

**INVITATION FOR BID**

**INVITATION FOR BIDS (IFB)  
FOR  
Supply, Installation and Commissioning of Solar Cold Storage at  
Senegal, Djibouti, Sudan and Seychelles**

**(International Competitive Bidding)**

**IFB No.: 20509**

**Date: 22.06.2022**

**Bidding Document No: CS-0011-004F-0**

**1.0** NTPC Ltd invites e-bid on behalf of International Solar Alliance (ISA) from eligible bidders from ISA member/signatories countries for **Supply, Installation and Commissioning of Solar Cold Storage at Senegal, Djibouti, Sudan and Seychelles** package as single stage two envelope bid basis (Envelope-I: Techno Commercial & Envelope-II: Price).

**2.0 BRIEF SCOPE OF WORK**

Supply, Installation and Commissioning of Solar based cold storage system at Senegal (5MT), Djibouti (2 x 2MT), Sudan (5MT) and Seychelles (5MT). The scope includes one year standard warranty and two years extended warranty. The detailed scope of work is defined in the Bidding document.

**3.0** The project shall be financed by ISA as per provisions of Grant Agreement.

**4.0** Detailed specifications, Scope of work and Terms & Conditions are given in the bidding documents, which are available at e-tender portal <https://ntpc.procure247.com> and as per the following schedule:

IFB Date	22.06.2022
Last Date for receipt of queries from prospective Bidders	01.07.2022
Last Date and Time for receipt of bids comprising both Techno-Commercial Bid and Price Bid	25.07.2022 14:30 HRS IST
Date & Time of opening of Techno-Commercial Bid (Envelop-I)	26.07.2022 15:00 HRS IST

## INVITATION FOR BID

Date & Time for opening of Price bid  
(Envelop-II)

Shall be intimated after opening of  
Techno-Commercial Bid.

**Cost of Bidding Documents and Bid Security are NIL.**

### **5.0 Qualifying Requirements for Bidders:**

Bidders shall be required to meet the Technical and Financial Qualifying Requirement (QR) as enclosed at Annexure-I to IFB.

**6.0** NTPC Ltd. reserves the right to reject any or all bids or cancel / withdraw the Invitation for Bids without assigning any reason whatsoever and in such case no bidder / intending bidder shall have any claim arising out of such action.

**7.0** A complete set of Bidding Documents may be downloaded by any interested Bidder from the website <https://ntpc.procure247.com> as per aforementioned schedule. The tender is invited under e-tendering process. The bidders can enroll themselves on the website <https://ntpc.procure247.com>. Bidder can participate in the tendering process by paying the portal charges as indicated at the e-tender portal.

The said website also has the user manuals with detailed guidelines on enrollment and participation in the bidding process. The e-tender portal is based on the email OTP based authentication for participation in the bidding process.

**No hard copy of Bidding Documents shall be issued. Bids shall be submitted ONLY at the e-tendering portal.**

### **10.0 Communication Details:**

Email: [ravikumar04@ntpc.co.in](mailto:ravikumar04@ntpc.co.in) / [neerajkumar02@ntpc.co.in](mailto:neerajkumar02@ntpc.co.in)

Telephone No. 01204948687/ 01204946675

Address:

Sr Manager(CS)/ AGM(CS)

CC&M, NTPC Limited, 6<sup>th</sup> Floor,

Engineering Office Complex (EOC),

A-8A, Sector-24, NOIDA,

Distt. Gautam Budh Nagar, (UP)

India, Pin - 201301

Clause no.	Qualifying Requirements (QR)
<b><u>1) QR for Solar Cold Storage</u></b>	
<b>1 Technical Criteria</b>	
1.1	The Bidder should have supplied, installed/got installed and commissioned Solar cold storage of total cumulative capacity of 25 MT. The reference plants of a cumulative minimum capacity of 10 MT must have been in successful operation for at least one-year from the date of commissioning prior to the techno-commercial bid opening date.
<b><u>Notes for clause 1</u></b>	
a)	The reference Solar cold storage plant as per clause 1.1 should consist of system of minimum 2MT capacity at a single location supplied, installed/got installed, and commissioned by Bidder for a client.
b)	Bidder shall submit certificate of successful completion and operation, as per Technical Criteria 1.1 from the Owner
c)	The Bidder should be a legal entity, duly incorporated/registered under the laws of its country of domicile in one of the member/signatory countries of ISA as on the date of techno-commercial bid submission.
<b>2 Financial Criteria</b>	
2.1 a)	<p>The average annual turnover of the Bidder, should not be less than USD 100000 (US Dollar One Hundred Thousand only) during the preceding three (3) financial years as on date of techno-commercial bid opening</p> <p>In case a Bidder does not satisfy the average annual turnover criteria, stipulated above 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 Bidder would be required to furnish along with its Techno-Commercial Bid, a Letter of Undertaking from the 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 Bidder in case of award.</p>
2.1 b)	In case the Bidder is not able to furnish its audited financial statements on standalone entity basis, the unaudited unconsolidated financial statements of the Bidder can be considered acceptable provided the Bidder further furnishes the following documents on substantiation of its qualification:
2.1 c)	Copies of the unaudited unconsolidated financial statements of the Bidder along with copies of the audited consolidated financial statements of its Holding Company

2.1 d)	Certificate from the CEO/ CFO of the Holding Company, as per the format enclosed in the bidding documents, stating that the unaudited unconsolidated financial statements form part of the consolidated financial statement of the Holding Company.
2.1 e)	In case where audited results for the last financial year as on the date of Techno Commercial Bid Opening are not available, the financial results certified by a practicing Chartered Accountant shall be considered acceptable. In case the Bidder is not able to submit the Certificate from a practicing Chartered Accountant certifying its financial parameters, the audited result of three consecutive financial years preceding the last financial year shall be considered for evaluating 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 date of Techno Commercial Bid Opening and the Certificate from a practicing Chartered Accountant certifying the financial parameters is not available.
<b><u>Notes for Clause 2</u></b>	
a)	Net worth means the sum-total of the paid-up share capital and free reserves. Free reserves mean 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,
b)	Other income shall not be considered for arriving at annual turnover.
c)	"Holding Company" and "Subsidiary" shall have the meaning ascribed to them as per Companies Act of domicile country of the bidder
d)	For Turnover indicated in foreign currency, the exchange rate as on seven (7) days prior to Techno Commercial Bid Opening date shall be used.

***NTPC LIMITED***  
***(A Government of India Enterprise)***

Project Management Consultant (PMC) for

**International Solar Alliance (ISA)**



**BIDDING DOCUMENTS**

**FOR**

**Supply, Installation, Commissioning of Solar Cold Storage at Senegal, Djibouti, Sudan and Seychelles**

**BIDDING DOCUMENT NO.: CS-0011-004F-0**

(This document is meant for the exclusive purpose of bidding against this Bid Document No. / Specification and shall not be transferred, reproduced or otherwise used for purposes other than that for which it is specifically issued).

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Bid Form & Attachments (Techno-Commercial Bid)
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  - (c) **Section-VII (Book 3 of 3)**  
LOA and other formats

## Acronyms

BDS	Bid Data Sheet
CIF	Cost, Insurance and Freight
CIP	Carriage and Insurance paid to (place)
CPM	Critical Path Method
EDI	Electronic Data Interchange
EXW	Ex factory, ex works or ex warehouse
FCA	Free Carrier
FOB	Free on Board
FP	Forms & Procedures
GCC	General Conditions of Contract
ICC	International Chamber of Commerce
IFB	Invitation for Bids
ITB	Instructions to Bidders
SCC	Special Conditions of Contract
TS	Technical Specifications and Drawings
UNCITRAL	United Nations Commission on International Trade Law
INCOTERMS	International Rules for International Trade Law.
Note:	The terms EXW, CIF, etc. shall be governed by the rules prescribed in the current edition of INCOTERMS, published by the International Chamber of Commerce, 38, Cours Albert 1er, 75008, Paris, France/.

SECTION - I

**INVITATION FOR BIDS (IFB)**



**INVITATION FOR BID**

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Email: [ravikumar04@ntpc.co.in](mailto:ravikumar04@ntpc.co.in) / [neerajkumar02@ntpc.co.in](mailto:neerajkumar02@ntpc.co.in)

Telephone No. 01204948687/ 01204946675

Address:

Sr Manager(CS)/ AGM(CS)

CC&M, NTPC Limited, 6<sup>th</sup> Floor,

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a)	Net worth means the sum-total of the paid-up share capital and free reserves. Free reserves mean 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,
b)	Other income shall not be considered for arriving at annual turnover.
c)	"Holding Company" and "Subsidiary" shall have the meaning ascribed to them as per Companies Act of domicile country of the bidder
d)	For Turnover indicated in foreign currency, the exchange rate as on seven (7) days prior to Techno Commercial Bid Opening date shall be used.

## **SECTION – II**

### **INSTRUCTION TO BIDDERS**

**for**

**Supply, Installation, Commissioning of Solar Cold Storage at Senegal, Djibouti, Sudan and Seychelles**

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CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
	<p style="text-align: center;"><b>INSTRUCTIONS TO BIDDERS</b></p> <p><b>Mode &amp; Type of Bidding</b></p> <p>NTPC Ltd, as Project Management Consultant (PMC) invites e-bid on behalf of International Solar Alliance (ISA) from eligible bidders from ISA member/signatories countries as single stage two envelope bid basis (Envelope-I: Techno- Commercial &amp; Envelope-II: Price).</p> <p>Bidding documents will be available at the e-tender portal <a href="https://ntpc.procure247.com">https://ntpc.procure247.com</a> and bids shall be submitted online only at same portal. No physical copy of Bidding Documents shall be issued and no physical bids shall be required to be submitted by bidders.</p> <p>The above e-tender portal is having system of mobile and/or email based authentication for tendering. The aforesaid website also contains the user manuals with detailed guidelines on enrollment and participation in the bidding process. Brief Guidelines for tendering is available at the e-tender portal.</p> <p style="text-align: center;"><b>A. Introduction</b></p> <p><b>1. Bidders Eligible for Bidding</b></p> <p>1.1 Bidding is open to bidders from ISA member/signatory countries only as on the last date of bid submission. (List of ISA signatory countries are available at <a href="https://isolaralliance.org/membership/countries">https://isolaralliance.org/membership/countries</a> and list of ISA members countries are available at <a href="https://isolaralliance.org/membership/countries">https://isolaralliance.org/membership/countries</a>).</p> <p><b>2. Source of Funds</b></p> <p>2.1 The project shall be financed by ISA as per Grant Agreement.</p>
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CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
3.	<p><b>Cost of Bidding</b></p>
3.1	<p>The Bidder shall bear all costs associated with the preparation and submission of its bid, and the PMC/ISA/Employer will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.</p>
<p><b>B. The Bidding Documents</b></p>	
4.	<p><b>Content of Bidding Documents</b></p>
4.1	<p>The facilities required, bidding procedures, contract terms and technical requirements are prescribed in the bidding documents. The bidding documents include the following sections:</p> <p>Section I - Invitation for Bids (IFB)</p> <p>Section II - Instructions to Bidders (ITB)</p> <p>Section III - Bid Data Sheet (BDS)</p> <p>Section IV - General Conditions of Contract (GCC)</p> <p>Section V - Special Conditions of Contract (SCC)</p> <p>Section VI - Technical Specifications (TS)</p> <p>Section VII- Forms and Procedures (FP)</p>
4.2	<p>The Bidder is expected to examine all instructions, forms, terms, conditions, specifications and other information in the bidding documents. Failure to furnish all information required as per the bidding documents or submission of a bid not substantially responsive to the bidding documents in every respect will be at the Bidder's risk and may result in rejection of its bid.</p>
5.	<p><b>Clarification on Bidding Documents</b></p>
5.1	<p>A prospective Bidder requiring any clarification to the bidding documents may submit it at the Clarifications section on the e-tender portal or through email to ID mentioned in the BDS. The PMC will respond to any request for clarification or modification of the bidding documents that it receives not later than the date specified in IFB. The PMC will post the Clarifications at e-tender portal and Bidders can view these clarifications once they are posted at the e-tender portal.</p>
<p>SECTION-II (ITB) INSTRUCTIONS TO BIDDERS</p>	
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CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
	<p>Bidders are advised to regularly check e-tender portal regarding posting of clarifications to the bidding documents, if any.</p> <p><b>Further, no queries from Bidders shall be entertained after last date of receipt of Queries/ Pre-Bid Conference (if applicable) as specified in IFB.</b></p> <p>5.2 The Bidder is advised to visit and examine the site where the facilities are to be installed and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for supply and installation of the facilities. The costs of visiting the site shall be borne by the bidder only.</p> <p>5.3 The Bidder and any of its personnel or agents will be granted permission by the PMC/Employer to enter upon its premises and lands for the purpose of such inspection, but only upon the express condition that the Bidder, its personnel and agents will release and indemnify the PMC/Employer and its personnel and agents from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as a result of the inspection.</p> <p>6. <b>Amendment to Bidding Documents</b></p> <p>6.1 At any time prior to the deadline for submission of bids, the PMC may, for any reason, whether at its own initiative, or in response to a clarification requested by a prospective Bidder, amend the bidding documents.</p> <p>6.2 The amendments will be posted at e-tender portal for viewing by the Bidder. The amendments will be binding on Bidders and it will be assumed that the information contained therein will have been taken into account by the Bidder in its bid. Bidders are also advised to regularly check e-tender portal regarding posting of Amendment, if any.</p> <p>6.3 In order to afford prospective Bidders reasonable time in which to take the amendment into account in preparing their bid, the PMC may, at its discretion, extend the deadline for the submission of bids.</p> <p style="text-align: center;"><b>C. Preparation of Bids</b></p> <p>7. <b>Language of Bid</b></p> <p>7.1 The bid prepared by the Bidder and all correspondence and documents related to the bid exchanged between the Bidder and the PMC shall be written in <b>English</b> language, provided that any printed literature furnished by</p>
SECTION-II (ITB) INSTRUCTIONS TO BIDDERS	PAGE 6 OF 23

CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
8.  8.1          8.2	<p>the Bidder may be written in another language, as long as such literature is accompanied by a translation of its pertinent passages in English language in which case, for purposes of interpretation of the bid, the translation shall govern.</p> <p>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.</p> <p><b>Documents Comprising the Bid</b></p> <p>Single Stage-Two Envelope Bidding procedure shall be followed through e-tendering for the subject package as under:</p> <p><b>Envelope - I : Techno-Commercial Bid</b></p> <p><b>Envelope - II : Price Bid</b></p> <p>The <b>Envelope - I: “Techno-Commercial Bid”</b> shall be evaluated for completeness and in regard to fulfillment of the qualification requirements and eligibility conditions.</p> <p><b>Envelope - I: Techno-Commercial Bid</b></p> <p>The Techno-Commercial Bid submitted by the Bidder shall comprise of the following documents:</p> <p><b>Bid Form (Techno-Commercial Bid) Section-VII, (Part 1 of 3) duly completed and signed by the Bidder together with following Attachments shall be uploaded on e-tender portal under section “Technical”</b></p> <p>(a) <b>Attachment 1: DELETED</b></p> <p>(b) <b>Attachment 2: Power of Attorney</b></p> <p>A power of attorney, indicating that the person signing and submitting the bid digitally/ submitting the documents has the authority to sign the bid and the bid is binding upon the Bidder during the full period of its validity. It may be noted that scanned copy of Power of Attorney is to be submitted along with the bid on e-tender portal. Original copy Power of Attorney in physical form shall be submitted by bidder on demand of PMC.</p>
SECTION-II (ITB) INSTRUCTIONS TO BIDDERS	PAGE 7 OF 23

CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
	<p>(c) <b>Attachment 3: Bidder’s Qualifications</b></p> <p>The documentary evidence of the Bidder’s qualifications to perform the contract, if its bid is accepted, shall establish to PMC’s satisfaction that the Bidder has the capacities and capabilities necessary to perform the contract and meets the experience and other criteria outlined in the <b>Qualifying Requirements in the BDS.</b></p> <p>Documentary evidence that the Bidder is eligible to bid and is qualified to perform the contract as per Qualifying Requirements shall be furnished in <b>Attachment-3</b> (Section-VII Book 1 of 3) to Bid.</p> <p>In case Bidder is permitted in the Bid Data Sheets to offer to supply and/or install plant and equipment under the contract that the Bidder did not manufacture or otherwise produce and/or install, the Bidder shall (i) have the financial and other capabilities necessary to perform the contract; (ii) have been duly authorised by the manufacturer or producer of the related plant and equipment or component to supply and/or install that item in the Employer’s country; (iii) be responsible for ensuring that the manufacturer or producer of the related item meets the minimum criteria listed for that item.</p> <p>(d) <b>Attachment 4: DELETED</b></p> <p>(e) <b>Attachment 5: Technical Data Sheets</b></p> <p>Technical Data Sheets duly filled in as per the format, enclosed with Technical Specifications of the bidding documents.</p> <p>(f) <b>Attachment 6: Additional Information</b></p> <p>Additional Information which the bidder wishes to provide in his bid, without any price Component.</p> <p>(g) <b>Attachment 7: General Declaration</b></p> <p>Bidders to accept general declaration and provide information as per details as mentioned below:</p> <p>Bankruptcy- Not declared bankruptcy, not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against the Bidder that could impair its operations in the foreseeable future.</p> <p>History of Non-Performing Contracts- Non-performance of a contract did not occur as a result of contractor default for the last 3 years</p>
<p>SECTION-II (ITB) INSTRUCTIONS TO BIDDERS</p>	<p>PAGE 8 OF 23</p>

CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)	
8.3	<p>Litigation History- No consistent history of court/arbitral award decisions against the Bidder for the last 3 years</p> <p><b>Note: Techno-Commercial Bid should not contain any price content entry. If any of the Bidder indicates the price in Techno-Commercial Bid, such bid shall be liable for rejection.</b></p> <p><b>Envelope - II: Price Bid</b></p> <p>Bidders to submit the price bid in the “ Commercial” section of the e-tender portal as per BOQ in the bid documents. Bidders to note following while submission of price bid:</p> <p>8.3.1 Price Bid should not contain any matter in respect of Technical and/ or Commercial aspects other than the details specifically sought by the PMC in the Price Bid. If the Technical/ commercial matters indicated in Price Bid are found to be in contradiction with the details furnished in Techno-Commercial Bid, the details furnished in Techno-Commercial Bid shall prevail.</p> <p>8.3.2 The price bid submitted by the bidder should be without any deviations and strictly in conformity with the provisions of all bidding documents and amendment/addenda/corrigenda/ errata/clarification to the bidding documents issued by PMC.</p> <p>8.3.3 Bidders shall be required to upload prices for mandatory Spares as per Section-VII book 2 of 3 under “Commercial” section at the e-tender portal.</p> <p>9. NOT USED</p> <p>10. <b>Bid Prices</b></p> <p>10.1 Unless otherwise specified in the Technical Specifications, Bidders shall <b>quote for the entire facilities on a “single responsibility” basis</b> such that the total bid price including taxes and duties covers all the Contractor’s obligations mentioned in or to be reasonably inferred from the bidding documents in respect of the design, manufacture, including procurement and subcontracting (if any), delivery, construction [including Structural Steel Works, Civil &amp; Allied Works etc.], installation, commissioning, completion of the facilities including supply of mandatory spares (if any), and one year standard warranty and two years extended warranty. This includes all requirements under the Contractor’s responsibilities for testing, pre-commissioning and commissioning of the facilities, where so required by the bidding documents, the acquisition of all permits, approvals and licenses, Royalties etc.; the training services and such other items and services as</p>	
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10.2	<p>may be specified in the bidding documents, all in accordance with the requirements of the General Conditions of Contract and Technical Specifications.</p> <p><b>Bidders are required to quote the total lumpsum price inclusive of taxes and duties for each project separately as per the format specified in the price schedule</b> for the commercial, contractual and technical obligations outlined in the bidding documents.</p>																													
10.3	<p><b>Bidders are required to fill up their Bid Price (inclusive of taxes and duties) in the price schedule under “ Commercial” section screen at the e-tender portal as per following:</b></p> <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Item Description</th> <th>Unit</th> <th>Quantity</th> <th>Price(USD)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Senegal</td> <td>1</td> <td>LOT</td> <td></td> </tr> <tr> <td>2</td> <td>Supply, Installation, Commissioning of Solar Cold Storage (2 X 2 MT) in Djibouti</td> <td>1</td> <td>LOT</td> <td></td> </tr> <tr> <td>3</td> <td>Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Sudan</td> <td>1</td> <td>LOT</td> <td></td> </tr> <tr> <td>4</td> <td>Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Seychelles</td> <td>1</td> <td>LOT</td> <td></td> </tr> </tbody> </table> <p><b>Bidders shall have option to submit price bid for either one project or more than one project. Evaluation of price bid shall be carried out item wise i.e award of each project shall be separately based on the quoted price of each project. Cumulative price evaluation shall not be carried out.</b></p> <p>The above price schedules shall include the following:</p> <p>Plant and Equipment including Mandatory Spares, Commissioning spares, Special Tools and Tackles etc. from outside / within Employer’s country which is required to complete the scope of work as per Technical Specifications and Conditions of Contract. The price shall be inclusive of all costs as well as taxes, duties and levies paid or payable on components and raw materials incorporated or to be incorporated in the facilities.</p> <p>All services i.e. Transportation from Works to Port of embarkation in manufacturer’s / supplier’s country including insurances, Ocean / Air</p>					Sl. No.	Item Description	Unit	Quantity	Price(USD)	1	Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Senegal	1	LOT		2	Supply, Installation, Commissioning of Solar Cold Storage (2 X 2 MT) in Djibouti	1	LOT		3	Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Sudan	1	LOT		4	Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Seychelles	1	LOT	
Sl. No.	Item Description	Unit	Quantity	Price(USD)																										
1	Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Senegal	1	LOT																											
2	Supply, Installation, Commissioning of Solar Cold Storage (2 X 2 MT) in Djibouti	1	LOT																											
3	Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Sudan	1	LOT																											
4	Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Seychelles	1	LOT																											
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10.4	<p>Transport from the port of embarkation in manufacturer's / supplier's country to Employer's country, port handling, port clearance and port charges in both manufacturer's / supplier's and employer's country, further loading, inland transportation within Employer's country for delivery at site, inland transit insurance, unloading, storage, handling at site, installation (including civil, structural steel work &amp; allied work, if applicable), insurance covers other than inland transit insurance, erection, testing, commissioning and conducting Guarantee tests and all other services as specified in the Contract Documents.</p> <p>The prices quoted in the Price Schedule shall be inclusive of all Taxes, Duties, Levies &amp; charges and no Separate payment on this account, whatsoever, shall be made.</p> <p>While quoting the prices, bidders are required to take into account that the Employer shall grant exemption to any domestic or international direct and indirect taxes and duties prevailing in Employer's country that may otherwise be levied on expenses relating to the Project, including, but not limited to the plant, machinery, equipment, components, services availed, and/or commission charged. If the Employer's Country fails to grant such exemptions, it shall fully reimburse to offset the expenses incurred for payment of such taxes and duties as specified before. Any such resources provided by the Employer's country will be considered as in-kind resources provided by the Employer's country government for successful implementation of the Project.</p>
10.5	<p>Bidders shall also be required to furnish a separate item wise price break-up for Mandatory Spare parts (already included in lot price of project) under price bid envelop. These prices of spares shall be included in the lot price of that project. The Price shall be inclusive of Transportation from Works to Port of embarkation in manufacturer's / supplier's country including insurances, Ocean / Air Transport from the port of embarkation in manufacturer's / supplier's country to Employer's country, port handling, port clearance and port charges in both manufacturer's / supplier's and employer's country, further loading, inland transportation within Employer's country for delivery at project site, inland transit insurance and unloading at project site.</p>
10.6	<p><b>Price Basis</b></p> <p><b>Prices quoted by the Bidder shall remain FIRM and fixed for the entire period of execution of the Contract.</b></p>
11.	<p><b>Bid Currencies</b></p>
<p style="text-align: center;">SECTION-II (ITB) INSTRUCTIONS TO BIDDERS</p> <p style="text-align: right;">PAGE 11 OF 23</p>	

CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
	Bidders shall indicate the entire Bid Price in <b>USD</b> only.
12.	<b>Bid Security: NOT APPLICABLE</b>
13.	<b>Period of Validity of Bid (Techno-Commercial Bid and Price Bid)</b>
13.1	Bids(both Techno-Commercial Bid and Price Bid) shall remain valid for one hundred & eighty (180) days from the closing date for the receipt of bids pursuant to Clause 16. The bid valid for shorter period shall be rejected as being non-responsive. The bidder agrees not to vary, alter or revoke his bid either in whole or in part during that period.
13.2	In exceptional circumstances, prior to the expiry of the original bid validity period, the PMC may request the Bidders to extend the period of validity for a specified additional period. The request and the responses thereto shall be made in writing through email. A Bidder agreeing to the request will not be permitted to modify his bid.
14.	NOT USED.
<b>D. Submission of Bids</b>	
15.	<p><b>Submission of Bids</b></p> <p>Bid shall be submitted online at e-tender Portal in the manner specified elsewhere in Bidding Document. Bidders to ensure that all uploaded documents must be certified. Bidder to further ensure that documents uploaded should be in the proper format so that it could be downloaded properly. PMC shall not be responsible for corrupted files, if any, uploaded online at the e-tender portal.</p> <p><b>No Manual / Physical Copy of the Bid shall be acceptable.</b></p>
15.1	<p><b>Techno-Commercial (Envelope-I) submission:</b></p> <p>Bidder shall be required to submit documents as indicated in the ITB 8.2 in the e-tender portal.</p> <p>While submission of bid, bidders to comply condition of <b>“DO YOU CERTIFY FULL COMPLIANCE TO ALL PROVISIONS OF BID DOC?”</b> as per ITB 21.5 and <b>"Do you certify full compliance on Qualifying Requirements"</b> as per ITB 21.7.1.</p>
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CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
<p>15.2</p> <p>15.2.1</p> <p>16.</p> <p>16.1</p> <p>16.2</p> <p>17.</p> <p>18.</p>	<p><b>Price Bid (Envelop-II) Submission:</b></p> <p>Bidders will submit his <b>Price bid online under “ Commercial” section Part on the e-tender portal</b> in the following manner after carefully examining the document/conditions etc:</p> <p>Bidders are required to fill up their <b>Bid Price on screen under Commercial section to the e-tender portal</b> along with all annexure in Financial Part. Bidder to further ensure that documents uploaded should in the proper format so that it could be downloaded properly. PMC shall not be responsible for corrupted files, if any, uploaded.</p> <p><b>This tender is pertaining to four different projects in four different countries as specified in bidding documents. Bidders shall have option to submit price bid for either one project or more than one project. If bidder mentions “No price”, or “zero” price against any item(s) in the commercial section , it shall be considered that bidder has not quoted that particular project and no claim whatsoever for that particular project shall be permitted.</b></p> <p>The Price Bid shall be strictly in conformity with the provisions of the Bidding Documents, amendments/clarifications/errata thereof issued and does not contain any matter or deviation to any provision of the Bidding Documents including its Amendments/Clarifications/Errata.</p> <p>After opening of Price Bid, if any deviation to the provisions of the Bidding Documents (including all amendments/Clarifications) is observed in the Price Bid, the same shall be ignored by PMC and considered as withdrawn by the bidder without any cost implication to PMC.</p> <p><b>Deadline for Submission of Bids</b></p> <p>Bids must be submitted online at e-tender portal no later than the time and date stated at the e-tender portal. Deadline for Bid Submission shall be date and time as stated in IFB or any subsequent communication from the PMC or date and time indicated at the e-tender portal.</p> <p>The PMC may, at its discretion, extend this deadline for submission of bids by amending the bidding documents in accordance with ITB Sub-Clause 6.0, in which case all rights and obligations of PMC and Bidders will thereafter be subject to the deadline as extended.</p> <p>NOT USED</p> <p><b>Modification and Withdrawal of Bids</b></p>
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18.1	The Bidder may modify or withdraw its bid up-to the bid submission deadline as per the process at the e-tender Portal.
18.2	No bid may be withdrawn in the interval between the bid submission deadline and the expiration of the bid validity period specified in ITB Clause 13.
<b>E. Bid Opening and Evaluation</b>	
19.	<b>Opening of Bids</b>
19.1	<b>Techno-Commercial Bid Opening</b>
19.1.1	The PMC will open the Techno-Commercial bids online at the time, on the date specified at the E-tender portal. In the event of the specified date for the opening of bids being declared a holiday for the PMC, the bids will be opened at the appointed time on the next working day. Bidder's attendance during the Techno-commercial Bid opening in PMC Premises is not envisaged.
19.1.2	Techno-Commercial Bids that are not opened during bid opening will not be considered for further evaluation, regardless of the circumstances.
19.1.3	Techno-Commercial Bids which are generally responsive to the operating and performance requirements as laid out in Technical Specifications, Section-VI of bidding documents will then be considered for evaluation.
19.1.4	The Price Bid will remain unopened and shall be opened separately by PMC after completion of evaluation of Techno-Commercial Bids.
19.2	<b>Price Bid Opening</b>
19.2.1	After evaluation process of Techno-Commercial bids is completed, Price bids shall be opened of the bidders qualified during Techno-Commercial bids (Envelop-I) evaluation. Bidder's attendance during the Price Bid opening in PMC Premises is not envisaged.
20.	<b>Clarification of Bids</b>
20.1	During the bid evaluation, the PMC may, at its discretion, ask the Bidder for a clarification of its bid including documentary evidence pertaining to the reference plants declared in the bid for the purpose of meeting Qualifying Requirement specified in Bid Data Sheet. The request for clarification and the response shall be in writing and no change in the price or substance of the bid including substitution of reference plants in the bid by new/additional plant for conforming to Qualifying Requirement shall be sought, offered or permitted.
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CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
<p>21.</p> <p>21.1</p> <p>21.2</p> <p>21.3</p> <p>21.4</p> <p>21.5</p>	<p><b>Preliminary Examination of Techno-Commercial Bids</b></p> <p>The PMC will examine the Bids to determine whether the same are complete, whether required documents have been furnished, whether the documents have been properly signed and whether the Bids are generally in order.</p> <p>During evaluation and comparison of bids, the PMC may, at his discretion ask the bidder for clarification on its bid. The request for clarification shall be in writing and no change in prices or substance of the bid shall be sought, offered or permitted. No post bid clarification at the initiative of the bidder shall be entertained as all such clarifications would have been obtained prior to the submission of the bid.</p> <p>The PMC may waive any minor informality, nonconformity, or irregularity in a bid that does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Bidder.</p> <p>Prior to the detailed evaluation, the PMC will determine whether each Techno-commercial bid is of acceptable quality, is complete, and is substantially responsive to the Bidding Documents. For purposes of this determination, a substantially responsive bid is one that (a) materially conforms to all the terms, conditions and specifications of the bidding documents without material deviations, objections, conditionalities or reservations. A material deviation, exception, objection, conditionality, or reservation is one: (i) that affects in any substantial way the scope, quality, or performance of the contract; (ii) that limits, in any substantial way that is inconsistent with the Bidding Documents, the PMC's rights or the Successful bidder's obligations under the Contract; or (iii) whose rectification would unfairly affect the competitive position of other Bidders who have submitted substantially responsive bids.</p> <p>No deviation, whatsoever, is permitted by PMC, to any provisions of the Bidding Documents. The bidders are advised that while making their Bid proposals and quoting prices, all conditions may appropriately be taken into consideration.</p> <p>Bidders shall certify their full compliance to all the provisions of Bidding Documents and its subsequent Amendment(s) / Clarification(s) / Addenda / Errata, if any, issued by the PMC by accepting the following condition in the e-tender portal.</p> <p><b>“DO YOU CERTIFY FULL COMPLIANCE TO ALL PROVISIONS OF BID DOC?”</b></p>
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CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
	<p>Acceptance of above condition shall be considered as bidder's confirmation to the following:</p> <p>(a) Confirm that we comply with all terms, conditions and specifications of the Bidding Documents read in conjunction with Amendments(s)/ Clarification(s) /Addend/Errata (if any) issued by the PMC prior to opening of Techno-Commercial Bids and the same has been taken into consideration while making our Techno-Commercial Bid &amp; Price Bid and we declare that we have not taken any deviation in this regard.</p> <p>(b) Any deviation, variation or additional condition etc. or any mention, contrary to Bidding Documents and its Amendments(s)/Clarification(s) /Addend/Errata (if any) found anywhere in our Techno-Commercial Bid and/ or Price Bid, implicit or explicit shall stand unconditionally withdrawn, without any cost implication whatsoever to PMC/ISA/Employer, failing which the bid shall be rejected.</p>
21.6	<p>The PMC's determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence. If a bid is not substantially responsive, it will be rejected by the PMC, and may not subsequently be made responsive by the Bidder by correction of the nonconformity.</p>
21.7	<p><b>QUALIFICATION</b></p>
21.7.1	<p><b>Compliance on "Qualifying Requirements"</b></p> <p>Bidders shall certify their compliance on "Qualifying Requirements" by accepting the following at the e-tender portal of Bid Invitation :</p> <p style="text-align: center;"><b>"Do you certify full compliance on Qualifying Requirements"</b></p> <p>Acceptance of above condition shall be considered as bidder's confirmation to the following conditions:</p> <p>(a) The declared reference Plants shall only be considered for evaluation / establishing compliance to Qualifying Requirement (QR).</p> <p>(b) No change or substitution in respect of reference Plants for meeting the specified Qualifying Requirement (QR) shall be offered by the bidder.</p>
21.7.2	<p>PMC, by the examination of Techno-Commercial Bid, will determine to its satisfaction whether the participating bidders are qualified to satisfactorily perform the contract in terms of the qualifying requirements stipulated in the</p>
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21.7.3	<p>Bid Data Sheet. The determination will take into account the bidder's financial and technical capabilities. It will be based upon an examination of documentary evidence of bidder's qualification submitted by the bidder in relevant attachment to the Bid Form of Techno-Commercial Bid as well as such other information as PMC deems necessary and appropriate. Notwithstanding anything stated anywhere else in the bidding documents, PMC reserves the right to seek in writing information relating to qualifying requirements in addition to details contained in the bid. The bidder shall furnish required information promptly to PMC. PMC will shortlist the Bidders meeting the stipulated Qualifying Requirements.</p>	
21.8	<p>An affirmative determination of meeting the qualifying requirements will be a prerequisite for further evaluation of Techno-Commercial bid and holding clarification meeting, if any, with the Bidder. A negative determination will result in rejection of the Bidder's Techno-Commercial Bid in which event PMC will not open the Price Bid of the concerned bidder.</p>	
21.8	<p>Bidder may note that deviations, variations and additional conditions etc. found anywhere in the bid, shall not be given effect to in evaluation and it will be assumed that the Bidder complies with all the conditions of Bidding Documents. In case the Bidder refuses to withdraw deviations, implicit or explicit, found anywhere in the bid, without any financial implication whatsoever, the bid shall be rejected.</p>	
22.	<p><b>Evaluation of Techno-Commercial Bids</b></p> <p>Techno-Commercial Bid, prepared and comprising details/ documents, submitted by Bidder's will be evaluated as described below:</p>	
22.1	<p>The PMC will carry out a detailed evaluation of Techno-Commercial Bids (of the qualified bidders short listed as above) previously determined to be substantially responsive in order to determine whether the technical aspects are in accordance with the requirements set forth in the bidding documents. In order to reach such a determination, the PMC will examine and compare the technical aspects of the bids on the basis of the information supplied by the bidders, taking into account the following factors:</p> <ul style="list-style-type: none"> <li>(a) overall completeness and compliance with the Technical Specifications and Drawings; suitability of the facilities offered in relation to the environmental and climatic conditions prevailing at the site; and quality, function and operation of any process control concept included in the bid. The bid that does not meet acceptable standards of completeness, consistency and detail will be rejected for non-responsiveness.</li> <li>(b) achievement of specified performance criteria by the facilities</li> </ul>	
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CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
22.2	The capabilities of the vendors and subcontractors, proposed in the bid will also be evaluated for acceptability. Should a vendor or subcontractor be determined to be unacceptable, the bid will not be rejected but the Bidder will be required to substitute an acceptable vendor or subcontractor without any change in the bid price.
22.3	Bidder may note that deviations, variations and additional conditions etc. found elsewhere in the bid, shall not be given effect to in evaluation and it will be assumed that the Bidder complies to all the conditions of Bidding Documents. In case the Bidder refuses to withdraw deviation implicit or explicit found anywhere in the bid, without any financial implication whatsoever to the PMC, the bid shall be rejected.
23.	NOT USED
24.	NOT USED
25.	NOT USED
26.0	<b>Preliminary Examination of Price Bids</b>
26.1	The PMC will examine the Price Bids to determine whether they are complete, whether any computational errors have been made and whether the bids are generally in order.
26.2	<b>DELETED</b>
27.	<p><b>Evaluation of Price Bids</b></p> <p>The PMC's evaluation and comparison shall take into account the total lumpsum price inclusive of taxes and duties quoted by the bidder for each project separately for the scope of work, technical specifications and terms and conditions specified in the bidding documents.</p> <p><b>If bidder mentions “No price”, or “zero” price against any item(s) / project in the commercial section at the e-tender portal , it shall be considered that bidder has not quoted that particular project and no claim whatsoever for that particular project shall be permitted.</b></p> <p>Price(s) quoted by bidder against each item of the BOQ shall be considered as lumpsum price of complete scope for that project and shall be evaluated accordingly.</p>
<p style="text-align: center;">SECTION-II (ITB) INSTRUCTIONS TO BIDDERS</p> <p style="text-align: right;">PAGE 18 OF 23</p>	

CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
	<p>The PMC's evaluation of a price bid will take into account the bid prices indicated in Price Schedule and Arithmetical Corrections, if any.</p> <p>Bidders shall have option to submit price bid for either one project or more than one project. <b>Evaluation of price bid shall be carried out item wise i.e award of each project shall be placed separately based on the quoted price of each project. Cumulative price evaluation shall not be carried out.</b></p> <p>Bid prices quoted by Bidders shall remain unaltered.</p> <p>28. <b>Contacting the PMC</b></p> <p>28.1 Subject to ITB Clause 20, no Bidder shall contact the PMC on any matter relating to its bid, from the time of the opening of bids to the time the contract is awarded.</p> <p>28.2 Information relating to examination, evaluation and comparison of bids and recommendation for the award of contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful bidder has been announced. Any effort by a Bidder to influence the PMC in the PMC's bid evaluation, bid comparison or contract award decisions may result in rejection of the Bidder's bid.</p> <p>29. NOT USED.</p> <p style="text-align: center;"><b>F. AWARD OF CONTRACT</b></p> <p>30. <b>Award Criteria</b></p> <p>30.1 Subject to ITB Clause 31, the PMC will award the contract(s) to the successful Bidder(s) whose bid has been determined to be substantially responsive and to be the lowest evaluated bid for each project, further provided that the Bidder(s) is/are determined to be qualified to perform the contract satisfactorily.</p> <p>30.2 The Bidder will be required to comply with all requirements of the Bidding Documents and subsequent amendment thereof, if any without any extra cost to the PMC/ISA/Employer.</p> <p>30.3 The PMC/ISA/Employer reserves the right to vary the quantity of any of Spares and / or delete any Item of Spares altogether at the time of Award of Contract.</p>
SECTION-II (ITB) INSTRUCTIONS TO BIDDERS	PAGE 19 OF 23

CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
30.4	<p>The mode of contracting with the successful bidder will be as per stipulation outlined in GCC Clause 3.6 and briefly indicated below:</p> <p>The award shall be made as follows:</p> <p>The Contract for supply of all plant and equipment including mandatory spares including Transportation from Works to Port of embarkation in manufacturer's / supplier's country including insurances, Ocean / Air Transport from the port of embarkation in manufacturer's / supplier's country to Employer's country, port handling, port clearance and port charges in both manufacturer's / supplier's and employer's country, further loading, inland transportation within Employer's country for delivery at site, inland transit insurance, unloading, storage, handling at site and providing other services such as installation (including civil, structural steel work &amp; allied work, if applicable), insurance covers other than inland transit insurance, erection, testing, commissioning, conducting tests, one year standard warranty, two years extended warranty and any other services specified in the Contract Documents.</p>
31.	<p><b>PMC's Right to Accept Any Bid and to Reject any or All Bids</b></p>
31.1	<p>The PMC reserves the right to accept or reject any bid, for any reasons including National defense and security consideration and to annul the bidding process and to reject all bids at any time prior to award of contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders on the grounds for the PMC's action.</p>
32.	<p><b>Letter of Award (LOA)</b></p>
32.1	<p>Prior to the expiration of the period of bid validity, the PMC will issue Letter of Award for each project separately to the successful Bidder(s) in writing through post, or email or by hand that its bid has been accepted for that particular project.</p> <p>Separate Letter of award shall be issued to successful bidder (s) for each project mentioned in the bidding documents.</p> <p>The Letter of award (LOA) will constitute the formation of the contract.</p>
33.	<p>NOT USED</p>
34.	<p><b>Performance Security</b></p>
<p style="text-align: center;">SECTION-II (ITB) INSTRUCTIONS TO BIDDERS</p>	
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CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
34.1	<p>Within twenty-eight (28) days after receipt of the Letter of Award, the successful Bidder(s) for each project shall furnish performance securities for ten percent (10%) of Contract Price for each project(s).</p>
34.2	<p>The Bank Guarantees submitted towards Performance Security shall be essentially as per rules and regulations of the PMC's country and it shall be submitted to the PMC.</p> <p>The Bank Guarantees submitted towards Performance Security shall be essentially from any of the Banks listed in Annexure-I to SCC.</p> <p>The Bank guarantee submitted from within India towards Performance Security shall be issued on Non-Judicial Stamp Paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted.</p> <p>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.</p> <p>The BG issued by a Bank outside India also needs to bear Stamp Duty of appropriate value applicable to the place of PMC where BG is to be submitted, the BG will be adjudicated from Collector of Stamps, within 3 months of arrival of BG in PMC country and the expenses incurred in this regard shall be recovered from the Contractor.</p>
34.3	<p>The Contractor also has the option for Security deposit instead of Bank Guarantees by making a request to employer/ PMC within thirty (30) days of the Letter of Award. In such case, the Employer shall at the time of making any payment to him for the work done under the Contract deduct towards the Contract Performance Security an amount equivalent to 20% of the gross bill amount accepted for payment until the Contract Performance Security so deducted becomes equal to 10% of the Contract Price. The Contractor at any time during currency of contract may convert the security deposit amount into a Bank Guarantee.</p>
35.	<p><b>DELETED</b></p>
36.	<p><b>Corrupt and Fraudulent Practices</b></p>
36.1	<p>The PMC/ISA/Employer requires that Bidders, Contractors and Suppliers observe the highest standard of ethics during the procurement and execution of the contracts. In pursuance of this policy, the PMC:</p>
<p style="text-align: center;">SECTION-II (ITB) INSTRUCTIONS TO BIDDERS</p> <p style="text-align: right;">PAGE 21 OF 23</p>	

CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
<p>36.2</p> <p>37.0</p> <p>38.0</p> <p>39.</p> <p>39.1</p>	<p>(a) Defines, for the purposes of this provision, the terms set forth below as follows:</p> <p>(i) “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; and</p> <p>(ii) “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 PMC, 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 PMC of the benefits of free and open competition;</p> <p>(b) will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;</p> <p>(c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for or in executing a contract of the Employer/PMC/ISA.</p> <p>Bidders are required to certify their compliance to the conditions of <b>“Corrupt or Fraudulent Practices ”</b> by accepting the following condition at the e-tender portal:</p> <p><b>“Do you accept the condition of Corrupt or Fraudulent Practices?”</b></p> <p>Furthermore, Bidders shall be aware of the provision stated in the General Conditions of Contract regarding <b>Corrupt or Fraudulent Practices</b>.</p> <p><b>Ineligibility for Participation in Re-Tender</b></p> <p>If a bidder after having been issued the Letter of Award, the contract being terminated due to reason attributed to bidder, then such bidder shall be treated ineligible for participation in re-tendering of this particular Package.</p> <p><b>Pre-Bid Conference: NOT APPLICABLE</b></p> <p><b>Policy for withholding and Banning of Business Dealings</b></p> <p>The PMC has in place a Policy for withholding and Banning of Business dealings as mentioned at the link</p>
<p>SECTION-II (ITB) INSTRUCTIONS TO BIDDERS</p>	<p>PAGE 22 OF 23</p>

CLAUSE NO.	INSTRUCTIONS TO BIDDERS (ITB)
	<p><a href="https://ntpctender.ntpc.co.in/Heading/Banning_Policy.pdf">https://ntpctender.ntpc.co.in/Heading/Banning_Policy.pdf</a>. Business dealings may be withheld or banned with the Bidder/Contractor on account of any of the grounds and following the procedures as detailed in the said Policy for withholding and Banning of Business Dealings.</p> <p>Bidders are required to certify their compliance to the conditions of <b>“Withholding and Banning of Business Dealings policy”</b> as per policy mentioned above by accepting the following at the e-tender portal.:</p> <p><b>“Do you accept withholding and Banning of Business Dealings policy”</b>.</p>
<p>SECTION-II (ITB) INSTRUCTIONS TO BIDDERS</p>	<p>PAGE 23 OF 23</p>

## SECTION - III

### BID DATA SHEET (BDS)

<b>BDS Item No.</b>	<b>ITB Clause Ref., if any</b>	<b>BID DATA SHEET</b>								
<p align="center"><b>SECTION - III</b></p> <p align="center"><b>BID DATA SHEET (BDS)</b></p> <p>The following bid specific data for the Plant &amp; Equipment to be procured shall amend and/or supplement the provisions in the Instructions to Bidders (ITB). Whenever there is a conflict, the provisions herein shall prevail over those in the ITB.</p>										
1.		<p><b>Instructions Related to E-tendering</b></p> <p>NTPC Ltd, as Project Management Consultant (PMC) invites e-bid on behalf of International Solar Alliance (ISA) from eligible bidders from ISA member/signatories as single stage two envelope bid basis (Envelope-I: Techno Commercial &amp; Envelope-II: Price).</p> <p>Bidding documents will be available at the e-tender portal <a href="https://ntpc.procure247.com">https://ntpc.procure247.com</a>. No physical copy of Bidding Documents shall be issued. Bids shall be submitted online only at <a href="https://ntpc.procure247.com">https://ntpc.procure247.com</a>.</p> <p>Name of the Package: <b>Supply, Installation, Commissioning Solar Cold Storage at Senegal, Djibouti, Sudan and Seychelles</b></p> <table border="1"> <thead> <tr> <th colspan="2"><b>Details of project Located in Senegal</b></th> </tr> </thead> <tbody> <tr> <td>Name of Project</td> <td>Supply, Installation, Commissioning of Solar PV Cold Storage(5MT) at Senegal</td> </tr> <tr> <td>Project Location</td> <td>Louga section of Niyaes region and 200 kms away from the port of Dakar (Capital of Senegal)</td> </tr> <tr> <td>Employer's Details</td> <td>Aïssatou D. SONKO Responsable Coopération Direction de la Promotion et de la Coopération Agence Nationale pour les Energies Renouvelables 120 Cité Asecna Liberté 6 Extension-</td> </tr> </tbody> </table>	<b>Details of project Located in Senegal</b>		Name of Project	Supply, Installation, Commissioning of Solar PV Cold Storage(5MT) at Senegal	Project Location	Louga section of Niyaes region and 200 kms away from the port of Dakar (Capital of Senegal)	Employer's Details	Aïssatou D. SONKO Responsable Coopération Direction de la Promotion et de la Coopération Agence Nationale pour les Energies Renouvelables 120 Cité Asecna Liberté 6 Extension-
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2.										

