategy for integration of renewable energy generation assets (PV) incl. primary, secondary, and tertiary ancillary services , with special focus integration of batteries and existing diesel gensets	Technical Specification Document is clear on the subject Please refer, amendment at Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for clarity on the subject.
212.	Sec-VI			General Query	EWS and all communication equipment's shall be housed in existing 17 MW Main control room. Kindly confirm	BESS Control Building:
213.	Sec-VI			General Query	Kindly share the below details for better design to ensure EMS and Solar SCADA communicate seamlessly. 1. 17 MW Solar plant SCADA architecture and Tag list 2. Solar SCADA drawing (Hardware and Software details) 3. Distances between Main control room and Inverter rooms of 17 MW Solar plant 4. Switchgear details of 17 MW Control room to factor equipment quantities and interface details 5. Protocol details (version) by which Solar SCADA can share the data to EMS	Detail shall be shared during detail engineering stage Please refer, amendment Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for solar SCADA integration.
214.	Sec-VI			General Query	Owner needs to give full access of existing SCADA not limited to database schema, OPC server, change in connection between field devices...etc. Kindly confirm	Noted. Please refer, amendment Doc. No. RE-CS-5728-004(B)-9-AMDT-01 for solar SCADA integration.
215.	Sec-VI			General Query	Free access to the BESS site during construction and O&M shall be provided by the solar project contractor for timely completion.	Free access to the BESS site during construction and O&M shall be provided.
216.	Sec-VI			General Query	Given the battery degrades with cycles what is the allowed degradation level per year? Daily load profile of the region inorder to better size the battery	BESS needs to deliver 6 MW ,24MWh rated AC discharge capacity at PCC throughout the life of 25 Years. Bidder to comply with technical specification requirement