BDS Item No.	ITB Clause Ref., if any	<b>BID DATA SHEET</b>																		
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"> Dakar  Tél. : +221 33 869 55 04/ Mob. : +221 77 790 36 21  Email 1 : aissatou.sonko@aner.sn  Email 2 : aissatoudsonko@hotmail.com </td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>Details of project Located in Djibouti</b></td> </tr> <tr> <td>Name of Project</td> <td>Supply, Installation, Commissioning of Solar PV Cold Storage(2 x2MT) at Djibouti</td> </tr> <tr> <td>Project Location</td> <td>Omar Jaga'a in ARTA prefecture and 67 kms away from the capital city  Village of Dougoum, Region of Tadjourah</td> </tr> <tr> <td>Employer's Details</td> <td>M.Souleiman ELMI IDRISSE Engineer in Electrical Energy System Head of Service of Rural Électrification ,Direction of Energy Ministry of Energy, in charge of Natural Resources, Republic of DJIBOUTI Mob: (+253) 77 87 04 60 Phone: (+253) 21 34 60 10 BP: 10010 Mail id: seikasoulami@gmail.com</td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>Details of project Located in Sudan</b></td> </tr> <tr> <td>Name of Project</td> <td>Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Sudan</td> </tr> <tr> <td>Project Location</td> <td>Assunaytah, West kordofan Stat which is about (639) km from Khartoum capital of Sudan</td> </tr> <tr> <td>Employer's Details</td> <td>Eng. Zeinab Mohamed Hassan Mahgoub Sudan NFP - ISA Fellow-IITD First Batch Renewable Energy Directorate, Senior Engineer Sudanese Holding Company, Sudan</td> </tr> </table>		Dakar Tél. : +221 33 869 55 04/ Mob. : +221 77 790 36 21 Email 1 : aissatou.sonko@aner.sn Email 2 : aissatoudsonko@hotmail.com	<b>Details of project Located in Djibouti</b>		Name of Project	Supply, Installation, Commissioning of Solar PV Cold Storage(2 x2MT) at Djibouti	Project Location	Omar Jaga'a in ARTA prefecture and 67 kms away from the capital city  Village of Dougoum, Region of Tadjourah	Employer's Details	M.Souleiman ELMI IDRISSE Engineer in Electrical Energy System Head of Service of Rural Électrification ,Direction of Energy Ministry of Energy, in charge of Natural Resources, Republic of DJIBOUTI Mob: (+253) 77 87 04 60 Phone: (+253) 21 34 60 10 BP: 10010 Mail id: seikasoulami@gmail.com	<b>Details of project Located in Sudan</b>		Name of Project	Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Sudan	Project Location	Assunaytah, West kordofan Stat which is about (639) km from Khartoum capital of Sudan	Employer's Details	Eng. Zeinab Mohamed Hassan Mahgoub Sudan NFP - ISA Fellow-IITD First Batch Renewable Energy Directorate, Senior Engineer Sudanese Holding Company, Sudan
	Dakar Tél. : +221 33 869 55 04/ Mob. : +221 77 790 36 21 Email 1 : aissatou.sonko@aner.sn Email 2 : aissatoudsonko@hotmail.com																			
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BDS Item No.	ITB Clause Ref., if any	BID DATA SHEET										
2.		<table border="1"> <tr> <td></td> <td>Whatsapp : +91-7289063983 Mob : +49-918315141</td> </tr> </table> <table border="1"> <thead> <tr> <th colspan="2"><b>Details of project Located in Seychelles</b></th> </tr> </thead> <tbody> <tr> <td>Name of Project</td> <td>Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Seychelles</td> </tr> <tr> <td>Project Location</td> <td>La digue island of Seychelles</td> </tr> <tr> <td>Employer's Details</td> <td>Wills Agricole Technical Advisor for Energy and Climate Change ISA National Focal Point For Seychelles Ministry of Agriculture, Climate Change and Environment P.O. Box 445 Botanical Garden, Mt. Fleuri Victoria Mahe, Seychelles Tel: +248 4670569 E-mail: <a href="mailto:w.agricole@meteo.gov.sc">w.agricole@meteo.gov.sc</a>; <a href="mailto:wagricole1957@gmail.com">wagricole1957@gmail.com</a>; <a href="mailto:w.agricole@env.gov.sc">w.agricole@env.gov.sc</a></td> </tr> </tbody> </table> <p>Project Manager: NTPC Ltd PMC: NTPC Ltd ISA: International Solar Alliance</p> <p>Address of PMC (for bidding process): NTPC Limited</p> <p>Email: <a href="mailto:Ravikumar04@ntpc.co.in">Ravikumar04@ntpc.co.in</a> / <a href="mailto:neerajkumar02@ntpc.co.in">neerajkumar02@ntpc.co.in</a> CC&amp;M, 6th Floor, Engineering Office Complex (EOC), A-8A, Sector-24, NOIDA, Distt. Gautam Budh Nagar, (UP) India, Pin – 201301</p>		Whatsapp : +91-7289063983 Mob : +49-918315141	<b>Details of project Located in Seychelles</b>		Name of Project	Supply, Installation, Commissioning of Solar Cold Storage (5 MT) in Seychelles	Project Location	La digue island of Seychelles	Employer's Details	Wills Agricole Technical Advisor for Energy and Climate Change ISA National Focal Point For Seychelles Ministry of Agriculture, Climate Change and Environment P.O. Box 445 Botanical Garden, Mt. Fleuri Victoria Mahe, Seychelles Tel: +248 4670569 E-mail: <a href="mailto:w.agricole@meteo.gov.sc">w.agricole@meteo.gov.sc</a> ; <a href="mailto:wagricole1957@gmail.com">wagricole1957@gmail.com</a> ; <a href="mailto:w.agricole@env.gov.sc">w.agricole@env.gov.sc</a>
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Employer's Details	Wills Agricole Technical Advisor for Energy and Climate Change ISA National Focal Point For Seychelles Ministry of Agriculture, Climate Change and Environment P.O. Box 445 Botanical Garden, Mt. Fleuri Victoria Mahe, Seychelles Tel: +248 4670569 E-mail: <a href="mailto:w.agricole@meteo.gov.sc">w.agricole@meteo.gov.sc</a> ; <a href="mailto:wagricole1957@gmail.com">wagricole1957@gmail.com</a> ; <a href="mailto:w.agricole@env.gov.sc">w.agricole@env.gov.sc</a>											
3.	ITB 8.2 (c)	<p><b>Qualification Requirements for Bidders (QR)</b></p>										

BDS Item No.	ITB Clause Ref., if any	BID DATA SHEET
		<p><b>Technical and financial Qualification Requirements for Bidders is enclosed at Annexure-I to BDS.</b></p> <p><b>Bids not meeting the requirements as stated above shall be rejected.</b></p> <p><b>The reference plants whose details have been declared as per the specified format in the relevant attachment (i.e. Attachment No. 3) shall be considered to ascertain the bidder's compliance to the specified Qualifying Requirement (QR).</b> Bidders wishing to provide additional reference plants are required to declare the same in similar format which shall be additionally attached.</p> <p>Bidders are required to furnish the details of the past experiences based on which selection is to be made as per format enclosed in the bidding documents for the same and enclose relevant documents like copies of authentic work order, completion certificate, agreements, etc. supporting the details/data provided in the format. No claims without supporting documents shall be accepted in this regard.</p> <p>The PMC at its discretion may seek any clarification and/or documentary evidence for the reference plants as mentioned in the bid including past data for conforming to the specified Qualifying Requirements from bidders.</p> <p>i. All other bidders, who are required to submit the details of the past experiences, shall submit all the documents, in support of Technical Qualification Requirements (such as copy of Purchase Orders/ Work Orders/ Contract Agreements/ Client Certificates etc.), duly certified and verified for authenticity from Independent Statutory Auditor of their Company or specified Third-Party Inspection Agency (TPIA).</p> <p>Further, wherever information can be drawn from books of accounts, records and other relevant documents, Bidders can also submit a certificate issued by their Independent Statutory Auditor certifying the data required for meeting the Technical Qualification Requirements.</p>



BDS Item No.	ITB Clause Ref., if any	BID DATA SHEET
		<p>Such bidder shall be required to submit duly certified and verified documents from their Statutory Auditors or specified TPIA in support of meeting Technical QR along with a certificate regarding verification of authenticity of documents as per the format placed at Appendix-I to Attachment-3A (Undertaking from Statutory Auditor) and/ or Appendix-II to Attachment-3A (Undertaking from TPIA). All the documents submitted by the bidder in support of meeting Technical QR shall be digitally signed by the Statutory Auditor and/ or specified TPIA.</p> <p>ii. In case documents are certified &amp; verified for authenticity through TPIA, the verification and certification of authenticity of documents is acceptable from any of the following TPIAs:</p> <ol style="list-style-type: none"> <li>1) Société Générale de Surveillance / SGS India Pvt. Ltd.(SGS)</li> <li>2) Gulf Lloyds Industrial Services (India) Pvt. Ltd (GLISPL)</li> <li>3) International Certification Services (ICS)</li> <li>4) TÜV Rheinland (India) Pvt. Ltd.</li> <li>5) TÜV SÜD South Asia Pvt. Ltd.</li> <li>6) TÜV India Pvt. Ltd. (TÜV Nord Group)</li> <li>7) Intertek India Pvt. Ltd.</li> <li>8) Moody International (India) Pvt. Ltd.</li> <li>9) RINA India Pvt. Ltd.</li> <li>10) Competent Inspectorate and Consultants LLP</li> </ol> <p>The following website may be referred for contact details of above ten (10) TPIAs:  <a href="http://nabcb.qci.org.in/accreditation/reg_bod_inspection_bodies.php">http://nabcb.qci.org.in/accreditation/reg_bod_inspection_bodies.php</a></p> <p>iii. The Bidder shall be responsible to get their documents/ credentials in support of Qualifying Requirements verified &amp; certified by their Statutory Auditor(s) and/ or specified TPIAs. All the costs pertaining to third party verification and certification (including those by statutory auditors) shall be borne by the Bidder. PMC shall have no liability (financial or otherwise) towards the same and shall not be liable for any claim/ dispute between the bidder and TPIA and/ or Statutory Auditor.</p>

BDS Item No.	ITB Clause Ref., if any	BID DATA SHEET
4.0	ITB 22.1(d)	<p><b>The completion period of the contract shall be five months from the date of award of work.</b></p>
5.0	General	<p>Joint Venture and Consortium are not eligible to bid as per Qualifying requirements. Bids received from Joint Venture and Consortium shall be rejected.</p>

Clause no.	Qualifying Requirements (QR)
<b><u>1) QR for Solar Cold Storage</u></b>	
<b>1 Technical Criteria</b>	
1.1	The Bidder should have supplied, installed/got installed and commissioned Solar cold storage of total cumulative capacity of 25 MT. The reference plants of a cumulative minimum capacity of 10 MT must have been in successful operation for at least one-year from the date of commissioning prior to the techno-commercial bid opening date.
<b><u>Notes for clause 1</u></b>	
a)	The reference Solar cold storage plant as per clause 1.1 should consist of system of minimum 2MT capacity at a single location supplied, installed/got installed, and commissioned by Bidder for a client.
b)	Bidder shall submit certificate of successful completion and operation, as per Technical Criteria 1.1 from the Owner
c)	The Bidder should be a legal entity, duly incorporated/registered under the laws of its country of domicile in one of the member/signatory countries of ISA as on the date of techno-commercial bid submission.
<b>2 Financial Criteria</b>	
2.1 a)	<p>The average annual turnover of the Bidder, should not be less than USD 100000 (US Dollar One Hundred Thousand only) during the preceding three (3) financial years as on date of techno-commercial bid opening</p> <p>In case a Bidder does not satisfy the average annual turnover criteria, stipulated above 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 Bidder would be required to furnish along with its Techno-Commercial Bid, a Letter of Undertaking from the 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 Bidder in case of award.</p>
2.1 b)	In case the Bidder is not able to furnish its audited financial statements on standalone entity basis, the unaudited unconsolidated financial statements of the Bidder can be considered acceptable provided the Bidder further furnishes the following documents on substantiation of its qualification:
2.1 c)	Copies of the unaudited unconsolidated financial statements of the Bidder along with copies of the audited consolidated financial statements of its Holding Company

2.1 d)	Certificate from the CEO/ CFO of the Holding Company, as per the format enclosed in the bidding documents, stating that the unaudited unconsolidated financial statements form part of the consolidated financial statement of the Holding Company.
2.1 e)	In case where audited results for the last financial year as on the date of Techno Commercial Bid Opening are not available, the financial results certified by a practicing Chartered Accountant shall be considered acceptable. In case the Bidder is not able to submit the Certificate from a practicing Chartered Accountant certifying its financial parameters, the audited result of three consecutive financial years preceding the last financial year shall be considered for evaluating 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 date of Techno Commercial Bid Opening and the Certificate from a practicing Chartered Accountant certifying the financial parameters is not available.
<b><u>Notes for Clause 2</u></b>	
a)	Net worth means the sum-total of the paid-up share capital and free reserves. Free reserves mean 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,
b)	Other income shall not be considered for arriving at annual turnover.
c)	"Holding Company" and "Subsidiary" shall have the meaning ascribed to them as per Companies Act of domicile country of the bidder
d)	For Turnover indicated in foreign currency, the exchange rate as on seven (7) days prior to Techno Commercial Bid Opening date shall be used.

## SECTION – IV

# GENERAL CONDITION OF CONTRACT (GCC)

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6. Settlement of Disputes

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8. Time for Commencement and Completion
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10. Employer's Responsibilities

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14. Taxes and Duties

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18. Work Program
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  - 43. Assignment
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  - 46. No Claim for interest or damage
  - 47. Procedure of Contract Closing
-



**GENERAL CONDITION OF CONTRACT (GCC)**

**A. Contract and Interpretation**

1. **Definitions** 1.1 The following words and expressions shall have the meanings hereby assigned to them:

“Contract” means the Letter of award issued to 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 Letter of Award (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 Management Consultant (PMC)” means the person appointed by the Employer for implementation of said project and the same is named as such in the SCC and includes the legal successors or permitted assigns of PMC.

“Project Manager” means the person appointed by the PMC 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 PMC.

“Contractor” or “Vendor” means the person(s) whose bid to perform the Contract has been accepted by the Employer and is named as such in the Letter of Award , 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

## GENERAL CONDITION OF CONTRACT (GCC)

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 the Letter of Award, subject to such 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 use structural and construction materials required), installation including civil and allied works etc., testing, precommissioning, commissioning, operations, maintenance, 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.

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“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 Letter of Award.

“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.

“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 (Commissioning and Completion of Facilities) 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 24 (Commissioning and Completion of Facilities) 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 25.1 (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 fulfillment of the

## GENERAL CONDITION OF CONTRACT (GCC)

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 (Guarantee Tests 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. **Contract Documents**

- 2.1 Subject to (Order of Precedence) mentioned in the SCC, 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.

### 3. **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. 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.

- 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.

#### 3.2 **Singular and Plural**

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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

Words importing persons or parties shall include firms, corporations and government entities.

### 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 Contract to be entered into between the Employer and the successful bidder shall be for supply of all plant and equipment including mandatory spares including Transportation from Works to Port of embarkation in manufacturer's / supplier's country including insurances, Ocean / Air Transport from the port of embarkation in manufacturer's / supplier's country to Employer's country, port handling, port clearance and port charges in both manufacturer's / supplier's and employer's country, further loading, inland transportation within Employer's country for delivery at site, inland transit insurance, unloading, storage, handling at site and providing other services such as installation (including civil, structural steel work & allied work, if applicable), insurance covers other than inland transit insurance, erection, testing, commissioning and conducting Guarantee tests and any other services specified in the

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Contract Documents including warranty and extended warranty.

### **3.7 Entire Agreement**

Subject to GCC Sub-Clause 16.4 hereof, the Contract constitutes the entire Letter of Award issued to the 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.

### **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.

### **3.11 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

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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

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 manufacturer and from which the services are provided.

## 4. 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 post and/or email to the address of the relevant party set out in the Contract Coordination Procedure to be finalized pursuant to GCC Sub-Clause 17.2.3.1, with the following provisions.

4.2 Notices shall be deemed to include any approvals, consents, instructions, orders and certificates to be given under the Contract.

## 5. Governing Laws

5.1 The Contract shall be governed by and interpreted in accordance with laws in force in the Employer's country.

## 6. Settlement of Disputes

6.1 The Employer/PMC/ISA and the Contractor shall make every effort to resolve amicably by direct informal negotiation any

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disagreement or dispute arising between them under or in connection with the Contract.

- 6.2 If, after twenty-eight (28) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Employer/PMC/ISA or the Contractor may give 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. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or during or after the completion of works under the Contract. Arbitration proceedings shall be conducted in accordance with the rules of procedure specified as follows:.

**“Clause 6.2 (a) shall be applicable in the case of a Contract with a foreign contractor and clause 6.2 (b) shall be applicable in the case of a Contract with a national of the Employer’s Country.”]**

(a) Contract with foreign Supplier:

[For contracts entered into with foreign contractors, International commercial arbitration may have practical advantages over other dispute settlement methods. The ISA/PMC should not be named as arbitrator, nor should it be asked to name an arbitrator. Among the rules to govern the arbitration proceedings, the Employer may wish to consider the United Nations Commission on International Trade Law (UNCITRAL) Arbitration Rules of 1976, the Rules of Conciliation and Arbitration of the International Chamber of Commerce (ICC), the Rules of the London Court of International Arbitration or the Rules of Arbitration Institute of the Stockholm Chamber of Commerce.]

If the Employer chooses the UNCITRAL Arbitration Rules, the following sample clause should be inserted:

GCC 6.2 (a)—Any dispute, controversy or claim arising out of or relating to this Contract, or breach, termination or invalidity thereof, shall be settled by arbitration in accordance with the UNCITRAL Arbitration Rules as at present in force.



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If the Employer chooses the Rules of ICC, the following sample clause should be inserted:

GCC 6.2 (a)—All disputes arising in connection with the present Contract shall be finally settled under the Rules of Conciliation and Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with said Rules.

If the Employer chooses the Rules of Arbitration Institute of Stockholm Chamber of Commerce, the following sample clause should be inserted:

GCC 6.2 (a)—Any dispute, controversy or claim arising out of or in connection with this Contract, or the breach termination or invalidity thereof, shall be settled by arbitration in accordance with the Rules of the Arbitration Institute of the Stockholm Chamber of Commerce.

If the Employer chooses the Rules of the London Court of International Arbitration, the following clause should be inserted:

GCC 6.2 (a)—Any dispute arising out of or in connection with this Contract, including any question regarding its existence, validity or termination shall be referred to and finally resolved by arbitration under the Rules of the London Court of International Arbitration, which rules are deemed to be incorporated by reference to this clause.

(b) Contracts with contractor national of the Employer's Country:

In the case of a dispute between the Employer and a Contractor who is a national of the Employer's Country, the dispute shall be referred to adjudication or arbitration in accordance with the laws of the Employer's Country.

- 6.3 Notwithstanding any reference to arbitration herein,
- (a) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and
  - (b) the Employer / ISA shall pay the Contractor any monies due the Contractor.

### **B. Subject Matter of Contract**

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### 7. 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 spares and the performance of all services required for the design, the manufacture (including procurement, quality assurance, construction, installation, associated civil, structural and other construction works, Pre-commissioning and delivery) of the Plant and Equipment and the installation, commissioning, completion of facilities and carrying out guarantees test for 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); insurance and storage, except for those supplies, works and services that will be provided or performed by the Employer, as set forth in Technical Specifications.
- 7.2 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.

### 8. Time for Commencement and Completion

- 8.1 The Contractor shall commence work on the Facilities from the date of Letter of Award and without prejudice to GCC Sub-Clause 26.2 hereof, the Contractor shall thereafter proceed with the Facilities in accordance with the time schedule specified in SCC .
- 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

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within such extended time to which the Contractor shall be entitled under GCC Clause 40 (Extension of Time for Completion) hereof.

**9. Contractor's Responsibilities**

9.1 The Contractor shall design, manufacture (including associated purchases and/or subcontracting), install and complete the Facilities carry out the Guarantee tests 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/PMC, 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 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/PMC 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

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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. Employer's Responsibilities**

10.1 The Employer/PMC shall ensure the accuracy of all information and/or data to be supplied by the Employer/PMC as described in Technical Specifications 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 execution of the Contract, including all requisite rights of way, as specified in Technical Specifications. The Employer shall give full possession of and accord all rights of access thereto on or before the date(s) specified in Technical Specifications.

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 Technical Specifications.

10.4 If requested by the Contractor, the Employer shall use its best endeavors 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.

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10.5 Not used

10.6 The Employer shall be responsible for the continued operation of the Facilities after Completion, in accordance with GCC Sub-Clause 24.9, and shall be responsible for facilitating the Guarantee Test (s) for the Facilities, in accordance with GCC Sub-Clause 25.1.

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 25.1.

**C. Payment**

**11. Contract Price**

11.1 The Contract Price shall be as specified in Letter of Award.

11.2 The Contract Price shall be adjusted in accordance with provisions of SCC.

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. Terms of Payment**

12.1 The Contract Price shall be paid as per Terms and Procedures of payment specified in Special Conditions of Contract. The procedures to be followed in making application for and processing payments shall be those outlined in Special Conditions of Contract.

12.2 No payment made by the Employer / ISA herein shall be deemed to constitute acceptance by the Employer / PMC / ISA of the Facilities or any part(s) thereof.

**13. Securities**

**13.1 Issuance of Securities**

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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: Not Applicable**

### 13.3 **Contract Performance Security**

13.3.1 The Contractor shall, within twenty-eight (28) days of the Letter of Award, provide securities for the due performance of the Contract for ten percent (10%) of the total Contract Price, with an initial validity up to ninety (90) days beyond the end of Defect Liability Period of the last equipment covered under the package. However, in case of delay in completion of the defect liability period/ standard warranty 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 of the Contract 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.

## 14. **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-Clause 14.1, Employer shall grant exemption to any direct and indirect taxes and duties prevailing in Employer's country that may otherwise be levied on expenses relating to the Project, including, but not limited to the plant, machinery, equipment, components, services availed, and/or commission charged. If the Employer's Country fails to grant such exemptions, it shall fully pay / reimburse to offset the expenses incurred for payment of such taxes and duties as specified before. Any such resources provided by the Employer's will be considered as

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in-kind resources provided by the Employer's country government for successful implementation of the Project.

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 Letter of Award is based on the taxes, duties, levies and charges prevailing on seven (7) days prior to the deadline set for 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 shall not be applicable on procurement of raw materials, intermediary components and intermediary services etc. by the Contractor.

14.5 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.

### D. Intellectual Property

15. **Copyright** 15.1 The copyright in all drawings, documents and other materials containing data and information furnished to the Employer/PMC by the Contractor herein shall remain vested in the Contractor or, if they are furnished to the Employer/PMC 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/PMC shall however be free to reproduce all drawings, documents and other material furnished to the

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Employer/PMC for the purpose of the contract including, if required, for operation and maintenance of the facilities.

**16. Confidential Information**

16.1 The Employer/PMC 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/PMC 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/PMC 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/PMC 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.



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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.

16.5 The provisions of this GCC Clause 16 shall survive termination, for whatever reason, of the Contract.

**E. Work Execution**

**17. Representatives**

**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/PMC shall appoint and notify the Contractor in writing of the name of the Project Manager. The Employer/PMC 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/PMC 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/PMC 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.

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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 / PMC 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 / PMC. 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. Documents indicating, if the Contractor's representative is an employee of contractor or his Appointment Letter/Salary Slip/other documentary evidence (only in case of recent appointment)
- 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 b (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 where the Contractor's representative is the nominee.

17.2.1.3 If the Employer / PMC objects to the appointment giving the reason therefore, then the Contractor shall appoint a replacement within fourteen (14)

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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/PMC's prior written consent, which shall not be unreasonably withheld. If the Employer/PMC 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/PMC (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/PMC and the Project Manager.

Any act or exercise by any person of powers, functions and 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.

17.2.3.1 Notwithstanding anything stated in GCC Sub-clause 17.1 and 17.2.1 above, for the purpose of execution of contract, the Employer/PMC and the Contractor shall finalise and agree to a Contract Co-ordination Procedure and all the

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communication under the Contract shall be in accordance with such Contract Co-ordination Procedure.

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/PMC 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/PMC, may behave inappropriately, may be in-competent or negligent, or may commit a serious breach of the Site regulations provided under GCC Sub-clause 22.3. The Employer/PMC shall provide evidence of the same, whereupon the Contractor shall remove such person from the Facilities.

17.2.6 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.

## 18. Work Program

### 18.1 Contractor's Organization

The Contractor shall supply to the Employer/PMC 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/PMC and the Project Manager in writing of any revision or alteration of such an organization chart.

### 18.2 Not used

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### 18.3 Progress Report

The Contractor shall monitor progress of all the activities 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 Not used

### 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.

## 19. Subcontracting

19.1 The Contractor shall prepare a list of Subcontractors for and may from time to time propose any addition to or deletion of sub-contractors from such list. The Contractor shall submit such list or any modification thereto to the Employer/PMC for its approval in sufficient time so as not to impede the progress of work on the Facilities. Such approval by the Employer/PMC 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.

## 20. 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 of the Contract, or where not so specified, in accordance with good engineering practice.

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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 / PMC.

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/PMC, 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 date of 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/PMC and shall be treated in accordance with GCC Clause 39 (Changes Originating from Contractor).

## 21. Procurement

### 21.1 Plant and Equipment

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 Not used

### 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.

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### **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 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 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 email 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 / PMC 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**

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

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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. 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 / PMC.

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 satisfaction of the Project Manager. If such error is based on incorrect data provided in writing by or on behalf of the Employer / PMC, 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 is encouraged to use local labor that has the necessary skills.



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- (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.
- (d) The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst its employees and the labour of its Subcontractors.
- (e) 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 endeavour 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.

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### 22.3 Site Regulations and Safety

22.3.1 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 / PMC, with a copy to the Project Manager, proposed Site regulations for the Employer's approval, which approval shall not be unreasonably withheld. The contractor shall comply with safety requirements mentioned in the Technical Specifications.

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 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 / Employer 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 and the Employer promptly of any defects in the other Contractors'

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work that come to its notice, and that could affect the Contractor's work. The Project Manager / Employer shall determine the corrective measures, if any, required to rectify the situation after inspection of the Facilities. Decisions made by the Project Manager / Employer 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.

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### 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 or Project Manager regarding the details of works in shifts so that necessary supervision should be provided.

### 23. 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 / PMC 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

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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 in accordance with GCC Sub-Clause 6.2.

- 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

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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. Commissioning and 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.

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- 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 services and other matters as specified in Technical Specifications, required for Precommissioning of the Facilities or any part thereof.
- 24.3 As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Employer and the services and other matters, if so specified in Technical Specifications in accordance with GCC Sub-Clause 24.2, the Contractor shall commence Precommissioning of the Facilities or the relevant part thereof in preparation for Commissioning.
- 24.4 As soon as all works in respect of Precommissioning are completed and, in the opinion of the Contractor, the Facilities or any part thereof is ready for Commissioning, the Contractor shall commence Commissioning of the facilities. As soon as Commissioning is satisfactorily completed, the Contractor shall so notify the Project Manager in writing.
- 24.5 Commissioning of the Facilities or any part thereof shall be completed by the Contractor as per procedures detailed in the Technical Specifications.
- 24.6 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

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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.

24.7 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.

24.8 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.

24.9 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. Guarantee Test and Operational Acceptance**

**25.1 Guarantee Test**

25.1.1 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 / PMC shall promptly provide the Contractor with such information as the Contractor may



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reasonably require in relation to the conduct and results of the Guarantee Test (and any repeats thereof).

25.1.2 If for reasons attributable to the Employer, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within one (01) year from the date of completion of facilities, payment of Contractor due on 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.

### 25.2 Operational Acceptance

25.2.1 Subject to GCC Sub-Clause 25.3 (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 24.8 hereof relevant to the Facilities or that part thereof have been completed.

25.2.2 At any time after any of the events set out in GCC Sub-Clause 25.2.1 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.

25.2.3 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.

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25.2.4 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.

**F. Guarantees and Liabilities**

**26. 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 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

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milestone or other act, matter or thing by any date specified in SCC and/or Letter of Award 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 will be given for earlier completion of the facilities as part thereof.

**27. 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 twelve (12) months from the date of Completion of the Facilities (or any part thereof), 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 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

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- (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 tests in character shall in any case be not less than what has

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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 Securities.

27.8 If the Facilities or any part thereof cannot be used by reason 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 has been completed.

27.8.1 At the end of the Defect Liability Period, the contractor 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 of the respective plant and equipment including spares. For the purpose of the 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

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the result of the gross negligence, fraud, criminal or willful 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 / Technical Specifications. Such obligation shall be in addition to the defect liability specified under GCC Sub-Clause 27.2.

### 28. Functional Guarantees

- 28.1 The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified under Section-VI (Technical Specification), 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 under of Section-VI (Technical Specification) 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 guaranteed level of specified Functional Guarantees parameter(s) are still not specified under Section-VI (Technical Specification), then the Employer will accept the equipment/system/plant after levy of liquidated damages in accordance with the provisions specified of Section-VI (Technical Specification). However, if the level of the specified Functional Guarantee parameters, as demonstrated even during repeat of the Guarantee Test(s), are outside the acceptable shortfall limit as specified under of Section-VI (Technical Specification), 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

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(c) Accept the equipment after levy of liquidated damages in accordance with the provisions specified under Section-VI (Technical Specification) 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 Section-VI (Technical Specification), 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.

28.4 DELETED

**29. 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 / PMC 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 / PMC 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.

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.

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29.2 If any proceedings are brought or any claim is made against the Employer / PMC arising out of the matters referred to in GCC Sub-Clause 29.1, the Employer / PMC shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Employer / PMC'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 / PMC within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer / PMC 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 / PMC shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer / PMC 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. Limitation of Liability

30.1 Except in cases of criminal negligence or willful misconduct,

(a) neither Party shall be liable to the other Party, whether in contract, tort, or otherwise, for any indirect



## GENERAL CONDITION OF CONTRACT (GCC)

or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, which may be suffered by the other Party in connection with the Contract, provided that this exclusion shall not apply to any obligation of the Contractor to pay liquidated damages to the Employer and

- (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/PMC with respect to patent infringement.
- (c) the aggregate liability of the Employer to the Contractor except for GCC sub-clause 29.3, whether under the Contract, in tort or otherwise, at any point of time during the execution/performance of the Contract, shall not exceed the 'total Contract Price less payments already released to the Contractor'.
- (d) the aggregate liability of the PMC to the Contractor or Employer, whether under the Contract, in tort or otherwise, shall not exceed USD 5000

### G. Risk Distribution

#### 31. Transfer of Ownership

- 31.1 Ownership of the Plant and Equipment (including spare parts) 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 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

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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, 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 of the Contractor in following the statutory requirements with regard to removal/disposal of surplus material. The **Indemnity-cum-Undertaking Agreement** 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 Contract entered into between the Employer and the Contractor as per GCC Sub-Clause 3.6 or where the Employer hands over his equipment/plant 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 dispatch documents furnish Trust Receipt for Plant, Equipment and Materials and also execute an Indemnity Bond in favor of the Employer in the form acceptable to Employer for keeping the equipment in safe custody and to utilize the same exclusively for the purpose of the said Contract. Proforma for the Trust Receipt and **Indemnity-cum-Undertaking Agreement** is enclosed under Section-VII

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(Forms and Procedures). The Employer shall also issue a separate Authorization 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. 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.
- 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

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- (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.

- 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.

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**33. 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 / PMC 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 / PMC, its contractors, employees, officers or agents.

33.2 If any proceedings are brought or any claim is made against the Employer / PMC that might subject the Contractor to liability under GCC Sub- Clause 33.1, the Employer / PMC shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the Employer / PMC'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 / PMC within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer / PMC shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer / PMC within the twenty-eight (28) day period, the Employer / PMC shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer / PMC 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

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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 fails to take such measures, the other party's liabilities shall be correspondingly reduced.

**34. Insurance**

34.1 To the extent specified in SCC, 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 SCC. 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**

## GENERAL CONDITION OF CONTRACT (GCC)

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 SCC / Letter of Award.

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 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 SCC, deliver to the Employer certificates of insurance (or copies of the insurance policies) as evidence that the

**GENERAL CONDITION OF CONTRACT (GCC)**

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 Sub-contractor(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 SCC.

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.

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, 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 give from time, written authorization to the under writer(s) to



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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 partial 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. **Not used**

36. **Change in Laws and Regulations**

36.1 If, after the date seven (7) days prior to the date of 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

## GENERAL CONDITION OF CONTRACT (GCC)

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 adjustment shall not be applicable on procurement of raw materials, intermediary components etc. by the Contractor. 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 SCC.

### 37. 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 fulfill 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 nonperformance by either party hereto caused by the occurrence of any event of Force Majeure shall
- (a) constitute a default or breach of the Contract

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(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. War Risks**

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

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(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.

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).

38.4 Notwithstanding anything contained in the Contract, the Employer shall pay the Contractor for any increased costs or

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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.

38.5 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.

38.6 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. Change In The Facilities

##### 39.1 Introducing a Change

39.1.1 Subject to GCC 39.2.5 & 39.2.7, the Employer / PMC 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

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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 / PMC (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 /PMC 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 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 / PMC**

39.2.1 If the Employer / PMC 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.

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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 the Letter of Award 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 / PMC accepts the Contractor's objection, the Employer / PMC and the Contractor shall agree on specific rates for valuation of the change.

39.2.4 Upon receipt of the Change Proposal, the Employer / PMC 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 / PMC 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 / PMC decides not to proceed with the Change for whatever reason, it shall, within the said period of fourteen (14) days, notify the Contractor accordingly.

39.2.5 If the Employer / PMC 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 / PMC 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

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Order, then the matter may be referred as per GCC para 6.0.

### 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. 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 / PMC 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 / PMC, specifically including failure to supply the items under Scope of Works and Supply by the Employer mentioned in Technical Specifications, or any activity,



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act or omission of any other contractors employed by the Employer

- (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 as per GCC para 6.0

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 Contractor shall be required to attend all weekly site progress review meetings organised by the 'Project Manager' or his authorized representative. The deliberations in the meetings shall interalia 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.

## GENERAL CONDITION OF CONTRACT (GCC)

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 the joint recordings in "Hindrance Register" and "Weekly Review 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. 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.

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.

## GENERAL CONDITION OF CONTRACT (GCC)

If the Employer / PMC 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 ISA on behalf of 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 Terms and Procedures of Payment mentioned in SCC, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer / PMC that requires payment of such sum, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer / PMC / ISA to remedy the same, as the case may be. If the ISA on behalf of 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 / PMC, 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 GCC Clause 41, then the Time for Completion shall be extended in accordance with GCC Sub- Clause 40.1, and any

## GENERAL CONDITION OF CONTRACT (GCC)

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.

The Bank Guarantee and Insurance Charges for the extended period on account of delays attributable to the Employer / PMC / ISA shall be reimbursed at the following rates:

**Rate applicable for reimbursement of BG Charges:** 0.25% p.a. + GST, or actual, whichever is lower, subject to documentary evidence.

**Rate applicable for Insurance Charges:**

**1) Basic Rates\***

Sl No.	Extended Period	Rate
(i)	upto 6 months	0.4372 per thousand of Sum Insured
(ii)	exceeding 6 months but not exceeding 9 months	0.5406 per thousand of Sum Insured
(iii)	exceeding 9 months but not exceeding 12 months	0.6425 per thousand of Sum Insured
(iv)	exceeding 12 months but not exceeding 15 months	0.9743 per thousand of Sum Insured
(v)	exceeding 15 months but not exceeding 18 months	1.0762 per thousand of Sum Insured
(vi)	exceeding 18 months but not exceeding 21 months	1.1780 per thousand of Sum Insured
(vii)	exceeding 21 months but not exceeding 24 months	1.2799 per thousand of Sum Insured
(viii)	exceeding 24 months but not exceeding 30 months	1.7123 per thousand of Sum Insured

**GENERAL CONDITION OF CONTRACT (GCC)**

(ix)	exceeding 30 months but not exceeding 36 months	1.9148 per thousand of Sum Insured
(x)	exceeding 36 months but not exceeding 42 months	2.3473 per thousand of Sum Insured
(xi)	exceeding 42 months but not exceeding 48 months	2.5497 per thousand of Sum Insured
(xii)	exceeding 48 months	Insurance charges shall be mutually agreed with the contractor.

**\*Notes:**

- (i) These rates are applicable for standard deductibles which is package specific.
- (ii) The extension shall be done on the same terms and conditions as that of the original policy.
- (iii) The extension referred herein shall be the extension of insurance policy period and insurance charges shall be calculated as under: Say, extension is of 12 months, then insurance charges shall be reimbursed @ Rs 0.64 per thousand of Sum Insured; if extension is for 24 months then insurance charges shall be reimbursed @ Rs 0.96 per thousand of Sum Insured; and so on.
- (iv) The Insurance charges shall be reimbursable on the rates as above or actual, whichever is lower, subject to the documentary evidence.
- (v) Taxes shall be paid over and above the rates as indicated.

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. Termination**

**42.1 Termination for Employer's Convenience**

**GENERAL CONDITION OF CONTRACT (GCC)**

42.1.1 The Employer / PMC 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 / PMC 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 / PMC 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.

## GENERAL CONDITION OF CONTRACT (GCC)

42.1.3 In the event of termination of the Contract under GCC Sub-Clause 42.1.1, the Employer / ISA 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 / PMC, 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

## GENERAL CONDITION OF CONTRACT (GCC)

- (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 / PMC 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.

“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 / PMC 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 / PMC 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



## GENERAL CONDITION OF CONTRACT (GCC)

assurance to the Employer that the Contractor can attain Completion of the Facilities by the Time for Completion as extended then the Employer / PMC 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 / PMC 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
- (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 / PMC all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities.

**GENERAL CONDITION OF CONTRACT (GCC)**

42.2.4 The Employer / PMC may enter upon the Site, expel the Contractor, and complete the Facilities itself or by employing any third party. The Employer / PMC 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 / PMC thinks appropriate, the Employer / PMC 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 / PMC completes the Facilities, the cost of completing the Facilities by the Employer / PMC 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, exceeds the Contract Price, the Contractor shall be liable for such excess.

## GENERAL CONDITION OF CONTRACT (GCC)

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 / ISA, and if such excess is less than the sums due to the Contractor under GCC Sub-Clause 42.2.5, the Employer / ISA shall pay the balance to the Contractor.

The Employer / PMC 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 ISA on behalf of 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 Terms and Procedures of Payment mentioned in SCC, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer / PMC that requires payment of such sum, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer / PMC / ISA to remedy the same, as the case may be. If the ISA on behalf of 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 / PMC, 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 / PMC thereof, and if the Employer / ISA has failed to pay the outstanding sum, to approve the

## GENERAL CONDITION OF CONTRACT (GCC)

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 / PMC 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 / PMC to that effect, referring to this GCC Sub-Clause 42.3.2, if the Employer / PMC / ISA 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 / PMC / ISA 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

**GENERAL CONDITION OF CONTRACT (GCC)**

- (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 / PMC 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 / ISA 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.

42.4 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.

42.5 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 / ISA to the Contractor under the Contract, including any advance payment paid pursuant to Terms and Procedures of Payment mentioned in SCC.

**43. Assignment**

43.1 The Contractor shall not, without the express prior written consent of the Employer/PMC, 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

**GENERAL CONDITION OF CONTRACT (GCC)**

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. Bankruptcy**

44.1 If the Contractor shall become bankrupt or have a receiving order made against him or compound with his creditors, or being a corporation commence to be wound up, not being a voluntary winding up for the purpose only of amalgamation / reconstruction, or carry on its business under a receiver for the benefit of its creditors or any of them, the Owner will be at liberty:

- (a) to terminate the contract forthwith by notice in writing to the liquidator or receiver or to any person in whom the contract may become vested & to act in the manner provided in GCC clause 42 entitled "Termination" as though the last mentioned notice has been the notice referred to in such clause and the equipment and materials have been taken out of the contractor's hands.
- (b) to give such liquidator, receiver or other person, the option of carrying out the contract subject to his providing a guarantee, for the due and faithful performance of the contract up to an amount to be determined by the Owner.

**45. Corrupt and Fraudulent Practices**

45.1 The PMC/ISA/Employer requires that Bidders, Contractors and Suppliers observe the highest standard of ethics during the procurement and execution of the contracts. In pursuance of this policy, the PMC:

- (a) Defines, for the purposes of this provision, the terms set forth below as follows:
  - (i) "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; and

**GENERAL CONDITION OF CONTRACT (GCC)**

(ii) “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 PMC, 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 PMC of the benefits of free and open competition;

(b) will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

(c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for or in executing a contract of the Employer/PMC/ISA.

**46 No Claim for interest or damage**

**46.1 Interest on money due to the contractor:**

Contractor shall not be entitled to any interest or damage in case of any delay on the part of the Employer / PMC / ISA to pay the amount due upon measurement or as per Contract or otherwise. Contractor shall also not be entitled to interest upon any guarantee/ security/ retention money or payments in arrears or upon any balance which may on the final settlement of his account be due to him.

**46.2 No claim for interest or damage:**

No claim for interest or damage will be entertained or be payable by the Employer / PMC / ISA in respect of any amount or balance which may be lying with the Employer / PMC / ISA or may become due upon settlement/adjudication of any dispute, difference or misunderstanding between the parties by way of arbitration or court proceedings or otherwise or in respect of any delay or omission on the part of the Employer / PMC / ISA in making intermediate or final payment or in respect of any amount/damage which may be

**GENERAL CONDITION OF CONTRACT (GCC)**

claimed through arbitration or court proceedings or in any other respect whatsoever.

**47 Procedure of Contract Closing**

**Stage Closure of Contract**

47.1 The Stage Closure of the Contract shall be effected after successful completion of Guarantee Test in accordance with GCC Clause 25.0. Subsequent to successful completion of Guarantee Test, the Contractor shall be responsible for completion of all pending obligations within the stipulated timelines as mentioned hereunder:

<b>S. No</b>	<b>Contractor's Obligation</b>	<b>Timelines</b>
01	Any inputs regarding Scope Change in accordance with GCC Clause 39.0 titled "Change in Facilities"	Within 01 month from the date of successful completion of Guarantee Test*
02	Submission of pending Engineering Documents/Drawings including O&M Manuals.	Within 01 month from the date of successful completion of Guarantee Test*
03	Contractor's compliance to all the pending points recorded in writing by the Employer during Performance Guarantee Test.	Within 01 month from the date of successful completion of Guarantee Test*
04	Any other obligations of the Contractor set forth in the Contract	Within 01 month from the date of successful completion of Guarantee Test.*

\*In case Guarantee Test is not applicable in the Package, it shall be the last obligation as specified in the Work Schedule.

47.2 The Contractor shall ensure that all obligations pertaining to statutory requirement and labour payments set forth in the contract are completed and the compliance of the same shall be furnished by the Contractor to the Employer / PMC in the form of certificate as per the proforma enclosed at Section-VII (Forms and Procedures) – Forms for Stage



**GENERAL CONDITION OF CONTRACT (GCC)**

Closing Activities not later than two (02) months from the date of completion of Guarantee Test.

- 47.3 Upon successful fulfilment of all the obligation of the Contractor pursuant to GCC Sub-Clause 57.1 and 57.2, the Employer / PMC shall require the Contractor to furnish a “No Demand Certificate” as per the format enclosed at Section-VII (Forms and Procedures) – Forms for Stage Closing Activities.

**Final Closure of Contract**

- 47.4 The final closing of the contract shall be effected after the warranty period / Defect Liability Period including extended warranty period if specified in SCC is successfully completed and the Performance Bank Guarantees including any Extended Warranty Security if specified in SCC of the Contractor is returned / discharged by the Employer / PMC to the Contractor.

## SECTION – V

# SPECIAL CONDITION OF CONTRACT (SCC)

Special conditions (SCC) No.	GCC Clause Ref. (if any)	Special Conditions												
<p><b>SECTION - V</b></p> <p><b>SPECIAL CONDITIONS OF CONTRACT</b></p> <p><i>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.</i></p> <p><b>NAME OF PACKAGE:</b> Supply, Installation, Commissioning of Solar Cold Storage at Senegal, Djibouti, Sudan and Seychelles</p>														
1.	Definitions (GCC Clause 1)	<table border="1"> <thead> <tr> <th colspan="2"><b>Details of project Located in Senegal</b></th> </tr> </thead> <tbody> <tr> <td>Name of Project</td> <td>Supply, Installation, Commissioning of Solar Cold Storage (5 MT) at Senegal</td> </tr> <tr> <td>Project Location</td> <td>Louga section of Niyaes region and 200 kms away from the port of Dakar (Capital of Senegal)</td> </tr> <tr> <td>Employer's Details</td> <td> Aïssatou D. SONKO  Responsible Coopération  Direction de la Promotion et de la Coopération  Agence Nationale pour les Energies Renouvelables  120 Cité Asecna Liberté 6 Extension-Dakar  Tél. : +221 33 869 55 04/ Mob. : +221 77 790 36 21  Email 1 : aissatou.sonko@aner.sn  Email 2 : aissatoudsonko@hotmail.com </td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2"><b>Details of project Located in Djibouti</b></th> </tr> </thead> <tbody> <tr> <td>Name of Project</td> <td>Supply, Installation, Commissioning of Solar Cold Storage (2 x 2MT) at Djibouti</td> </tr> </tbody> </table>	<b>Details of project Located in Senegal</b>		Name of Project	Supply, Installation, Commissioning of Solar Cold Storage (5 MT) at Senegal	Project Location	Louga section of Niyaes region and 200 kms away from the port of Dakar (Capital of Senegal)	Employer's Details	Aïssatou D. SONKO Responsible Coopération Direction de la Promotion et de la Coopération Agence Nationale pour les Energies Renouvelables 120 Cité Asecna Liberté 6 Extension-Dakar Tél. : +221 33 869 55 04/ Mob. : +221 77 790 36 21 Email 1 : aissatou.sonko@aner.sn Email 2 : aissatoudsonko@hotmail.com	<b>Details of project Located in Djibouti</b>		Name of Project	Supply, Installation, Commissioning of Solar Cold Storage (2 x 2MT) at Djibouti
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Special conditions (SCC) No.	GCC Clause Ref. (if any)	Special Conditions																		
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		<table border="1"> <tr> <td>Employer's Details</td> <td>           Wills Agricole            Technical Advisor for Energy and Climate Change            ISA National Focal Point For Seychelles            Ministry of Agriculture, Climate Change and Environment            P.O. Box 445            Botanical Garden, Mt. Fleuri            Victoria Mahe, Seychelles            Tel: +248 4670569            E-mail: <a href="mailto:w.agricole@meteo.gov.sc">w.agricole@meteo.gov.sc</a>;  <a href="mailto:wagricole1957@gmail.com">wagricole1957@gmail.com</a>;  <a href="mailto:w.agricole@env.gov.sc">w.agricole@env.gov.sc</a> </td> </tr> </table> <p>Name of the PMC: NTPC Limited</p> <p>Address of the PMC: Head of International Business Development, NTPC Limited A-8A, Sector-24, Noida Uttar Pradesh PIN - 201301</p> <p><b>The Project Manager is :</b></p> <p>Name of Project Manager: To be intimated after award</p> <p>Address of Project Manager To be intimated after award</p> <p>Name of the Funding Agency: International Solar Alliance (ISA)</p> <p>Address of the Funding Agency: International Solar Alliance Secretariat, Surya Bhawan, National Institute of Solar Energy Campus, Gwal Pahari, Faridabad-Gurugram Road, Gurugram, Haryana – 122003, India</p>	Employer's Details	Wills Agricole Technical Advisor for Energy and Climate Change ISA National Focal Point For Seychelles Ministry of Agriculture, Climate Change and Environment P.O. Box 445 Botanical Garden, Mt. Fleuri Victoria Mahe, Seychelles Tel: +248 4670569 E-mail: <a href="mailto:w.agricole@meteo.gov.sc">w.agricole@meteo.gov.sc</a> ; <a href="mailto:wagricole1957@gmail.com">wagricole1957@gmail.com</a> ; <a href="mailto:w.agricole@env.gov.sc">w.agricole@env.gov.sc</a>
Employer's Details	Wills Agricole Technical Advisor for Energy and Climate Change ISA National Focal Point For Seychelles Ministry of Agriculture, Climate Change and Environment P.O. Box 445 Botanical Garden, Mt. Fleuri Victoria Mahe, Seychelles Tel: +248 4670569 E-mail: <a href="mailto:w.agricole@meteo.gov.sc">w.agricole@meteo.gov.sc</a> ; <a href="mailto:wagricole1957@gmail.com">wagricole1957@gmail.com</a> ; <a href="mailto:w.agricole@env.gov.sc">w.agricole@env.gov.sc</a>			

Special conditions (SCC) No.	GCC Clause Ref. (if any)	Special Conditions
2.	Order of Precedence	<p>The following documents shall constitute the Contract between the PMC and the contractor, and each shall be read construed as an integral part of the contract:</p> <ul style="list-style-type: none"> <li>(a) Letter of Award and appendices</li> <li>(b) Special Conditions of contract</li> <li>(c) General Conditions of contract</li> <li>(d) Technical Specifications</li> <li>(e) The Bid and Price Schedules submitted by the contractor</li> <li>(f) Procedures (as listed)</li> </ul> <p>In the event of any ambiguity or conflict between the Contract Documents listed above, the order of precedence shall be the order in which the Contract Documents are listed above.</p>
3	Time for Commencement and Completion (GCC Clause 8)  GCC 8.2	<p>Time schedule for completion of Facilities shall be five (05) months from the date of LOA.</p>
4	GCC 11.2	<p>The Contract Price shall remain FIRM during entire period of contract.</p>
5.	Terms of Payment (GCC 12)	<p>The Terms and Procedures of Payment shall be as enclosed at Annexure-I to SCC.</p>
6		<p><b>Contract Performance Security</b></p>
6.1	GCC 13.3.1	<p>Add new para under GCC Clause 13.3.1 as below:</p> <p>Further, the Contractor shall, within ninety (90) days of the completion of defect liability period, provide security towards</p>

Special conditions (SCC) No.	GCC Clause Ref. (if any)	Special Conditions
		<p>extended warrantee as per GCC 27.10, for five percent (5%) of the total Contract Price, with an initial validity up to ninety (90) days beyond the end of extended warrantee Period. However, in case of delay in completion of the extended warranty period, the validity of above bank guarantee shall be extended by the period of such delay.</p>
6.2	GCC 13.3.3	<p>Add new GCC Clause 13.3.3 as below:</p> <p>The Contractor also has the option for Security Deposit instead of Bank Guarantees by making a request to employer/ PMC within thirty (30) days of the Letter of Award. In such case, the Employer shall at the time of making any payment to him for the work done under the Contract deduct towards the Contract Performance Security an amount equivalent to 20% of the gross bill amount accepted for payment until the Contract Performance Security so deducted becomes equal to 10% of the Contract Price. The Contractor at any time during currency of contract may convert the security deposit amount into a Bank Guarantee.</p>
6.3	GCC 13.3.4	<p>Add GCC Clause 13.3.4 as below:</p> <p>Contract performance security shall be released to the contractor after completion of 90 days beyond defect liability period (or extension thereof) subject to submission and acceptance of Security towards extended warrantee. Security towards extended warrantee shall be released to the contractor after completion of extended warranty (or extension thereof) as per GCC clause 27.10.</p> <p>In case contractor has opted for Security deposit instead of Bank Guarantee as per GCC clause 13.3.3, 50% of the security deposit shall be released after completion of 90 days beyond defect liability period (or extension thereof) and balance 50% after completion of extended warranty (or extension thereof) as per GCC clause 27.10</p>
7.	GCC 13.4	<p>Add GCC Clause 13.4 as below:</p> <p>a) All BGs should be from the Bank as per the list of Banks enclosed at Annexure-2 to SCC.</p>

Special conditions (SCC) No.	GCC Clause Ref. (if any)	Special Conditions
		<p>b) All BGs except BG issued by a Bank outside India, shall be received from issuing Bank directly through post/ courier, by Unified Treasury, Dadri at below mentioned address:</p> <p style="text-align: center;">Unified Treasury (BG Group) Administrative Building, NCPS, Dadri NTPC Limited, PO. Vidyut Nagar Distt: Gautam Budh Nagar, Uttar Pradesh- 201008</p> <p>A BG issued by a Bank outside India needs to be submitted by the Bidder directly to the PMC as defined in SCC. The BG also needs to bear stamp duty of appropriate value applicable to the place in NTPC where BG is to be submitted. The BG may be got adjudicated by the PMC from Collector of Stamps, within 3 months of arrival of BG in India. Expenses incurred in this regard shall be adjusted from the payment due to the contractor.</p> <p>c) A soft copy of the BG is mandatorily required to be mailed to Unified Treasury Group at <a href="mailto:ubg@ntpc.co.in">ubg@ntpc.co.in</a> by the issuing Bank.</p> <p>d) Confirmation of BGs through Structured Financial Messaging System (SFMS)/SWIFT While issuing the physical BGs, the Bidder's Bank shall also send electronic message through secure SFMS (in case of BGs issued from within India) or SWIFT (in case of BGs issued from outside India) to Employer's Beneficiary Bank whose details are provided herein below:</p> <ul style="list-style-type: none"> <li>• Bank Name: ICICI Bank Limited</li> <li>• Branch: CONNAUGHT PLACE BRANCH</li> <li>• Bank Address: 9A, PHELPS BUILDING, INNER CIRCLE,</li> <li>• NEW DELHI- 110001</li> <li>• IFSC Code: ICIC0000007</li> </ul> <p>BG issuing/amending bank must send the BG advice in the form of message format via SFMS (Structured Financial Messaging System) as provided by RBI. The format of the message for confirmation of the BG shall be as below:</p>



Special conditions (SCC) No.	GCC Clause Ref. (if any)	Special Conditions
8.	<p>Completion Time Guarantee (GCC Clause 26)</p> <p>GCC 26.2</p>	<p>BG advising message: IFN 760COV/ IFN 767COV via SFMS Field Number: Particulars (to be mentioned in Row 1) 7037: NTPCBG (unique identifier)</p> <p>e) All Bank Guarantees should be enforceable for minimum ninety (90 days) after expiry of its validity.</p> <p>f) Extension of all BGs should be on Stamp paper of same value as that of the original BG. Minimum extension of any BG should be three months.</p> <p><b>Applicable rate for liquidated damages</b></p> <p><b>(A) Liquidated Damages for Delay in Commissioning shall be as under:</b></p> <p>If the Contractor fails to successfully achieve commissioning of the Project within <b>five (05) months</b> from the date of LOA as per time schedule specified in the Bidding Documents, the Contractor shall pay to the Employer as Liquidated Damages and not as penalty, a sum calculated as follows:</p> <p><i>“½ % (half percent) of the contract price per week subject to a maximum of 3 % (three Percent) of the total Contract Price.”</i></p> <p><b>(B) Liquidity Damage for System Breakdown:</b> The contractor shall ensure that the system can be made functional within ten days from the communication in writing/email of breakdown of the system during the standard warranty and extended period. If the Bidder is not able to address the issue within the timeframe due to reasons attributable to contractor, damages and not as penalty shall be recovered at USD 50 for each day of delay per incident after abovementioned timeframe of 10</p>

Special conditions (SCC) No.	GCC Clause Ref. (if any)	Special Conditions
9.	GCC Clause 27.10	<p>days. The recovery shall be subject to a maximum of 5 % (Five Percent) of the total Contract Price.</p> <p><b>(C)</b> Total liquidity damage as mentioned in (A) and (B) above shall be subject to a ceiling of maximum of 5 % (Five Percent) of the total Contract Price.</p> <p>In addition, the Contractor shall also provide an extended warranty of two (02) years for the complete facilities as specified in the Technical Specifications. Such obligation shall be in addition to the defect liability specified under GCC Sub-Clause 27.2.</p>
10.	Insurance GCC 34.1	<p>In accordance with the provisions of GCC Clause 34, the Contractor shall at his 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 in Sl. No. I) of Annexure-3 to SCC in the sums and with the deductibles and other conditions specified therein</p>
10.1	GCC 34.5	<p>The Employer shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in Sl. No. II) of Annexure-3 to SCC.</p>
11.	General	<p>In particular it is expressly understood and agreed that the Government of India is not a party to this Contract and has no liabilities, obligations or rights hereunder. It is expressly understood and agreed that the PMC is an Independent legal entity. The Contractor expressly agrees, acknowledges and understands that the PMC is not an Agent, Representative or Delegate of the Govt. of India. It is further understood and agreed that the Government of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the Contract. Accordingly, the Contractor expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the Government of India arising out of this Contract and covenants not to sue the Government of India as to any manner, claim, cause of action or thing whatsoever arising of or under this Agreement.</p>

Special conditions (SCC) No.	GCC Clause Ref. (if any)	Special Conditions
12.	GCC 19	<p><b>Subcontracting</b></p> <p>Add GCC Clause 19.3 as below:</p> <p>After award of the contract, the contractor shall submit details of all major items of supply or services that it proposes to purchase or sublet along with details such as name and nationality of the proposed Subcontractor and vendor, for each of those items and services.</p> <p>The PMC reserves the right to accept/reject any proposed Subcontractor/ Vendor.</p> <p>After discussion between the PMC and the Contractor, listing of the approved Subcontractor(s) / Vendor(s) for each item shall be completed.</p>

## **TERMS AND PROCEDURES OF PAYMENT**

*In accordance with the provisions of GCC Clause 12 (Terms of Payment), the ISA on behalf of the Employer and on recommendation of Project Manager shall pay the Contractor in the following manner and at the following times, on the basis of the Price Schedules. Payments will be made in the currencies quoted by the Bidder unless otherwise agreed between the parties.*

### **TERMS OF PAYMENT**

1. Forty percent (40%) of the total contract price shall be paid on:
  - a. Un-conditional acceptance of Letter of Award by the Contractor
  - b. Submission by the Contractor of an unconditional Bank Guarantee(s) towards Performance Security(s) initially valid up to ninety (90) days after the end of standard warranty period of all equipment covered under Contract Or consent for deduction of Security Deposit (SD) , at the time of making payments to contractor for the work done under the Contract, towards the Performance Security an amount equivalent to 20% of the every bill(s) subject to ceiling of 10% of the Contract Price.,  
  
and
  - c. Dispatch of all plant and equipment including mandatory spares identified in the contract and on production of invoices and satisfactory evidence of shipment which shall be original Bill of Lading /Goods Receipt/ LR /Rail Receipt including Pre - Dispatch Clearance Certificate issued by the PMC. In this regard, the Contractor shall prepare and submit to the PMC for approval, a complete Bill of Quantities of all plant and equipment including mandatory spares to be supplied to fulfill the obligations identified in the contract. Any payment under the Contract shall be made only after the Contractor's price break-up is approved by the Project Manager.
2. Twenty percent (20%) of the total contract price shall be paid on receipt of all plant and equipment including mandatory spares identified in the contract and physical verification & certification by the Employer / Project Manager of having the equipment received and stored at site.
3. Thirty percent (30%) of the total contract price shall be paid on Completion of the Facilities including all associated auxiliaries and ancillary works and issuance of Completion Certificate by the Project Manager/Employer.
4. Ten percent (10%) of the total contract price shall be paid on successful completion of acceptance test as per parameters specified in the Technical Specifications and issuance of Operational Acceptance Certificate by the Project Manager/Employer.

#### **Notes:**

All payments shall be disbursed upon successful completion of individual milestone as specified above. The Request for Disbursement shall be submitted by PMC and signed by the Authorized

Signatory from Employer. Further, any request for disbursement of the Grant or any part thereof will be accompanied by a Utilization Certificate. The Utilization Certificate will be issued by the supreme audit institution of Employer or by the Ministry / Department in charge of Finance in Employer's country in the absence of a dedicated audit institution and will be submitted along with sufficient evidence of project/work completion to the satisfaction of ISA for the release of the Grant or any part thereof.

### **1. Application for Payment**

- 1.1 The Contractor shall submit application for the payment in the proforma enclosed to the Project Manager (PMC) along with all necessary documents.
- 1.2 Each such application shall state the amount claimed and shall set forth in details the order of the Payment Schedule, particulars of the Facilities / milestones executed, including 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 preceding certificate, if any.
- 1.3 Every interim payment certificate shall certify the milestones 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.

### **2. Due Dates for Payment**

- 2.1 ISA will make progressive payments as and when the payment is due as per the Terms of Payment. Progressive payment will become due and payable by the ISA within Thirty (30) days from the date of recommendation by Project Manager based on the receipt of Contractor's bill/ invoice/ debit note, provided that the documents submitted are complete in all respects.
- 2.2 In cases of any discrepancy observed by the PMC in Contractor's bill, clarifications shall be sought in writing by the PMC within ten (10) days from the date of receipt of Contractor's bill/invoice/debit note by the PMC. The Contractor shall be required to submit the requisite clarifications within ten (10) days from the date of issuance of queries by the PMC. In case, no mutual agreement is reached between the PMC and the Contractor on any part of the bill/invoice, within ten (10) days of submission of clarification by the Contractor, the Contractor shall issue a revised bill/invoice. Payment against agreed and admissible part shall be processed as per payment procedure within ten (10) days after receipt of the revised bill/invoice. The bill/invoice for the balance amount under question may be separately submitted for consideration of the PMC after resolution of issues of payment by the PMC. In case of non-submission of satisfactory clarification by the Contractor within the stipulated period, PMC shall not be liable for the delay in making payment. If the bill submitted by Contractor is incorrect and has gross discrepancies, the bill shall be summarily rejected and returned to the Contractor. In the event of dispute, the same shall be settled as per GCC Clause (Settlement of Disputes).

### **3. Mode of Payment**

## **Annexure-1 to SCC**

All the payments shall be made directly to the Contractor by the ISA based on the Project Manager (PMC) recommendations.

Based on the authorization from the contractor, ISA on the recommendation of the PMC may also consider the direct payment to the sub-contractor(s)/ Sub-vendor(s) from the due payments to the contractor.

**LIST OF BANKS ACCEPTABLE FOR SUBMISSION  
OF BANK GUARANTEE (As per PMC country)**

**SCHEDULED COMMERCIAL BANKS**

**A STATE BANK OF INDIA**

**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
17. UCO Bank
18. Vijaya Bank
19. Bank of Baroda

**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 Limited
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 Limited
22. Bandhan Bank Limited



**D SCHEDULED PRIVATE BANKS (FOREIGN BANKS)**

1. Abu Dhabi Commercial Bank PJSC
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 Shangai 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. The Bank of Tokyo-Mitsubishi UFJ Limited.
26. Austalia & Newzealand Banking Group Limited
27. Sumitomo Mitsui Banking Corporation
28. American Express Banking Corporation
29. Credit Suisse A.G.
30. FirstRand Bank Ltd.
31. Industrial & Commercial Bank of China Ltd.
32. JSC VTB Bank
33. National Australia Bank
34. Cooperatieve Rabobank U.A.
35. Sberbank
36. United Overseas Bank Ltd.
37. Westpac Banking Corporation
38. Woori Bank
39. The Royal Bank of Scotland plc
40. Doha Bank Qsc
41. Industrial Bank of Korea
42. KEB Hana Bank
43. First Abu Dhabi Bank PJSC
44. Emirates NBD Bank (P.J.S.C.)
45. Qatar National Bank SAQ

**E OTHER PUBLIC SECTOR BANKS**

1. IDBI Bank Ltd

\*In case, Bank Guarantee is getting issued from State Bank of India, 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 : 03<sup>rd</sup> 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 of u.s

एन टी पी सी भवन स्कोप कॉम्प्लेक्स, 7, इंस्टीट्यूशनल एरिया, लोधी रोड, नई दिल्ली-110003 टेल/Tel.: 24360100, फैक्स/Fax : 011-24361018  
NTPC Bhawan, SCOPE Complex, 7, Institutional Area, Lodhi Road, New Delhi-110003, वेबसाइट/Website : www.ntpc.co.in



भारतीय स्टेट बैंक  
State Bank of India

कॉरपोरेट लेखा समूह शाखा, जवाहर व्यापार भवन,  
11-12 वां तल, 1, टॉलस्टाय मार्ग, नई दिल्ली-110 001

Corporate Accounts Group Branch, Jawahar Vyapar Bhawan,  
11th & 12th Floor, 1, Tolstoy Marg, New Delhi-110 001

Tel. : 23374525, 23374505, 23374541 (AMT-1), 23353022 (DGM & COO), 23701043, 23359506 (A & A), 23352995 (CS), 23352968 (IB)  
Fax : 23353101 (Sectt.), 23352793 (CS), 23353029 (IB)

Shri K.P. Gupta,  
General Manager (Finance),  
NTPC Limited  
Scope Complex, 7, Institutional Area,  
Lodhi Road,  
New Delhi: 110 003.

CAG-I/AMT-1/2014-15/370

04.09.2014

Dear Sir,

**Format of the Bank Guarantee (BG) issued by State Bank of India**

We refer to your letter dated 3<sup>rd</sup> September 2014 wherein you have requested for excluding bidders/vendors of NTPC from insertion of additional Clause restraining assignment/transferability of BG.

Looking at our relationship with NTPC, as a very special case, we have since obtained waiver from our Authorities for excluding NTPC from insertion of the referred clause for BGs issued in your favour.

We are taking steps to issue suitable instructions to our offices for exclusion of this clause for BGs issued in favour of NTPC. In case any bidder or vendor submits to you a Bank Guarantee issued by any of our Branches containing the additional clause as mentioned above, request you to please bring it to our notice and advise us so that we can take-up with the concerned Branch for excluding it.

This is for your information and necessary action please.

Yours faithfully,

  
(Sandeep Mishra)

Deputy General Manager &  
Relationship Manager, AMT-1

**(I) Insurance to be taken by the Contractor :**

In accordance with the provisions of GCC Clause 34, the Contractor shall at his 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 herein. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, such approval not to be unreasonably withheld.

Insurance	Amount insured	Deductible	Conditions
A. Marine Cargo	(i) 110% of CIF value in case of Plant and Equipment including all spare parts and Type Tests Charges to be supplied from abroad/110% of Ex-works value in case of plant & equipment and Type Tests Charges including all spare parts manufactured within the Employer's Country. (ii) Applicable taxes and duties (iii) Escalation 5% on (i) & (ii)	Not applicable	(i) Employer to be named as coinsured (ii) Open policy (iii) All risk institute cargo clause 'A' (iv) War, SRCC, terrorism. (v) Institute replacement clause, special replacement clause (Air duty) and deferred unpacking clause (vi) Insurers right of subrogation against all parties (excluding carrier) waived. (vii) Warehouse to warehouse basis.
B. Installation all risk	(i) 110% of CIF value plus 110% of Ex-works value of plant & equipment including Type Test Charges (ii) Applicable taxes and duties (iii) Cost of indigenous procurement and free issue materials (iv) 10% escalation on (i) (ii) & (iii) (v) Cost of erection works	Minimum as per insurance policy	(i) Installation risk, RSMTD, (ii) Air freight cover. (iii) Extra charge cover. (iv) Maintenance cover (v) Contractor's plant & machinery - Rs. 100 lakhs. (vi) Cross liability. (vii) Additional custom duty for imported machine (if any) for adequate value. (viii) Employer & Contractor's Sub-Contractor to be named as co-insured.
C. Third Party liability (Extension of MCE/EAR Policy)	For any one occurrence Rs. 50.00 lakhs	Nil	(i) Contractors, sub-contractors to be named as co-insured.

## Annexure-3 to SCC

Insurance	Amount insured	Deductible	Conditions
D. Automobile liability			
(i) M.V. policy for motor vehicles, private cars & commercial vehicles		-----	As per local M.V. Act.
(ii) CPM policy for heavy construction equipment	Anything above Rs.100 lakhs covered under erection all risk policy		
E. Workmen's Compensation	_____	As per statute _____	
F. Employer's liability	_____	As per statute _____	Cumulative to workmen's compensation to cover liability not covered thereby.
G. Group personal insurance, for contractor's & sub-contractor's employees			

**Note :**

1. The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC 34.1 except for Third Party Liability, Workman's Compensation and Employer's Liability Insurances and the Contractor's Sub-Contractors shall be named as co-insured under all insurances policies taken out by the Contractor pursuant to GCC 34.1, except for the Cargo insurance during transport, Workman's Compensation and Employer's Liability Insurances. All insurers 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.
  
2. Notwithstanding the insurance requirements mentioned above, it would be the Contractor's responsibility to take adequate insurance cover as may be pertinent to protect his interest and interest of the Employer. If at any point of time during execution of the Contract, the insurance policies are found to be inadequate, the Contractor shall take fresh insurance policies meeting aforesaid requirements. The Employer reserves the right to make suitable recovery from the Contractor, if any.

Upon grant of extension of time for completion by Employer; the Contractor shall promptly furnish documentary evidence to Project Manager towards extension of insurance policies for the period of time extension.

3. Any loss or damage to the plant and equipment during handling, transportation, storage, installation, commissioning, and all activities to be performed till the "Completion of Facilities" shall be to the account of the contractor. The contractor shall be responsible for preference of all claims and make good the damages or loss by way of repairs and/or replacement of plant and equipment damaged or lost. Notwithstanding the extent of insurances cover and the amount of claim available from the underwriter, the contractor shall be liable to make good the full replacement/rectification of all the equipment/materials and to ensure their availability as per project requirement without additional financial liability to the Employer.

The insurance should be in freely convertible currency and insurance policy to be taken should be on replacement value basis and/or incorporating appropriate insurance clause.

The Contractor shall follow local acts and laws as may be prevalent for insurance.

**II) Insurances to be taken by the Employer.**

The Employer shall take the insurance for its own employees, its stores and its machinery.

# BIDDING DOCUMENTS

## SECTION – VII BOOK 1 OF 3

**Bid Form & Attachments  
(Techno-Commercial Bid)**

(This document is meant for the exclusive purpose of bidding against this Bid Document No. / Specification and shall not be transferred, reproduced or otherwise used for purposes other than that for which it is specifically issued).



## **BID FORM**

To  
PMC

1.0 Having examined the Bidding Documents including subsequent amendments and clarifications if any, the receipt of which is hereby acknowledged, we the undersigned, hereby furnish our Techno-Commercial Bid.

2.0 **Attachments to the Techno Commercial Bid form:**

In line with the requirement of the Bidding Documents we are enclosing all relevant information as Attachments

3.0 **CONSTRUCTION OF THE CONTRACT**

We declare that we have studied bid documents relating to mode of contracting and we are making this proposal with a stipulation that you shall award us contact in the form of Letter of Award(s) (LOA) as per provisions of the bidding documents. Issue of LOA shall constitute formation of Contracts.

4.1 **COMPLIANCE TO THE PROVISION OF THE BIDDING DOCUMENTS**

4.2 We have read all the provision of the Bidding Documents and confirm that notwithstanding anything stated elsewhere in our bid to the contrary, the provisions of the Bidding Documents are acceptable to us and we further confirm that we have not taken any deviation to provision of the Bidding Documents anywhere in our bid.

We have furnished our compliance to the provisions of the Bidding Documents and its subsequent Amendment(s)/ Clarification(s)/ Addenda/ Errata by accepting the following condition at the e-tender portal:

**“ Do you certify compliance to all provisions of Bid Doc?”**

Acceptance of above at the e-tender portal shall be considered as our confirmation that any deviation, variation or additional condition etc. or any mention, contrary to the provisions of Bidding Documents and its subsequent Amendment(s)/ Clarification(s) /Addenda/Errata (if any) found anywhere in our bid proposal implicit or explicit shall stand unconditionally withdrawn, without any cost implication whatsoever to the Employer, failing which our bid security shall be forfeited.

4.3 We further declare that additional conditions, variations, deviations to the provisions of Bidding Documents and its subsequent Amendments/Clarifications/Addenda/Errata, if any, found in our bid, shall not be given effect to.

4.4 We have furnished our compliance on “Qualifying Requirements” of PMC by accepting the following conditions at the e-tender portal:

**“Do you certify full compliance on Qualifying Requirements?”**

5.0 We undertake, if our bid is accepted, to commence work on the Facilities immediately upon issue of Letter of Award to us and to achieve Completion of Facilities within the time specified in the Bidding Documents and provide standard warranty.

6.0 If our bid is accepted, we undertake to provide Contract Performance Securities in the form

and amounts and within the times specified in the Bidding Documents Or as per provisions of the bidding documents, we shall communicate to choose option of Security Deposit.

- 7.0 We agree to abide by our this Techno-Commercial bid including the Price Bid during the period of its validity for a period 180 days from the date of opening of Techno-Commercial Bids as stipulated in the Bidding Documents, unless extended by us on your request and it shall remain binding upon us and may be accepted by you at any time before expiration of that period.
- 8.0 We understand that you are not bound to accept our bid or any other bid you may receive.
- 9.0 We, hereby, declare that only the persons or firms interested in this proposal as principals are named here and that no other persons or firms other than those mentioned herein have any interest in this proposal or in the Contract to be entered into, if the award is made on us, that this proposal is made without any connection with any other person, firm or party likewise submitting a proposal, is in all respects for and in good faith, without collusion or fraud.

Dated this.....day of .....20.....

Thanking you, we remain,

Yours faithfully,

Date : (Signature).....

Place : (Printed Name).....

(Designation).....

Business Address : \_\_\_\_\_

Email id: Mobile

No. :

Phone No.:

**BID SECURITY**

NOT APPLICABLE

**POWER OF ATTORNEY**

**BIDDER TO ATTACH THE POWER OF ATTORNEY IN ACCORDANCE WITH CLAUSE 8.2. (b) OF  
ITB**

**(BOARD RESOLUTION IN FAVOUR OF AUTHORIZED SIGNATORY ALSO TO BE ENCLOSED)**

A Power of Attorney (POA) indicating that the person(s) signing the bid has/have the authority to sign the bid and thus that the bid is binding upon bidder during the full period of its validity in accordance with the ITB. **Bidders may note that no prescribed proforma has been enclosed for POA.**

Copy of POA to be furnished/ submitted at the e-tender portal. **Bidders may note that PMC MAY AT ANY TIME ASK FOR ORIGINAL PHYSICAL COPY OF POA.**

**ATTACHMENT - 3A-1**

**(Details Pertaining to Technical Qualification of the Bidder )**

**(A) To Satisfy the requirements specified in Clause 1.1 of the Qualifying Requirements, under Item No 3.0 of Bid Data Sheet, we give below the following details:**

We, declare that we have supplied, installed/got installed and commissioned Solar cold storage of total cumulative capacity of 25 MT. The reference plants of a cumulative minimum capacity of 10 MT is in successful operation for at least one-year from the date of commissioning prior to the techno-commercial bid opening date.

Details of reference plants to meet the qualification requirements are mentioned below:

Sl.No.	Description of work	Name of Client with full address, Email & Tel. No.	Name of the Plant with its location	Capacity of the plant (MT) (Minimum capacity 2 MT)	Date of Commissioning	Period of Successful Operation (in months)
Plant 1						
Plant 2						
Plant 3						
Plant 4						
Plant 5						
Plant 6						
Plant 7						
..						
..						

**Continuation sheets of like size and format may be used and annexed to this Attachment if required.**

We further confirm that notwithstanding anything stated above, the PMC reserves the right to undertake a physical assessment of the capacity and capabilities including financial capacity and capability of the Bidder to perform the Contract, should the circumstances warrant such assessment in the overall interest of the PMC.

**Note:**

1. The reference plants as per QR clause 1.1 should consist of system of minimum 2MT capacity at a single location for a client.
2. We have submitted certificate of successful completion and operation, as per Technical Criteria 1.1, from the Owner
3. We are a legal entity, duly incorporated/registered under the laws of our country of domicile in one of the member/signatory countries of ISA as on the date of techno-commercial bid submission. Supporting documents in this regard are enclosed.
3. The reference plants / installations whose details have been declared as per the specified format in this Attachment-3 above shall only be considered to ascertain the bidder's compliance to Qualifying Requirement (QR).
4. The PMC at its discretion may seek clarification and / or documentary evidence only for the reference plants / installations as mentioned above. However, no change or substitution of the reference plants by new / additional plant for conforming to the specified Qualifying Requirement shall be sought, offered or permitted.
5. Bidder to ensure that certificate issued by the client covers / includes all parameters of QR.
6. As specified in the BDS 3.0, we have submitted Appendix-I to Attachment-3A1/ Appendix-II to Attachment-3A1 for Authentication of veracity of documents submitted.

-----

Name and Signature of Bidder

**Appendix-I to Attachment-3A1**

**Undertaking from Independent Statutory Auditor**

(On letter head digitally signed by a person duly authorized to Sign on behalf of the Statutory Auditor)

Bid Ref. No:

DATE:

To,  
NTPC Ltd.  
.....

**Subject: Authentication of veracity of documents submitted by M/s ..... in support of meeting the Qualifying Requirements**

Ref: IFB/Tender no. ....  
Name of the Package/ Tender: .....

Dear Sir,

M/s. .... (hereinafter called Bidder) having Registered office at..... intend to participate in above referred tender of NTPC Ltd.

We, M/s ..... has been appointed as Statutory Auditor for the Bidder i.e. M/s ..... (Relevant documents on our appointment attached)

The tender condition stipulates that the bidder shall submit supporting Documents pertaining to Technical Qualifying Requirement duly verified and certified by Statutory Auditor.

In this regard, it is hereby confirmed that we have examined the following documents, which are also attached with this letter. The same has been verified from the Original Documents and/ or Client for authenticity.

We hereby confirm that the following documents are found to be genuine and authentic.

1. Doc ref. no. .... dated ..... (name of Documents)
2. Doc ref. no. .... dated ..... (name of Documents)
3. ....

All the aforesaid documents have been duly signed and stamped and/ or digitally signed by us as a certificate of authenticity.

\*Further, we have examined the books of accounts, records, and other relevant documents, along with other necessary information and explanations furnished by M/s. .... (bidder) and hereby certify following:

.....

This certificate is issued at the request of M/s ..... (Bidder) for the purpose of participating in tender/s.

Thanking you,

.....

*\* Strike off, whichever is not applicable.*

**Appendix-II to Attachment- 3A1**

**Undertaking from Third Party Inspection Agency**

(on letter head digitally signed by a person duly authorized to Sign on behalf of the TPIA)

Ref.: \_\_\_\_\_ Date:

To,  
NTPC Ltd.

.....Dear

Sir,

**Subject: Authentication of veracity of documents submitted by M/s ..... in support of meeting the Qualifying Requirements**

Ref : IFB/Tender no. ....  
Name of the Package/ Tender: .....

M/s. .... (hereinafter called Bidder) having Registered office at ..... intend to participate in above referred tender of NTPC Ltd.

The tender condition stipulates that the bidder shall submit supporting Documents pertaining to Qualifying Requirement duly verified and certified by a specified independent Third Party Inspection Agency as per the list mentioned in the bidding documents.

In this regard, it is hereby confirmed that we have examined the following documents, which are also attached with this letter. The same has been verified from the Original Documents and / or Client for authenticity.

We hereby confirm that the following documents are found to be genuine and authentic.

1. Doc ref. no. .... dated ..... (name of Documents)
2. Doc ref. no. .... dated ..... (name of Documents) 3. ....

All the aforesaid documents has been digitally signed by us as a certificate of authenticity.

We further confirm that we neither have any vested interest in aforesaid tender nor have any conflict of interest in respect of above tender.

This certificate is issued at the request of M/s ..... (Bidder) for the purpose of participating in the subject tender/s.

Thanking you,

*\* Strike off, whichever is not applicable.*



(Financial Data pertaining to Financial Qualification of the Bidder)

**A\*** To satisfy the requirements specified in financial QR, We give below the following details:

In terms of **Clause 2.1(a) of the Qualifying Requirements**, under Item No. 3. of Bid Data Sheets, we confirm that our average annual turnover during the preceding three financial years as on date of Techno-commercial bid opening is **not less than USD 1,00,000/-** In support of above, we are enclosing Audited Financial Statements.

Sl. No.	Financial Year	Amount in USD
1.		
2.		
3.		
4.		
5.	Average Annual Turnover for the preceding three (3) Financial Years as on date of Techno-commercial Bid Opening.	
6.	We have enclosed Audited Financial Statements for preceding (3) Three 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 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 bidders not meeting the requirement of Clause 2.1(a) (Para 1) of Financial Qualifying Requirements on its own:**

Since we do not satisfy the average annual turnover criteria, stipulated under Financial Criteria at Sub Clause 2.1 (Para 1) of QR on its own, **our Holding Company meet the stipulated turnover requirements as above i.e USD 1,00,000/-**, the Net Worth of 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 this case, the we hereby furnish along with Techno-Commercial Bid, a Letter of Undertaking from the 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 us in case of award.

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

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

Sl.No.	Financial Year	Amount in USD
1.		
2.		
3.		
4.	Average Annual Turnover of the Holding Company for the preceding three (3)Financial Years as on date of Techno- Commercial Bid Opening.	
5.	Net Worth of Holding Company as on the last day of the preceding financial year	
6.	Paid- up share capital of the Holding Company on the last day of the preceding financial year	
7.	Is Net Worth of 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 (Yes*/No*)	
8.	We have enclosed Audited Financial Yes*/No* Statements for the last 3 financial years of the Holding Company	

- 
9. A Letter of Undertaking from the Holding Company, supported by Board Resolution, pledging unconditional and irrevocable financial support for execution of the contract in case of award is enclosed as per the format at **Appendix-B** to this Attachment-3A-2. A power of attorney of the person signing on behalf of holding company is also enclosed at Annexure..... to this Attachment-3A-2.
- 

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

**Note:**

- (i) Net worth means the sum-total of the paid-up share capital and free reserves. Free reserves mean 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 domicile country of the bidder
- (iv) For value of reference projects required for clause 2.1(b) of the QR in foreign currency, the exchange rate as on seven (7) days prior to Techno Commercial Bid Opening date shall be used.
- (v) In case the Bidder is not able to furnish its audited financial statements on standalone entity basis, the unaudited unconsolidated financial statements of the Bidder can be considered acceptable provided the Bidder further furnishes the following documents on substantiation of its qualification:
- (a) In case where audited results for the last financial year as on the date of Techno Commercial Bid Opening are not available, the financial results certified by a practicing Chartered Accountant shall be considered acceptable. In case the Bidder is not able to submit the Certificate from a practicing Chartered Accountant certifying its financial parameters, the audited result of three consecutive financial years preceding the last financial year shall be considered for evaluating 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 date of Techno Commercial Bid Opening and the Certificate from a practicing Chartered Accountant certifying the financial parameters is not available.
- (b) Certificate from the CEO/ CFO of the Holding Company, as per the format enclosed in the bidding documents, stating that the unaudited unconsolidated financial statements form part of the consolidated financial statement of the Holding Company.
- (c ) Copies of the unaudited unconsolidated financial statements of the Bidder along with copies of the audited consolidated financial statements of its Holding Company

**PROFORMA OF CERTIFICATE FROM THE CEO/CFO OF THE HOLDING  
COMPANY IN ACCORDANCE WITH FINANCIAL CRITERIA**

**(To be submitted by Bidder alongwith the Techno-Commercial Bid)**

Ref. :

Date:

To  
PMC

**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 Bidder).
- 2.0** I hereby confirm and undertake that the unaudited unconsolidated financial statements  
submitted in respect of the bidder 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.
- 3.0** 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)

Date : (Name & Designation).....

Place : (Name of the Holding Company).....

**Note :** \*Strike off whichever is not applicable.

**APPENDIX-B TO ATTACHMENT – 3A-2**

**PROFORMA OF LETTER OF  
UNDERTAKING**

**(TO BE FURNISHED ON NON-JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)**

**(To be executed by the Holding Company Supported by  
Board Resolution and submitted by the Bidder alongwith the Techno-Commercial Bid,  
Applicable to the Bidder for meeting the stipulated Financial QR)**

Ref. :

Date :

To  
PMC

**Dear Sirs,**

1.0 We, M/s..... declare that we are the holding company of M/s  
..... (Name of the Bidder) and have controlling interest therein.

M/s. .... (Name of the Bidder) proposes to submit the bid for the  
package ..... (Name of the package) for ..... (Name of  
the Project) under bid reference no. .... dated ..... and have  
sought financial strength and support from us for meeting the stipulated Financial  
Qualifying Requirement as per Clause No. 2.1(a) .

2.0 We hereby undertake that we hereby pledge our unconditional & irrevocable financial  
support for the execution of the said package to M/s. .... (Name of the  
Bidder), in case they are awarded the Contract for the said package, at the end of  
the bidding process. We further agree that this undertaking shall be without prejudice to  
the various liabilities that M/s ..... (Name of Bidder) would be  
required to undertake in terms of the Contract including the Performance Security as  
well as other obligations of the Bidder/Contractor.

3.0 This undertaking is irrevocable and unconditional, and shall remain in force till the  
successful execution and performance of the entire contract and/or till it is discharged  
by Employer.

4.0 We are herewith enclosing a copy of the Board Resolution in support of this undertaking.

Yours faithfully

(Signature of Authorised Signatory  
on behalf of the Holding  
Company)

**\* PROFORMA OF CERTIFICATE FROM THE CEO/CFO  
IN ACCORDANCE WITH Clause 2.1(d) OF QR**

**(To be submitted by Bidder alongwith the Techno-Commercial Bid)**

Ref. :

Date:

To  
PMC

**Dear Sirs,**

I, Mr. .... (CEO/ CFO of the Company) of ..... (Name of the Company) declare that the financial results of M/s. .... (Name of the Bidder) are under audit as on ..... (Date of Techno-commercial bid opening) and the Certificate from the practicing Chartered Accountant certifying the financial parameters is also not available.

Yours

faithfully

(Signature)

Date : (Name & Designation).....

Place : (Name of the Company).....

**Note :** \*Strike off if not applicable

DELETED

**TECHNICAL DATA SHEET**

To,  
PMC

Dear Sir/Madam,

We hereby furnish the following details with reference to the Data Sheet mentioned in the Technical Specifications of each projects for which we have quoted:



**Additional Information included with the proposal**

**GENERAL DECLARATION**

We, hereby confirm the following:

- (a)** Bankruptcy: We have not declared bankruptcy, not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against us that could impair our operations in the foreseeable future.
- (b)** History of Non-Performing Contracts- We, do not have any Non-performing contract due to our default during the last 3 years.

(Details of non performing contracts, if any may be enclosed at Annexure)
- ©** Litigation History- There is no consistent history of court/arbitral award decisions against us for the last 3 years.

(Details of litigation history, if any may be enclosed at Annexure)

.....

Name and Signature of bidder

# **BIDDING DOCUMENTS**

## **SECTION – VII BOOK 2 OF 3**

	SECTION-VII Book 2 of 3 BID FORMS FOR PRICE BID	PAGE 1 OF 3
--	--	----------------

## **Price Break-up of Mandatory Spares**

1. Bidder shall be required to submit price break-up of Mandatory Spares as mentioned in the Technical Specifications.
2. These prices shall be included in the total lumpsum price of entire project.
3. Bidder shall be required to quote prices for mandatory spares for only those projects for which price quoted in the ' Commercial' section at the e-tender portal.
4. This Shall be Uploaded by bidder under Commercial section at the e-tender portal

### **For Project at SENEGAL**

Sl. No.	Item	Unit	Quantity	Price
1.	Solar panel of each type	No.	1	
2	DC cable of each type and rating as installed	Length	5%	
3.	Fuse of each type and rating used in system	Percentage	100%	
4.	Surge protection device of each type and rating used in the system	Percentage	100%	

### **For Project at DJIBOUTI**

Sl. No.	Item	Unit	Quantity	Price
1.	Solar panel of each type	No.	1	
2	DC cable of each type and rating as installed	Length	5%	
3.	Fuse of each type and rating used in system	Percentage	100%	
4.	Surge protection device of each type and rating used in the system	Percentage	100%	

### **For Project at SUDAN**

Sl. No.	Item	Unit	Quantity	Price
1.	Solar panel of each type	No.	1	
2	DC cable of each type and rating as installed	Length	5%	
3.	Fuse of each type and rating used in system	Percentage	100%	
4.	Surge protection device of each type and rating used in the system	Percentage	100%	

### **For Project at Seychelles**

Sl. No.	Item	Unit	Quantity	Price
1.	Solar panel of each type	No.	1	
2	DC cable of each type and rating as installed	Length	5%	
3.	Fuse of each type and rating used in system	Percentage	100%	
4.	Surge protection device of each type and rating used in the system	Percentage	100%	

# BIDDING DOCUMENTS

SECTION – VII  
BOOK 3 OF 3

## TABLE OF FORMS AND PROCEDURES

### Section-VII (Book 3 of 3)

1. Forms of Letter of Award
2. Performance Security Form
3. Performance Security Form (Extended warranty period)
4. Form of Completion Certificate
5. Form of Operational Acceptance Certificate
6. Form of Trust Receipt
7. Forms of Indemnity-cum-Undertaking Agreements (2 Nos.)
8. Form of Authorization Letter
9. Form of Bank Guarantee Verification Check List
10. Form of Extension of Bank Guarantee
11. Form of Indemnity-cum-Undertaking Agreement (for Removal of Surplus Material and scraps)
12. Form of No-Demand Certificate

FORM OF 'LETTER OF AWARD'

**NOTE :** *INSTRUCTIONS INDICATED IN ITALICS IN THIS NOTIFICATION OF AWARD ARE TO BE TAKEN CARE OF BY THE ISSUING AUTHORITY.*

Ref. No. :

Date :

.....(Contractor's Name & Address).....  
.....  
.....  
.....

Attn : Mr.....

**Sub :** Letter of Award of Contract for ..... (*Package Name*)  
..... as per Bidding Document No.....

Dear Sir,

1.0 This has reference to the following:

- (i) Our Notice Inviting Tender (IFB) No. .... dated .....
- (ii) Bidding Documents for the subject package issued to you comprising the following :

*.....(List out all the Sections/Volumes of the Bidding Documents along with Tender Drawings etc. as issued to the bidder).....*

Errata/Amendment No..... to..... (*Name of Section/Volume of the Bidding Documents to which Errata/Amendment pertains*)..... issued to you

*(Applicable only if any Errata/Amendment to the Bidding Documents has been issued subsequently)*

- (iii) Clarifications No..... to..... furnished to you on the Bidding Documents based on the query raised by you/one of the prospective bidders. (*Use as applicable*)

*(Applicable only if any clarification to the Bidding Documents has been issued subsequently)*

**(INCLUDE AS FURTHER SUB-PARAGRAPHS ANY OTHER CORRESPONDENCE MADE TO THE BIDDER AFTER ISSUANCE OF BIDDING DOCUMENTS UP TO THE DATE OF BID OPENING)**

- (iv) Your Proposal for the subject package and its modification (*Delete if not applicable*).
- (v) Our email/letter No. .... dated..... regarding extension of validity of bid and that of the Bank Guarantee towards Bid Security.

*(Applicable only if any extension has been sought subsequently)*

**(INCLUDE AS FURTHER SUB-PARAGRAPHS ANY OTHER CORRESPONDENCE MADE TO OR BY THE BIDDER AFTER BID OPENING)**

2.0 We, on behalf of ..... (Name of Employer) confirm having accepted your proposal submitted and its modification. (*Delete if not applicable*) read in conjunction with all the



specifications, terms & conditions of the Bidding Documents, **your subsequent letters (Use if relevant)** and award on you the Contract for the work of .....**(Indicate brief Scope of Work)** ..... of ..... **(Name of Package)** .....for **(Name of project)**..... as per Specification No. :..... . The issuance of this Letter of award will constitute the formation of the contract.

- 3.0 The total Contract Price for the entire scope of work under the Contract shall be .....**(Specify the amount )**.....
- 4.0 The Time of Completion of the Facilities shall be determined from the date of Letter of Award (“Effective Date”) for a period as mentioned in SCC or its subsequent amendments, if any.
- 5.0 This Letter of Award is being issued to you in duplicate. We request you to return its duplicate copy duly signed and stamped on each page including all the enclosed Appendices, by the authorized signatory of your company as a proof of your acknowledgement.

Please take the necessary action to commence the work and confirm action.

Yours faithfully,  
for and on behalf of  
.....**(Name of the PMC)**.....

**(Authorised Signatory)**

Encl. : As above.

**Performance Security Form  
(Bank Guarantee format)**

(To be stamped in accordance with Stamp Act  
if any, of the Country of the Issuing Bank)

Bank Guarantee No.....  
Date.....

To,  
[PMC's Name & Address]

Dear Sirs,

In consideration of the ..... [project management consultant PMC's Name] ..... (hereinafter referred to as the 'PMC' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) having awarded to M/s..... [Contractor's Name]..... with its Registered /Head Office at ..... (hereinafter referred to as the 'Contractor', which expression shall unless repugnant to the context or meaning thereof, include its successors administrators, executors and assigns), a Contract by issue of PMC's Letter of Award No. .... dated..... and the same having been unequivocally accepted by the contractor, valued at ..... for ..... and the Contractor having agreed to provide a Contract Performance Guarantee for the faithful performance of the entire Contract equivalent to .....(\*).....% (..... percent) of the said value of the Contract to the PMC.

We .....[Name & Address of the Bank].....having its Head Office at .....(hereinafter referred to as the 'Bank', which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the PMC, on demand any and all monies payable by the Contractor to the extent of .....(\*)..... as aforesaid at any time up to .....(@)..... [days/month/year] without any demur, reservation, contest, recourse or protest and/or without any reference to the Contractor. Any such demand made by the PMC on the Bank shall be conclusive and binding notwithstanding any difference between the PMC and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. The Bank undertakes not to revoke this guarantee during its currency without previous consent of the Employer and further agrees that the guarantee herein contained shall be enforceable till ninety (90) days after expiry of its validity.

The PMC shall have the fullest liberty, without affecting in any way the liability of the Bank under this guarantee, from time to time to extend the time for performance of the Contract by the Contractor. The PMC shall have the fullest liberty, without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to forbear to enforce any covenants, contained or implied, in the Contract between the PMC and the Contractor or any other course or remedy or security available to the PMC. The Bank shall not be released of its obligations under these presents by any exercise by the PMC of its liberty with reference to the matters aforesaid or any of them or by reason of any other act or forbearance or other acts of omission or commission on the part of the PMC or any other indulgence shown by the PMC or by any other matter or thing whatsoever which under law would, but for this provision, have the effect of relieving the Bank.

The Bank also agrees that the PMC at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the PMC may have in relation to the Contractor's liabilities.

Notwithstanding anything contained hereinabove our liability under this guarantee is restricted to .....(\*)..... and it shall remain in force upto and including .....(@)..... and shall be extended from time to time for such period (not exceeding one year), as may be desired by M/s .....[Contractor's Name]..... on whose behalf this guarantee has been given.

Dated this ..... day of ..... 20..... at.....

.....  
(Signature)

.....  
(Name)

.....  
(Designation with  
Bank Stamp)

Authorised Vide Power of  
Attorney No.....

Date.....

- Notes :**
1. (\*) This sum shall be **ten percent (10%)** of the Contract Price.  
(@) This date will be ninety (90) days beyond the defect liability period as specified in the Contract.
  2. The BG should be on Non-Judicial stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the state(s) where the BG is submitted or is to be acted upon or the rate prevailing in State where the BG is executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Bidder/Bank issuing the guarantee.
  3. While getting the Bank Guarantee issued, the Contractor is required to ensure compliance to the points mentioned in Form of Bank Guarantee Verification Check List. Further, the Contractor is required to fill up Bank Guarantee Verification Check List and enclose the same with the Bank Guarantee.
  4. The Bank Guarantee shall be from a Bank as per provisions of Section-V (SCC) of the Bidding Documents.
  5. In case, Bank Guarantee is getting issued from State Bank of India, Bidder to take note of NTPC letter ref. NTPC/FC/CS/BG/01 dated 03.09.2014 and SBI letter ref. CAG-II/AMT-1/2014-15/370 dated 04.09.2014 (attached with Section-III of Bidding Documents).
  6. BG to be forwarded to following address:  
Unified Treasury (BG Group), Administrative Building, NCPS, Dadri  
NTPC Limited, PO. Vidyut Nagar, Distt: Gautam Budh Nagar, Uttar Pradesh- 201008

**Performance Security Form  
(Extended warranty period)**

(To be stamped in accordance with Stamp Act  
if any, of the Country of the Issuing Bank)

Bank Guarantee No.....  
Date.....

To,  
[PMC's Name & Address]

Dear Sirs,

In consideration of the ..... [project management consultant PMC's Name] ..... (hereinafter referred to as the 'PMC' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) having awarded to M/s..... [Contractor's Name]..... with its Registered /Head Office at ..... (hereinafter referred to as the 'Contractor', which expression shall unless repugnant to the context or meaning thereof, include its successors administrators, executors and assigns), a Contract by issue of PMC's Letter of Award No. .... dated..... and the same having been unequivocally accepted by the contractor, valued at ..... for ..... and the Contractor having agreed to provide a Guarantee for the faithful performance of the extended warranty for entire Contract equivalent to .....(\*).....% (..... percent) of the said value of the Contract to the PMC.

We .....[Name & Address of the Bank].....having its Head Office at .....(hereinafter referred to as the 'Bank', which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the PMC, on demand any and all monies payable by the Contractor to the extent of .....(\*)..... as aforesaid at any time up to .....(@)..... [days/month/year] without any demur, reservation, contest, recourse or protest and/or without any reference to the Contractor. Any such demand made by the PMC on the Bank shall be conclusive and binding notwithstanding any difference between the PMC and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. The Bank undertakes not to revoke this guarantee during its currency without previous consent of the Employer and further agrees that the guarantee herein contained shall be enforceable till ninety (90) days after expiry of its validity.

The PMC shall have the fullest liberty, without affecting in any way the liability of the Bank under this guarantee, from time to time to extend the time for performance of the Contract by the Contractor. The PMC shall have the fullest liberty, without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to forbear to enforce any covenants, contained or implied, in the Contract between the PMC and the Contractor or any other course or remedy or security available to the PMC. The Bank shall not be released of its obligations under these presents by any exercise by the PMC of its liberty with reference to the matters aforesaid or any of them or by reason of any other act or forbearance or other acts of omission or commission on the part of the PMC or any other indulgence shown by the PMC or by any other matter or thing whatsoever which under law would, but for this provision, have the effect of relieving the Bank.

The Bank also agrees that the PMC at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the PMC may have in relation to the Contractor's liabilities.

Notwithstanding anything contained hereinabove our liability under this guarantee is restricted to .....(\*)..... and it shall remain in force upto and including .....(@)..... and shall be extended from time to time for such period (not exceeding one year), as may be desired by M/s .....[Contractor's Name]..... on whose behalf this guarantee has been given.

Dated this ..... day of ..... 20..... at.....

.....  
(Signature)

.....  
(Name)

.....  
(Designation with Bank Stamp)

Authorised Vide Power of  
Attorney No.....

Date.....

- Notes :**
1. (\*) This sum shall be **five percent (5%)** of the Contract Price.  
(@) This date will be ninety (90) days beyond the extended warranty period ( two years) as specified in the Contract.
  2. The BG should be on Non-Judicial stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the state(s) where the BG is submitted or is to be acted upon or the rate prevailing in State where the BG is executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Bidder/Bank issuing the guarantee.
  3. While getting the Bank Guarantee issued, the Contractor is required to ensure compliance to the points mentioned in Form of Bank Guarantee Verification Check List. Further, the Contractor is required to fill up Bank Guarantee Verification Check List and enclose the same with the Bank Guarantee.
  4. The Bank Guarantee shall be from a Bank as per provisions of Section-V (SCC) of the Bidding Documents.
  5. In case, Bank Guarantee is getting issued from State Bank of India, 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 (attached with Section-III of Bidding Documents).
  6. BG to be forwarded to following address:

Unified Treasury (BG Group), Administrative Building, NCPS, Dadri  
NTPC Limited, PO. Vidyut Nagar, Distt: Gautam Budh Nagar, Uttar Pradesh- 201008

#### 4. Form of Completion Certificate

Date : \_\_\_\_\_

Loan/Credit No : \_\_\_\_\_

IFB No : \_\_\_\_\_

[Name of Contract]

To: [Name and address of Contractor]

Dear Sirs,

Pursuant to GCC Clause 24 (Completion of the Facilities) of the General Conditions of the Contract entered into between yourselves and the Employer dated [date], relating to the [brief description of the facilities], we hereby notify you that the following part(s) of the Facilities was (were) complete on the date specified below, and that, in accordance with the terms of the Contract, the Employer hereby takes over the said part(s) of the Facilities, together with the responsibility for care and custody and the risk of loss thereof on the date mentioned below.

1. Description of the Facilities or part thereof: [description]
2. Date of Completion: [date]

However, you are required to complete the outstanding items listed in the attachment hereto as soon as practicable.

This letter does not relieve you of your obligation to complete the execution of the Facilities including Guarantee Test(s) in accordance with the Contract nor of your obligations during the Defects Liability Period.

Very truly yours,

---

Title  
(Project Manager)

## 5. Form of Operational Acceptance Certificate

Date: \_\_\_\_\_

Loan/Credit No : \_\_\_\_\_

IFB No: \_\_\_\_\_

*[Name of Contract]*

To: *[Name and address of Contractor]*

Dear Sirs,

Pursuant to GCC Sub-Clause 25.3 (Operational Acceptance) of the General Conditions of the Contract entered into between yourselves and the Employer dated *[date]*, relating to the *[brief description of the facilities]*, we hereby notify you that the Functional Guarantees of the following part(s) of the Facilities were satisfactorily attained on the date specified below.

1. Description of the Facilities or part thereof: *[description]*
2. Date of Operational Acceptance: *[date]*

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defects Liability Period.

Very truly yours,

---

Title  
(Project Manager)

**6. FORM OF TRUST RECEIPT FOR PLANT,  
EQUIPMENT AND MATERIALS RECEIVED**

We M/s *(Contractor's Name)*..... having our Principal place of business at .....having been awarded a Contract No..... dated ..... for *(Contract Name)*..... by *(Name of Employer)* .....

We do hereby acknowledge the receipt of the Plant, Equipment and Materials as are fully described and mentioned under Documents of Title/RR/LR etc. and in the schedule annexed hereto, which shall form an integral part of this receipt as "Trustee" of ..... *(Name of Employer)*. The aforesaid materials etc. so received by us shall be exclusively used in the successful performance of the aforesaid Contract and for no other purpose whatsoever. We undertake not to create any charge, lien or encumbrance over the aforesaid materials etc, in favour of any other person/institution(s)/Banks.

For M/s .....  
*(Contractor's Name)*

Dated : .....

(AUTHORISED SIGNATORY)



**7a. FORM OF INDEMNITY-CUM-UNDERTAKING AGREEMENT  
FOR THE EQUIPMENTS  
HANDED OVER BY THE EMPLOYER  
FOR PERFORMANCE OF CONTRACT  
(Entire Equipment Consignment in one lot)**

**(On Non-Judicial Stamp Paper of appropriate value)**

**INDEMNITY-CUM-UNDERTAKING AGREEMENT**

THIS INDEMNITY-CUM-UNDERTAKING AGREEMENT is made this ..... day of ..... 20 ..... between .....(Contractor's Name) a Company /Partnership Firm / Proprietary Concern incorporated under the laws of ..... having its Registered Office at ..... (hereinafter called as 'Contractor' which expression shall include its successors and permitted assigns) and ..... (Name of Employer), a Company incorporated under the ..... having its Registered Office at ..... and its project at ..... (hereinafter called "....." / "Employer" which expression shall include its successors and assigns):

WHEREAS the NTPC Limited on behalf of 'Employer' has awarded to the 'Contractor' a Contract for .....vide its Notification of Award/Contract No.....dated ..... and its Amendment No. .... and Amendment No....., (*applicable when amendments have been issued*) (hereinafter called the "Contract") in terms of which .....@..... is required to hand over various Equipment to the 'Contractor' for execution of the Contract.

And WHEREAS by virtue of Clause No..... of the said Contract, the 'Contractor' and the 'Employer' are required to execute an Indemnity-cum-Undertaking Agreement for the Equipment handed over to the 'Contractor' by .....@..... for the purpose of performance of the Contract/Erection Portion of the Contract (hereinafter called the "Equipment")

AND THEREFORE, This Indemnity-cum-Undertaking Agreement witnesseth as follows:

1. That in consideration of various Equipment as mentioned in the Contract, a list where of is also annexed to this Indemnity-cum-Undertaking Agreement at Schedule-A, valued at (*Currency and amount in Figures*)..... (*Currency and amount in words*) ..... handed over to the 'Contractor' for the purpose of performance of the Contract, the 'Contractor' hereby undertakes to indemnify and shall keep the 'Employer' indemnified, for the full value of the Equipment. The Contractor hereby acknowledges actual receipt of the Equipment, etc. as per dispatch title documents handed over to the 'Contractor' as detailed in the Schedule appended hereto. The 'Contractor' shall hold such Equipment, etc. in trust as a "Trustee" for and on behalf of the 'Employer'

@ Fill in abbreviated name of Employer.

2. That the 'Contractor' is obliged and shall remain absolutely responsible for the safe transit/protection and custody of the Equipment at .....@..... project site against all risks whatsoever till the Equipment are duly used/erected in accordance with the terms of the Contract and the plant/package duly erected and commissioned in accordance with the terms of the Contract is taken over by the 'Employer' The 'Contractor' undertakes to keep the 'Employer' harmless against any loss or damage that may be caused to the Equipment.

3. The 'Contractor' undertakes that the Equipment shall be used exclusively for the performance/execution of the Contract strictly in accordance with its terms and conditions and no part of the Equipment shall be utilized for any other work or purpose whatsoever. It is clearly understood by the 'Contractor' that non-observance of the obligations under this Indemnity-cum-Undertaking Agreement by the 'Contractor' shall inter-alia constitute a criminal breach of trust on the part of the 'Contractor' for all intents and purpose including legal/penal consequences.

4. That the 'Employer' is and shall remain the exclusive owner of the Equipment free from all encumbrances, charges or liens of any kind, whatsoever. The Equipment shall at all times

be open to inspection and checking by the Project Manager or other employees/agents authorised by the 'Employer' in this regard. Further the 'Employer' shall always be free at all times to take possession of the Equipment in whatever form the Equipment may be, if in its opinion, the Equipment are likely to be endangered, mis-utilised or converted to uses other than those specified in the Contract, by any acts of omission or commission on the part of the 'Contractor' or any other person or on account of any reason whatsoever and the 'Contractor' binds himself and undertakes to comply with the directions of demand of the 'Employer' to return the Equipment without any demur or reservation.

5. That this Indemnity-cum-Undertaking Agreement is irrevocable. If at any time any loss or damage occurs to the Equipment or the same or any part thereof is mis-utilised in any manner whatsoever, then the 'Contractor' hereby agrees that the decision of the Project Manager of the 'Employer' as to assessment of loss or damage to the Equipment shall be final and binding on the 'Contractor'. The 'Contractor' binds itself and undertakes to replace the lost and/or damaged Equipment at its own cost and/or shall pay the amount of loss to the 'Employer' without any demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to the 'Employer' against the 'Contractor' under the Contract and under this Indemnity-cum-Undertaking Agreement.
6. NOW THE CONDITION of this Indemnity-cum-Undertaking Agreement is that if the 'Contractor' shall duly and punctually comply with the terms and conditions of this Indemnity-cum-Undertaking Agreement to the satisfaction of the 'Employer', THEN, the above Indemnity-cum-Undertaking Agreement shall become void after the due performance of the Contract, but otherwise, it shall remain in full force and virtue.

@ Fill in abbreviated name of Employer.

IN WITNESS WHEREOF, the 'Contractor' and the 'Employer' have hereunto set their hand through their authorized representative, the day, month and year first above mentioned.

**For and on behalf of**

.....  
**(Contractor's Name)**

Signature .....  
Name .....  
Designation of .....  
Authorised representative \*

**WITNESS :**

1. Signature .....
2. Name .....
3. Address .....

**For and on behalf of**

.....  
**(Employer's name)**

Signature .....  
Name .....  
Designation of .....  
Authorised representative \*

**WITNESS :**

1. Signature .....
2. Name .....
3. Address .....

---

\* Indemnity-cum-Undertaking Agreement are to be executed by the authorised person and (i) in case of contracting Company under common seal of the Company or (ii) having the Power of Attorney issued under common seal of the company with authority to execute Indemnity-cum-Undertaking Agreement , (iii) In case of (ii), the original Power of Attorney if it is specifically for this Contract or a photostat copy of the Power of Attorney if it is General Power of Attorney and such documents should be attached to Indemnity-cum-Undertaking Agreement . In case of Employer, by the authorized representative of the Employer.

**SCHEDULE - A**

<b>Particulars of the Equipments handed over</b>	<b>Quantity</b>	<b>Particulars of Despatch Title Documents</b>	<b>Value of the Equipments</b>	<b>Signature of Attorney in token of receipt</b>
		<b>RR/GR/Bill of Lading No &amp; Date</b>	<b>Carrier</b>	

**7b. FORM OF INDEMNITY-CUM-UNDERTAKING AGREEMENT FOR THE EQUIPMENTS  
HANDED OVER IN INSTALMENTS BY THE  
EMPLOYER FOR PERFORMANCE OF CONTRACT**

**(On Non-Judicial Stamp Paper of appropriate value)**

**INDEMNITY-CUM-UNDERTAKING AGREEMENT**

THIS INDEMNITY-CUM-UNDERTAKING AGREEMENT is made this .....day of..... 20 ..... between .....(*Contractor's Name*) a Company /Partnership Firm / Proprietary Concern incorporated under the laws of ..... having its Registered Office at ..... (hereinafter called as 'Contractor' which expression shall include its successors and permitted assigns) and .....(*Name of Employer*), a Company incorporated under the Indian Companies Act having its Registered Office at ..... and its project at ..... (hereinafter called "....." / '*Employer*' which expression shall include its successors and assigns):

WHEREAS the NTPC LTD. on behalf of 'Employer' has awarded to the 'Contractor' a Contract for .....vide its letter of Award/Contract No.....dated ..... and its Amendment No. .... and Amendment No....., (*applicable when amendments have been issued*) (hereinafter called the "Contract") in terms of which .....@..... is required to hand over various Equipments to the 'Contractor' for execution of the Contract.

And WHEREAS by virtue of Clause No..... of the said Contract, the 'Contractor' and the 'Employer' are required to execute an Indemnity-cum-Undertaking Agreement for the Equipments handed over to the 'Contractor' by .....@..... for the purpose of performance of the Contract/Erection Portion of the Contract (hereinafter called the "Equipments")

NOW THEREFORE, This Indemnity-cum-Undertaking Agreement witnesseth as follows:

1. That in consideration of various Equipments as mentioned in the Contract, valued at (*Currency and amount in figures*)..... (*Currency and amount in words*) ..... to be handed over to the 'Contractor' in instalments from time to time for the purpose of performance of the Contract, the 'Contractor' hereby undertakes to indemnify and shall keep the 'Employer' indemnified, for the full value of the Equipments. The Contractor hereby acknowledges actual receipt of the initial instalment of the Equipments, etc. as per details in the Schedule appended hereto. Further, the 'Contractor' agrees to acknowledge actual receipt of the subsequent instalments of the Equipments, etc. as required by .....@..... in the form of Schedules consecutively numbered which shall be attached to this Indemnity-cum-Undertaking Agreement so as to form integral parts of this Indemnity-cum-Undertaking Agreement. The 'Contractor' shall hold such Equipments, etc. in trust as a "Trustee" for and on behalf of the 'Employer'.

@ Fill in abbreviated name of Employer.

2. That the 'Contractor' is obliged and shall remain absolutely responsible for the safe transit/protection and custody of the Equipments at .....@..... project site against all risks whatsoever till the Equipments are duly used/erected in accordance with the terms of the Contract and the plant/package duly erected and commissioned in accordance with the terms of the Contract, is taken over by the 'Employer'. The 'Contractor' undertakes to keep the 'Employer' harmless against any loss or damage that may be caused to the Equipments.

3. The 'Contractor' undertakes that the Equipments shall be used exclusively for the performance/execution of the Contract strictly in accordance with its terms and conditions and no part of the Equipments shall be utilised for any other work or purpose whatsoever. It is clearly understood by the 'Contractor' that non-observance of the obligations under this Indemnity-cum-Undertaking Agreement by the 'Contractor' shall inter-alia constitute a criminal breach of trust on the part of the 'Contractor' for all intents and purpose including legal/penal consequences.

4. That the 'Employer' is and shall remain the exclusive owner of the Equipments free from all encumbrances, charges or liens of any kind, whatsoever. The Equipments shall at all times be open to inspection and checking by the Project Manager or other employees/agents authorised by the 'Employer' in this regard. Further, the 'Employer' shall always be free at all times to take possession of the Equipments in whatever form the Equipments may be, if in its opinion, the Equipments are likely to be endangered, misutilised or converted to uses other than those specified in the Contract, by any acts of omission or commission on the part of the 'Contractor' or any other person or on account of any reason whatsoever and the 'Contractor' binds himself and undertakes to comply with the directions of demand of the 'Employer' to return the Equipments without any demur or reservation.
  
5. That this Indemnity-cum-Undertaking Agreement is irrevocable. If at any time any loss or damage occurs to the Equipments or the same or any part thereof is mis-utilised in any manner whatsoever, then the 'Contractor' hereby agrees that the decision of the Project Manager of the 'Employer' as to assessment of loss or damage to the Equipments shall be final and binding on the 'Contractor'. The 'Contractor' binds itself and undertakes to replace the lost and/or damaged Equipments at its own cost and/or shall pay the amount of loss to the 'Employer' without any demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to the 'Employer' against the 'Contractor' under the Contract and under this Indemnity-cum-Undertaking Agreement.
  
6. NOW THE CONDITION of this Indemnity-cum-Undertaking Agreement is that if the 'Contractor' shall duly and punctually comply with the terms and conditions of this Indemnity-cum-Undertaking Agreement to the satisfaction of the 'Employer', THEN, the above Indemnity-cum-Undertaking Agreement shall become void after the due performance of the Contract, but otherwise, it shall remain in full force and virtue.

@ Fill in abbreviated name of Employer.

IN WITNESS WHEREOF, the 'Contractor' and the 'Employer' have hereunto set their hand through their authorised representative, the day, month and year first above mentioned.

**For and on behalf of**  
 .....  
**(Contractor's Name)**

Signature .....  
 Name .....  
 Designation of .....  
 Authorised representative \*

**WITNESS :**

1. Signature .....
2. Name .....
3. Address .....

**For and on behalf of**  
 .....  
**(Employer's name)**

Signature .....  
 Name .....  
 Designation of .....  
 Authorised representative \*

**WITNESS :**

1. Signature .....
2. Name .....
3. Address .....

---

\* Indemnity-cum-Undertaking Agreement are to be executed by the authorised person and (i) in case of contracting Company under common seal of the Company or (ii) having the Power of Attorney issued under common seal of the company with authority to execute Indemnity-cum-Undertaking Agreement , (iii) In case of (ii), the original Power of Attorney if it is specifically for this Contract or a photostat copy of the Power of Attorney if it is General Power of Attorney and such documents should be attached to Indemnity-cum-Undertaking Agreement . In case of Employer, by the authorized representative of the Employer.

**SCHEDULE No.1**

<b>Particulars of the Equipments handed over</b>	<b>Quantity</b>	<b>Particulars of Despatch Title Documents</b>	<b>Value of the Equip- ments</b>	<b>Signature of Attorney in token of receipt</b>
		<b>RR/GR/Bill of Lading No &amp; Date</b>	<b>Carrier</b>	

**(Please number subsequent schedules)**

**8. FORM OF AUTHORISATION LETTER**

**(NAME OF EMPLOYER)**

**(PROJECT ..... )**

REF. NO. :

DATE :

To,

M/s (*Contractor's Name*).....

Ref : Contract No..... Dated .....

for .....awarded by (*Name of Employer*)

Dear Sirs,

Kindly refer to Contract No..... Dated ..... for .....(*Contract Name*) You are hereby authorised on behalf of .....(*Name of Employer*) having its registered office at .....and its Project at ..... to take physical delivery of materials/equipments covered under despatch Document/ Consignment Note no..... \* .....dated ..... and as detailed in the enclosed Schedule for the sole purpose of successful performance of the aforesaid contract and for no other purposes, whatsoever.

(Signature of Project Authority)

(Designation : .....

Date .....

ENCL : as above

-----  
\* Mention LR/RR No.





## 9. BANK GUARANTEE VERIFICATION CHECKLIST

1. Bank Guarantee No.
2. Issuing Bank
3. Amount of BG
4. Nature of BG & No. of Pages
5. Validity of BG
6. Package Description
7. Party & Contracts Ref. Name, Address, Tel, Fax, e-mail,  
Contract No. Package Name
8. Bank Reference Name, Address, Tel. Fax, E-mail

### CHECK LIST

S.No.	Details of Checks	Yes/No
a)	Is the BG on non-judicial stamp paper / e-stamp paper of appropriate value, as per Stamp Act?	
b)	Whether date, purpose of purchase and name of the purchaser are indicated on the stamp paper? (The date of purchase of stamp paper should be of any date on or before the date of execution of BG and the stamp paper should be purchased either in the name of the executing Bank or the Party on whose behalf the BG has been issued. The stamp paper (other than e-stamp paper) should be duly Signed by the Stamp Vendor)	
c)	Has the executing Officer of BG indicated his name, designation and Power of Attorney No. / Signing Power No. etc. on the BG?	
e)	Is each page of BG duly signed/initiated by executant and whether stamp of Bank is affixed thereon? Whether the last page is signed with full particulars under seal of Bank as required in the prescribed proforma?	

S.No.	Details of Checks	Yes/No
f)	Does the Bank Guarantees compare verbatim with the Proforma prescribed in the Bid Documents?	
g)	Are the factual details such as Bid Document No., NOA / LOA / Contract No., Contract Price, Percentage of Advance, Amount of BG and Validity of BG correctly mentioned in the BG?	
h)	Whether overwriting / cutting if any on the BG have been properly authenticated under signature & seal of executant?	
i)	Whether the BG has been issued by a Bank in line with the provisions of BG / Contract Documents?	
j)	In case BG has been issued by a Bank other than those specified in Bid/Contract Document, is the BG confirmed by a Bank in India acceptable as per Bid/Contract Documents?	

Date : Signature .....

Place : Printed Name .....

(Designation) .....

(Common Seal) .....

Note: The Bidder is required to fill up this form and enclose along with the Bank Guarantee.

**10. FORM OF VALIDITY EXTENSION OF BANK GUARANTEE**

(To be stamped in accordance with the Stamp Act,  
if any, of the Country of the issuing Bank) :

Ref. No.....

Dated : .....

To :  
[PMC's Name and Address]

Dear Sirs,

Sub : Extension of Bank Guarantee No. .... dtd..... for .....value  
of BG..... favouring yourselves, expiring on..... on account of  
M/s\*..... in respect of Contract/Bid document for (Insert  
package name)..... for (Insert Project name) .....  
project, Contract No./Bid Document No. .... dated..... (hereinafter  
called original Bank Guarantee).

At the request of M/s\*..... we ..... Bank having branch  
office at ..... and having Head Office at ..... do  
hereby extend our liability under the above mentioned Bank Guarantee No..... dt ..... for a  
further period of.....Years/Months from ..... to expire on .....

Except as provided above, all other terms and conditions of the original Bank Guarantee  
No..... dt..... shall remain unaltered and binding.

Please treat this as an integral part of the original guarantee to which it would be deemed to have been  
attached.

.....  
(Signature)

.....  
(Name)

.....  
(Designation with Bank Stamp)  
Authorised vide Power of Attorney No.....  
Dated.....

**Note:**

- 1.\*In case of Joint Ventures, name of all partners of the Joint Venture shall be mentioned.
- 2. The BG should be on Non-Judicial stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the state(s) where the BG is submitted or is to be acted upon or the rate prevailing in State where the BG is executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Bidder/Bank issuing the guarantee.
- 3. The extension of the Bank Guarantee should be forwarded to the Unit/Project/Corporate Centre, from where the extension has been sought

**11. FORM OF INDEMNITY-CUM-UNDERTAKING AGREEMENT WITH REGARD TO  
REMOVAL/DISPOSAL OF SCRAP/SURPLUS MATERIAL**

**(TO BE EXECUTED ON STAMP PAPER OF APPROPRIATE VALUE, IF APPLICABLE)**

**INDEMNITY-CUM-UNDERTAKING AGREEMENT**

THIS INDEMNITY-CUM-UNDERTAKING AGREEMENT executed this .....day of.....  
20 ..... between .....(Name of Company) ..... a Company  
/Partnership Firm / Proprietary Concern incorporated under the laws of ..... having its  
Registered Office(s) at ..... (Office Address) ..... hereinafter called the  
'Contractor' (which expression shall, unless excluded by or repugnant to the context, be deemed to mean  
and include its successors, administrators, executors and permitted assigns)

**AND**

M/s. .... having its registered office at .....  
(hereinafter referred to as 'Employer').

1. PMC on behalf of 'Employer' has awarded the 'Contractor', contract for execution of work ("Scope of Work") as mentioned in the Letter of Award no. .... dated ....., relating to ..... (Name & Address of Project/Station) ..... (hereinafter called 'the Project').
2. The 'Contractor' for the purpose of execution of its Scope of Work had from time to time procured and stored ..... (Details of Material) ..... at the Project Site.
3. After completion of the Scope of Work by 'Contractor', it has been identified that scrap ..... (Details of Scrap Material & its quantity) ..... and/or surplus ..... (Details of Surplus Material & its Quantity) ..... belonging to 'Contractor' is lying at the said Project Site.
4. Now, the scrap ..... (Details of Scrap Material & its Quantity) ..... and/or surplus ..... (Details of Surplus Material & its Quantity) ..... belonging to the 'Contractor', requires to be removed by 'Contractor' from the Project Site.

**NOW THEREFORE THIS INDEMNITY-CUM-UNDERTAKING AGREEMENT WITNESSETH AS UNDER:**

1. That 'Contractor' by way of this Indemnity-cum-Undertaking Agreement requests 'Employer' to issue necessary exit gate pass(es) in favour of 'Contractor' for removal of scrap..... (Details of Scrap Material & its Quantity) ..... and/or surplus ..... (Details of Surplus Material & its Quantity) ..... belonging to 'Contractor', from the project.
2. That as per Employer's procedure, 'Contractor' shall ensure loading of trucks for clearing of its scrap ..... (Details of Scrap Material & its Quantity) ..... and/or surplus ..... (Details of Surplus Material & its Quantity) ..... by itself, as aforesaid, under the supervision of Employer's personnel.
3. That 'Contractor' in consideration of the premises above, for itself and its respective, executors, administrators and assigns, jointly and severally agree and undertake from time to time and at all times hereafter to indemnify 'Employer' and keep 'Employer' indemnified from and against all claims, demands, actions, liabilities and expenses which may be made or taken against or incurred by 'Employer' by reason of the issue of necessary gate pass(es) by 'Employer' and permitting 'Contractor' to remove scrap ..... (Details of Scrap Material & its Quantity) ..... and/or surplus ..... (Details of Surplus Material & its Quantity) ..... belonging to 'Contractor', from the project.
4. That 'Contractor' undertakes to indemnify and keep '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 and surplus belonging to 'Contractor', from the Project Site aforesaid, by

the 'Contractor'. Further, in case the laws require 'Employer' to take prior permission of the relevant Authorities before handing over the scrap and/or surplus to the 'Contractor', the same shall be obtained by the 'Contractor' on behalf of 'Employer'.

IN WITNESS WHEREOF, the 'Contractor' and the 'Employer', through their authorized representative, have executed these presents on the Day, Month and Year first mentioned above at ..... (Name of the Place) .....

**For and on behalf of**  
.....  
**(Contractor's Name)**

Signature .....  
Name .....  
Designation of .....  
Authorised representative \*

**For and on behalf of**  
.....  
**(Employer's name)**

Signature .....  
Name .....  
Designation of .....  
Authorised representative \*

**WITNESS :**  
1. Signature .....  
2. Name .....  
3. Address .....

**WITNESS :**  
1. Signature .....  
2. Name .....  
3. Address .....

-----

\* Indemnity-cum-Undertaking Agreement are to be executed by the authorised person and (i) in case of contracting Company under common seal of the Company or (ii) having the Power of Attorney issued under common seal of the company with authority to execute Indemnity-cum-Undertaking Agreement , (iii) In case of (ii), the original Power of Attorney if it is specifically for this Contract or a photostat copy of the Power of Attorney if it is General Power of Attorney and such documents should be attached to Indemnity-cum-Undertaking Agreement. In case of Employer, by the authorized representative of the Employer.

**PROFORMA OF "NO DEMAND CERTIFICATE" BY CONTRACTOR**

**(TO BE ISSUED BY THE CONTRACTOR)**

**NAME OF PACKAGE:**

**LETTER OF AWARD/ NOA/  
CONTRACT NO.:**

**NAME OF CONTRACTOR:**

**DATED:**

**PROJECT:**

We, M/s..... (Contractor) do hereby acknowledge and confirm that we have received the full and final payment due and payable to us from the Employer / ISA in respect of our aforesaid LOA/Contract No..... dated.....including amendments if any, to our entire satisfaction and we further confirm that we have no claim whatsoever pending with Employer / ISA / NTPC Ltd. under the said Contract.

Notwithstanding any protest recorded by us in any correspondence document, measurement books, and/or final bills etc., we waive all our rights to lodge any claim or protest in future under this contract.

We are issuing this "NO DEMAND CERTIFICATE" in favour of Employer / ISA / NTPC Ltd. with full knowledge and with our free consent without any undue influence, misrepresentation, coercion etc.

Signature .....

Date .....

Name.....

Place.....

Designation .....

(Company Common Seal



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**TECHNICAL SPECIFICATIONS FOR SUPPLY,  
INSTALLATION AND COMMISSIONING OF  
SOLAR PV BASED COLD STORAGE**

**IN**

**DJIBOUTI**

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## 1. Scope for Work

- 1.1. Bidder shall provide one (1) number solar PV based cold storage system/plant & equipment and related services as per the technical specifications. This shall include design, engineering, manufacturing, fabrication, assembly, pre-shipment testing at manufacturer's works, proper packing for transportation, transportation along-with transit insurance, delivery at the plant site, unloading, storage, installation, interconnection with related equipment, calibration, testing, commissioning to a fully operational condition as covered under this specification.
- 1.2. Bidder shall also provide remote monitoring for the system, training of intended beneficiaries and discharge of guarantee & warranty as covered under this specification.
- 1.3. Bidder shall also provide all material, equipment and services which may not be specifically stated in the specifications but are required for completeness of the equipment/systems furnished by the Bidder and for meeting the intent and requirement of the project/specification. The work shall be consistent with the latest practices and shall be following all applicable international codes, standards, guidelines, and safety requirements in force on the date of award in the country.

## 2. Project Location

Project Location <sup>1</sup>	<ol style="list-style-type: none"><li>1. Village of OMAR JAGA'A in Arta region</li><li>2. Village of Dougoum, Region of Tadjourah</li></ol>
Geographical site coordinates	<ol style="list-style-type: none"><li>1. OMAR JAGA'A (10°59'00"N 42°50'05"E)</li><li>2. Dougoum (11 "47'48.6"N 42"44'36.2"E)</li></ol>
Electrical Connectivity	No electrical connectivity at sites
Provision of Land	Land for the projects will be provided by Government of Djibouti

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<sup>1</sup> As per data provided by MOE, Djibouti



*(Site Location of Omar Jaga'a in Djibouti*



*Site Location of Dougoum in Djibouti*

### **3. General Requirements**

1. Though the cold storage will be an off-grid solution it should be capable of running on **415V three phase or 240V single phase grid power** or power from a DG set in the unforeseen event of prolonged cloudy period/outage of solar power. The Cold Storage should have the capability to shift to grid power if solar power is not sufficiently available or shift to diesel generator if solar power is not sufficient for operation and also grid power is not present. Such changeover shall be automatic or manual as per operator selection. Suitable contacts and status of grid power, DG set running shall be provided by the Bidder. The changeover shall be alarmed.
2. The entire cold storage system shall be electrically safe to use, without the danger of electrical shock. Adequate provision of protection from lightning and equipment earthing shall be done and protection shall be provided to detect faults like earthing/ short-circuit and bring the system to a safe stage.
3. **Earthing and lightning protections:** The cold storage system shall be provided with lightning & overvoltage protection. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying the required number of Lightning Arrestors. Lightning protection shall be provided as per IEC 62305 /IS 2309 standard. The protection against induced high voltages shall be provided by the use of metal oxide varistors (MOVs) based surge protection device and suitable earthing such that induced transients find an alternate route to earth. In addition, the lightning arrester/masts shall also be earthed. Earth resistance shall not be more than 5 ohms.

It shall be ensured that all the earthing points are bonded together to make them at the same potential. Separate earthing shall be provided for Controller, refrigeration unit and SPV array. For safety purposes, it shall be ensured during installation that the earthing can take care of leakage current. **All the work including civil work related to Earthing and lightning protections shall be in the Bidder's scope.**

4. The electrical system shall conform to the local electricity acts, applicable codes and laws.
5. **Performance parameters of solar cold Storage/ Cold room shall be tested at the works and a report shall be submitted for approval before dispatch clearance. The verification procedure shall be finalized during the award of the contract.**
6. **Necessary tools & tackles shall be provided for erection and maintenance purposes.**
7. Solar Cold Storage to be put on Platform (if required) as per Design, Layout and Guidelines to be finalized during detailed engineering. **The Platform construction shall be not in the scope of the Bidder and shall be done by the Employer.**
8. Adequate nos. of Danger board and signage to be provided and installed at the time of erection and commissioning. Display boards of Dos and Don'ts to be provided.
9. All the components should have a nameplate with its capacity mentioned on it.
10. Provision for the display of contact details of officials responsible for O&M and any emergency should be made.
11. Bidder shall provide a single line diagram of the system and a detailed write up explaining the working of the system.
12. Bidder shall indicate expected life of the various components of the solar cold storage and details of manufacturer's warranty provided by the component/ part supplier. The major components shall include:
  - i. Solar PV Panels
  - ii. Solar PV controller
  - iii. Cold storage operation controller.
  - iv. Refrigeration unit
  - v. Electrochemical battery
  - vi. Thermal storage / Phase change material unit
13. **Water supply during erection and commissioning shall be provided by the Employer from the nearest source. The Bidder shall make the necessary arrangement for using the water for its erection and commissioning activities.**
14. **Cleaning of Solar PV Modules in Employer's scope.**
15. **Power supply required during erection and commissioning shall be provided by the Employer using the existing DG set/grid power. Bidder shall make necessary arrangement for using the power for its erection and commissioning activities.**
16. Liaison with the concerned statutory authorities in the country, as applicable for all the Project related approvals shall be the responsibility of the Employer. The Bidder shall provide all inputs, information and documents for the same.
17. Security, safety, watch, and ward of all materials at sites shall be the responsibility of

the Employer. Safety management to be strictly complied with by the Contractor/Bidder throughout implementation activity.

18. All local labour, employment, and other issues shall be handled independently by the Bidder.
19. Bidder shall propose all the equipment of the system as per the standard range of the manufacturer. In case the standard manufacturing rating is less than the required rating as per the specification, the Bidder shall offer higher rated equipment in manufacture standard range at no extra cost to the Employer. Equipment over rating of a manufacturer standard rating through project specific modifications will normally will not be acceptable.
20. Bidders may visit site before bidding for better understanding the site conditions.

#### **4. Functional requirements**

The cold storage/ system shall work on the principle of thermal energy storage system using phase change material for providing the cooling function of farm produce during non-sun hours or during the time when solar energy is not sufficient to run the refrigeration system. The electro-mechanical battery shall be used for functions of extracting thermal energy for cooling and powering auxiliary loads.

##### **4.1. System sizing criteria**

- a) All the components of the system (Viz. Solar panels, refrigeration equipment, thermal storage, battery etc.) shall be adequately sized to meet the performance requirement as given in the specification. However, the equipment sizing shall not be less than the minimum size as given in the specification. It shall be the Bidders' responsibility to size the individual equipment and the whole system and meet the performance requirement. Bidder shall furnish the sizing for all the equipment meeting the specification requirement.
- b) **The design ambient temperature for cold storage system shall be considered as 45-degree C.** The design ambient relative humidity condition shall be considered as varying from 10% to 90%
- c) The cold storage equipment/ system design sizing shall have a minimum storage capacity of 2 MT and shall be adequate for storing 2000 Kgs of potatoes or farm produce equivalent in terms of specific heat and respiration rate.
- d) The cold storage gate opening shall be considered on an average as 5 minutes every hour.
- e) The refrigeration system shall be able to pre-cool or pull down the temperature of the farm commodity like potatoes from **30°C to 5°C in 6 hours for a minimum one batch of 300Kg and maintain the temperature for a batch of 2000 Kg at a temperature of 4 Degree C** and simultaneously charge the thermal storage system and auxiliary batteries fully. However, The Condensing units of the refrigeration

unit would be of Minimum 1.0 TR at -5°C evaporating and 50°C mean condensing temperature ambient with an Energy Efficiency ratio(EER ) of not less than 1.9

- f) During non-sun hours and for the period without any PV or external electrical energy support, the thermal storage of the cold storage/system shall be of adequate size to maintain the temperature at **4 degree C for 2000 Kg potatoes and simultaneously precool one batch of 300 Kgs from 35 degree C to 7 degree C in 12 hours for a period of at least 24 hours on a typical day having 40°C peak ambient temperature. However, the thermal storage capacity should be in the range of 30 MJ-60MJ**
- g) The system would have a battery of adequate capacity for operation of system auxiliaries during non-sun hours and for the period without any PV or external electrical energy support. Battery capacity shall also have provision for energising 100-watt load for up to 10 hours (during the non-sun period) to connect electrical devices like Lamps and fans external to the cold storage of battery shall be provided.
- h) Adequate number of solar PV modules shall be provided for the refrigeration system and the auxiliary battery. The solar array can be common/combined or separate for the refrigeration system and for charging the battery. The arrangement shall be as per proven practice of the Bidder. The total solar PV array capacity shall be adequate to run the refrigeration system, fully charge thermal energy storage system and fully charge the battery as per equipment energy requirement as specified. The solar PV panels size shall be in accordance with the site solar irradiation and required energy during the day. **However, the total solar PV array capacity would not be less than 3.0 kWp**
- i) The voltage levels of Battery, solar panels, refrigeration system, auxiliary devices like fans and controllers etc. shall be as per Bidder's system standard design and the same shall be furnished during the bid.
- j) The cold storage farm produce storage area/ cold room would be designed to maintain the desired temperature of the produce in uniform manner in the range of 4-10°C and relative humidity in the range of 65% - 95%, operator adjustable in steps of +/-1°C temperature tolerance.
- k) Temperature and Humidity level in the cold storage shall be suitably displayed.
- l) The system design shall ensure that there is no vapor condensation on the stored produce and the stored commodity does not get spoiled due to vapor condensation.

#### **4.2. Refrigeration system**

- a) Refrigeration System shall have Variable Speed Compressor with battery-less operation.
- b) Refrigerant shall be environmentally compliant and of Internationally acceptable standard (e.g. R290/R404a/R134a/407f) or as compatible with Montreal/ Kigali Agreement

#### 4.3. Thermal storage System

- a) Thermal storage medium shall be conditioned Water or phase change material. The cooling shall be convection based where cooling is done directly via convection between Thermal Storage system and room without a secondary refrigeration loop
- b) Thermal storage capacity indication must be Linear with minimum 10 graduations between maximum and minimum cooling storage capacity.
- c) The Cooling unit and allied components should be an integral part of the system to ensure higher system efficiency and better cooling mechanism.
- d) To ensure that overall system design should deliver cooling as expected with higher efficiency, system should be designed for direct cooling mechanisms

#### 4.4. Auxiliary Battery

- a) The battery shall be Lithium Ferro Phosphate (LiFePO<sub>4</sub>) type. However, if Bidder proposes any other type of battery, it shall be subject to Employer/PMC approval
- b) Battery shall be warranted for minimum 5 years.
- c) The battery shall operate trouble free with operation temperature ranging from minus 5 to 60 degree C.
- d) The Cell and Battery should conform to latest IEC 62133-2012 or BIS specifications and should have been certified with NABL/IEC accredited test center/ laboratory as per IEC/ BIS standard IEC 62133, IEC 61960 & UL1642: Safety of LiFePo<sub>4</sub> battery.

#### 4.5. Cold Storage / Cold Room

- a) **The minimum external dimension of the cold room should be approximately 2.3 M x 2.3 M x 2.3 M.** The cold storage should be able to hold at least 2000 kgs of potatoes or any other farm commodity equivalent to potatoes and with a provision to hold at least 100 numbers of standard 20 kg crates (approximate dimension 550mmX350mmX300mm). However, the crates for storage are excluded from the scope of supply of Bidder. The same shall be procured by country. Bidder shall provide his recommendations.
- b) Temperature set point allowable tolerance limit +/- 1 °C and Temperature variation allowable tolerance limit at any point in the room post pre-cooling +/- 1 °C without door openings
- c) Self-leakage from thermal storage shall not be more than 100 Watt at 40 °C ambient
- d) The solar panels would be mounted on the roof top of the cold storage unit.



- e) The refrigeration unit (Compressor and condensing unit), thermal storage unit, Power unit and Control unit for fans, valves, compressor would be designed in a manner to be an integral unit of the cold storage system.
- f) The cold storage along with refrigeration unit would be portable for relocation with adequate provision for loading, unloading, transportation.
- g) Galvanized iron based self-supporting mounting structure shall be provided for solar panels mounting on the cold room. Mounting structure shall be of sufficient strength to withstand maximum wind velocity of 150 km/hr.
- h) The entire unit shall be designed to ensure ease of installation and suitable for operation in a “plug and Play “mode.
- i) Insulation of cold room shall be minimum 100 mm thick Polyurethane Foam (PUF). Panels enclosed with 0.5 mm thick PPGI sheet or equivalent insulation
- j) Lockable, Heavy Duty door along with PVC curtain before the door shall be provided.
- k) There would be a Name Plate fixed on the back side of Solar PV module which will have following minimum details: Name of the Manufacturer or Distinctive Logo, rated capacity, Model Number, Serial Number, Year of manufacture etc.

#### **4.6. Solar PV Module**

The Solar PV module comprises of PV cell(s) connected in any combination to achieve the required module power output. PV cells directly produces DC power on receipt of solar irradiation. The technical details of Solar PV Modules shall be as given below:

- a) The total solar PV array capacity would not be less than **3 KWp**
- b) The capacity of each of the solar module shall not be less than 300 Wp and no negative tolerance from quoted power rating on solar module shall be allowed in any strings of the inverter. The module would be PID resistant.
- c) The temperature coefficient of power for the module would be better than -0.45% per° C
- d) Module should have visual distinct identification mark based on the measured output in a band of maximum 5 Wp. The glass used for making module shall be 3.2 mm thickness for module up to 72 cell configurations. Each string shall have identical Wp rating Solar PV modules.
- e) Each PV module used must have a Radio Frequency Identification Tag (RFID) capable of withstanding harsh environmental conditions carrying technical details of the Module, but not less than in following manner;

- i. Name of the manufacturer of the PV module and Solar cells, month, and year of manufacture (separately for solar cells and modules) and Country of origin (separately for solar cells and modules)
  - ii. IV curve of module, Wattage, Im, Vm, Voc, Isc of the module
  - iii. Unique Serial No and Model No of the module
  - iv. Name of the test lab issuing IEC certificate
  - v. Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001
- f) Solar PV modules used in plant(s)/ system(s) must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. Warranty certificate mentioning output peak watt capacity shall be duly submitted by the Bidder.
- g) The PV modules would comply with the following Codes/Standard (or other Code/Standard, if proven equivalent) as a minimum.

<u>Codes</u>	<u>Description</u>
IEC 61215-1:	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1: Test requirements
IEC 61215-1-1:2021	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1-1: Special requirements for testing of crystalline silicon photovoltaic (PV) modules
IEC 61215-2:2021	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 2: Test procedures
IEC 61730 – 1 -2016	Photovoltaic (PV) module safety qualification – Part 1: Requirements for construction
IEC 61730 – 2 -2016	Photovoltaic (PV) module safety qualification – Part 2: Requirements for Testing
IEC 61701 – Edition 2.0 2011-12	Salt mist corrosion testing of photovoltaic (PV) modules
IEC 62804 – 1: 2015	Photovoltaic (PV) modules - Test methods for the detection of potential-induced degradation - Part 1: Crystalline silicon

- h) **Junction Box:** Junction box at the back glass of the module should be weatherproof, dust proof and designed to be used with standard wiring or conduit connection. Additionally, cables coming out of the junction box shall be suitably sealed providing complete electric isolation. In case the junction box houses diode, the junction box shall be of IP 67 or better.
- i) **Documentation:** Factory test reports/ flash reports of Electrical characteristics, namely current voltage (I-V) curves of supplied modules to be provided as per serial no. Also,

Current Voltage (I-V) & power-voltage (P-V) performance curves at standard temperatures and irradiance to be provided. Factory test reports/flash reports would be provided in paper and soft format(digital). Also, I-V Curve Report (in hard copy) of individual Solar Module should be pasted at the back sheet of every module. Pasting of the I-V Curve report should be such that it should remain intact till the modules are installed at the sight.

#### **4.7. Control and Auxiliary Systems**

Control and auxiliary systems shall consist of drive control, power converters Battery charging controllers, control system for Fans, valves compressors etc Ambient temperature considered: -20°C to 50°C, Humidity: 95 % Non-condensing

- a) The control devices shall be housed in enclosure. The Protection of Enclosure: shall be IP-20(Minimum) for indoor: IP-65 (Minimum) for outdoor.
- b) No-load losses: Less than 2% of rated power

#### **4.8. Monitoring and alarms local to the cold storage including Mobile Application.**

- a) Local monitoring shall include the running/ fault/ not running status of all devices.
- b) Temperature and humidity meters and set point adjustments
- c) Fault alarms for important conditions thru lamps and common audible alarm
- d) Operator selection for changeover to Grid power / Diesel generator

#### **4.9. Remote monitoring & Controlling**

- a. Remote Mobile Android app-based application along with handset for remote alarm monitoring and control unit shall be provided. Monitoring shall include-room temperature, room humidity, ambient temperature, Solar Radiation, compressor power consumption, Charge level of thermal storage, whether the door is open or closed. It shall preferably have features of Predictive maintenance. These data including alarm and set point shall be logged with time stamp and stored for a period of minimum one year for future use and reference.
- b. The alarms shall include system and equipment faults, temperature and Humidity Low/ High than set value Refrigerant leak detection etc.
- c. The monitoring would be done at an interval of not more than 2 minutes.
- d. It shall also have Commodity-specific, picture-based set point control, Post-Harvest Management Training, and consulting.
- e. The cold Storage/ Cold room should have remote controlling facility of room temperature and room humidity
- f. The cold Storage/ Cold room should have a remote monitoring facility through internet/Bluetooth to monitor various aspects including but not limited to the following:
  - i. Room temperature, room humidity
  - ii. Ambient temperature, ambient humidity
  - iii. Compressor power consumption
  - iv. Status of door (open or closed)

- v. Power generated by PV panels
- vi. Fault monitoring system

## **5. Acceptance Test for the Roof top Solar PV System**

The Acceptance test shall be conducted at site and witnessed by Employer's representative. Based upon the result, representative deputed by country will accept the system.

During the acceptance test Bidder shall demonstrate the adequacy of sizing of all major components like PV modules, refrigeration capacity, thermal storage, battery storage. The sizing shall be adequate to meet the performance requirement of the cold storage system as specified.

The Bidder will be responsible to conduct the Acceptance test only after achieving the physical completion. If failed to achieve the guaranteed performance levels, the Bidder will at its own cost rectify all the defects identified during the test and take necessary steps/efforts to pass the test within the stipulated time span.

Acceptance procedure shall be in line with relevant international standards. The Bidder shall furnish acceptance test procedure along with the bid and the same shall be finalised during detailed engineering

## **6. Spare Parts**

**Mandatory Spares:** The bidder shall necessarily provide the mandatory spares as part of the equipment supply. The list of such spares is as under:

<b><u>S.No.</u></b>	<b><u>Item</u></b>	<b><u>Unit</u></b>	<b><u>Quantity</u></b>
1	Solar panel of each type	No.	1
2	DC cable of each type and rating as installed	Length	5%
3	Fuse of each type and rating used in system	Percentage	100%
4	Surge protection device of each type and rating used in the system	Percentage	100%

**Recommended Spares:** Bidder shall recommend and furnish details for essential spare parts required for at least 10 years after completion of warranty period. The bidder will provide the detailed specifications, supplier details and tentative cost for such future purchase. Employer, at its discretion, will purchase the spare as required for future operation.

## **7. Inspection and Testing: -**

- a) The bidder shall provide Test certificates duly signed by an authorized person shall be submitted for scrutiny. PMC/ISA/Employer may go for sampling to cross check the test results. No equipment shall be delivered without prior written clearance from PMC.

## **8. Tools and Tackles**

1. Detailed project execution program shall be submitted along with the offer.
2. The bidder shall be responsible for arranging tools / tackles e.g., hoists, ladders, scaffoldings, basic tool set etc. successful installation and commissioning the complete system.
3. Special tools & tackles which may be required during erection, commissioning and testing of plant/equipment in contract shall be arranged by the bidder

## **9. Warranty**

1. The Bidder shall transfer the warranty/ guarantees of the equipment as such from the OEM/ supplier in the name of the Employer. e.g., PV module(s), electrochemical battery as per technical specifications
2. Any repaired, replaced or re-performed activity under the warranty period shall be the liability of Bidder without any charge. The Bidder must ensure that the goods supplied under the Contract are new, unused and of most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.
3. **Standard Warranty/Defect Liability period** for first year from the date of commissioning and handing over of the system to the employer shall be part of the equipment cost. The work done/ material supplied would be warranted for satisfactory operation and against any defect in design, engineering, material and workmanship of the plant and equipment supplied and work executed thereof as per scope of work.
4. **Extended warranty of two years** after completion of one year of standard warranty/defect liability period: The work done/ material supplied would be warranted for satisfactory operation and against any defect in design, engineering, material and workmanship of the plant and equipment supplied and work executed thereof as per scope of work.

Bidders if registered in the country other than the country where the project is to be implemented may tie-up with the local agencies in the country where the project is to be implemented to discharge the requirement of extended warranty of 2 years

5. If during the warranty period any defect is found in the design, engineering, materials and workmanship of the Plant and Equipment supplied or of the work executed by the Bidder, the Bidder shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Bidder shall, at its discretion, determine) such defect as well as any damage to the Facilities caused by such defect.
6. **The eligible Bidder shall ensure that the system can be made functional within ten days from the communication in writing/email of breakdown of the system during the warrantee period.** If the Bidder is not able to address the issue within the timeframe due to reasons attributable to Bidder, damages and not as penalty shall be recovered at USD 50 for each day of delay per incident. The Bidder will maintain

adequate spares with its authorized representative/sub-contractor/local service partner to restore the system in stipulated time as mentioned above. The names and contact details of officials of Bidder should be mentioned at the appropriate location at the installation site, preferably at the front portion of the PCU.

7. Bidder shall provide details of its organizational set up for discharge of warranty/extended warranty.

## **10. Training**

1. Bidder would provide online training to the technicians before supply of equipment for proper storage, handling and erection and commissioning activities and offline training on the various aspects of design, operation, and maintenance of the system at the time of commissioning.
2. The training shall be provided to around (10-15) members using the interpretation services of a translator in **French Language**.
3. Bidder must do post-harvest management training session for the end beneficiary and usage of mobile based app to the cold storage operators maximize the value out of the project at site in **French Language**.

## **11. Documentation**

Bidder must provide detailed Engineering Document with specification, schematic drawing, circuit drawing, cable routing plans and test results, Bill of Materials, manuals for all deliverable items, Operation, Maintenance & Safety Instruction Manual and other information about the project are submitted for the equipment in adequate number of soft and hard copies. Also, as-built drawings shall be provided showing any change that may have become necessary in drawings during the execution of the work i.e corrections, adjustments & deviations etc. Minimum one hard copy in English language and two hard copies in French shall be provided. Soft copies will also be in English and French.

## **12. Packing and Marking**

The Bidder shall be responsible for securely protecting and packing the plant & equipment as per prescribed standards in force to withstand the journey and ensuring safety of materials and also arrival of materials at destination in original condition and good for contemplated use. Packing case size & weight shall take into consideration the remoteness of the final destination of goods and absence of heavy material handling facilities at all points in transit. Packing lists of materials shall be provided in each package to facilitate checking up of the contents at the destination. Bidder shall take necessary insurances to ensure safe transit & consequential risks. All packing material is the property of the Employer.

## **13. Acceptance by Employer**

- 1) Installation & Commissioning as per technical specifications.

- 2) The Plant Performance Guarantee in accordance with the procedure specified in “Technical Specifications” has been successfully completed and the Functional Guarantees are met.
- 3) Rectifications of all defects/deficiencies/incomplete work noted during erection & commissioning and testing.
- 4) Completion of the Facilities have been achieved as per Technical Specifications

Following shall be completed in not more than 45 days of the commissioning

1. Documentation as mentioned above in technical specification is provided.
2. Inventory of recommended spares (if any) and mandatory spares at project Site are provided
3. List of punch points, duly signed, is provided.
4. Certificates of tests performed for various Works.
5. Material appropriation, Statement for the materials issued by the Employer, if applicable for the Work and list of surplus materials returned to the Employer’s store duly supported by necessary documents.
6. Warranty certificates for each equipment are handed over to Employer’ and ‘Statutory approvals/ permits/ NOC are handed over to Employer’

## 8. Data sheets

Following information may be filled out in the data sheets by the Bidder,

### 1. General

- a. Single Line diagram of the system: Yes/ No
- b. Write up explain functioning of the cold storage Provided: Yes/ No.
- c. Bidder shall provide details of its organizational set up for discharge of warranty/extended warranty.

### 2. Cold Room

- a. Operating Temperature and RH level
- b. Insulation used and thickness
- c. Inner dimension
- d. Outer dimension
- e. Door Detail
- f. Remote monitoring features and sample report of data logger

### 3. Data sheet for Solar PV Modules

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Manufacturers name and address:
- c. Total solar PV array capacity kWp: -----
- d. Photovoltaic panels Type : Polycrystalline /Monocrystalline
- e. Coefficient of power for the module:-----
- f. Module efficiency: -----
- g. Fill Factor: -
- h. **Module Power Wp**
- i. Manufacturer's warranty for efficiency after 10 years/ after 25 years :

### 4. Data sheet for Refrigeration unit

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Manufacturers name and address
- c. Type of Compressor
- d. Compressor protection
- e. Type of refrigerant used
- f. Temperature operating range in Degree C ,Max/Min
- g. **Air flow**

### 5. Data sheet for Thermal Energy Storage system

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Type of Phase Change Material (PCM), temperature and latent energy
- c. Indication of available thermal storage capacity
- d. PCM encapsulation
- e. Mass of PCM
- f. Thermal Energy Storage in MJ

### 6. Data sheet for auxiliary battery

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Manufacturers name and address



- c. Type of Battery
- d. Calculations for Battery sizing and details of the loads connected to battery provided: Yes/ No
- e. Total electrical energy storage capacity in Kilo Watt hour and Battery Voltage
- f. Capacity of individual cell in Volts and Ampere hours
- g. Battery Charging Rate
- h. Maximum discharge capacity of the battery.
- i. Temperature operating range of the battery in Degree C ,Max/Min

**7. Data sheet for Earthing and lightning protections**

- a. Details of Lightning arresters
- b. Details of earthing pit/s
- c. Single line diagram of lightning and earthing

**TECHNICAL SPECIFICATIONS FOR SUPPLY,  
INSTALLATION AND COMMISSIONING OF  
SOLAR PV BASED COLD STORAGE**

**IN**

**SENEGAL**

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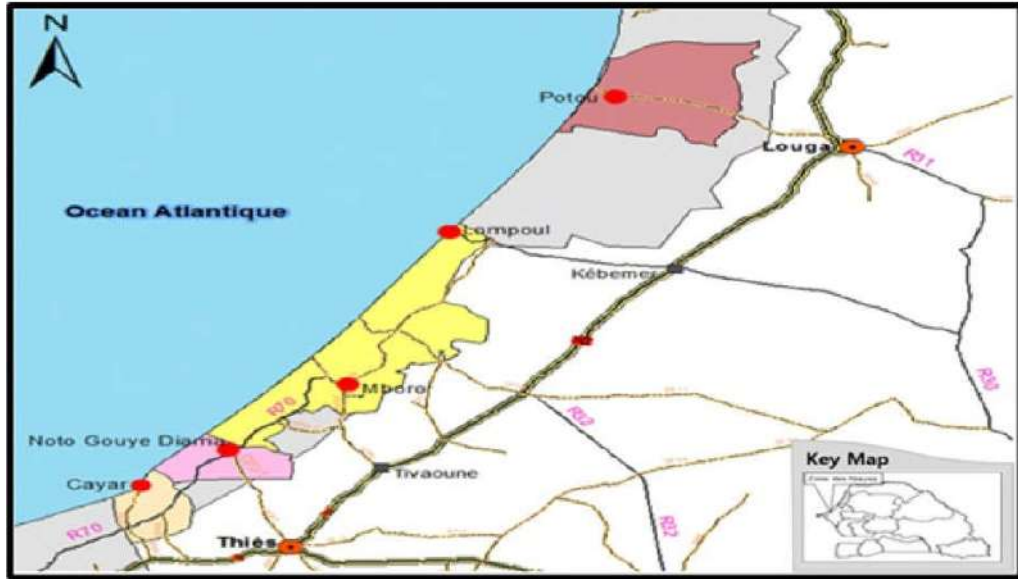
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## 1. Scope for Work

- 1.1. Bidder shall provide one (1) number solar PV based cold storage system/plant & equipment and related services as per the technical specifications. This shall include design, engineering, manufacturing, fabrication, assembly, pre-shipment testing at manufacturer's works, proper packing for transportation, transportation along-with transit insurance, delivery at the plant site, unloading, storage, installation, interconnection with related equipment, calibration, testing, commissioning to a fully operational condition as covered under this specification.
- 1.2. Bidder shall also provide remote monitoring for the system, training of intended beneficiaries and discharge of guarantee & warranty as covered under this specification.
- 1.3. Bidder shall also provide all material, equipment and services which may not be specifically stated in the specifications but are required for completeness of the equipment/systems furnished by the Bidder and for meeting the intent and requirement of the project/specification. The work shall be consistent with the latest practices and shall be following all applicable international codes, standards, guidelines, and safety requirements in force on the date of award in the country.

## 2. Project Location

Project Location	Borough of Ndande in the municipality of Theippe under the jurisdiction of Kebemer Department. The site is in Louga section of Niyaes region in Senegal
The geographical site coordinates	15.599548°(S), 16.579102° (E)
Site connectivity	7 km away from the main road route (R30) between Lompoul and Leona
Nearest City	200 km away from the port of Dakar(Capital of Senegal)



*(Niayes Region in Senegal)*

**Grid Connectivity:** Medium voltage (30KV) and High voltage (225 and 90 KV) lines runs parallel to the road route from Thies to Louga. There is no direct electrical connectivity at the site which is a few kilometres from the distribution line that supplies to villages of the commune.



Proposed Site



*(Approach road to the proposed site)*

### **3. General Requirements**

1. Though the cold storage will be an off-grid solution it should be capable of running on **415V three phase or 240V single phase grid power** or power from a DG set in the unforeseen event of prolonged cloudy period/outage of solar power. The Cold Storage should have the capability to shift to grid power if solar power is not sufficiently available or shift to diesel generator if solar power is not sufficient for operation and also grid power is not present. Such changeover shall be automatic or manual as per operator selection. Suitable contacts and status of grid power, DG set running shall be provided by the Bidder. The changeover shall be alarmed.
2. The entire cold storage system shall be electrically safe to use, without the danger of electrical shock. Adequate provision of protection from lightning and equipment earthing shall be done and protection shall be provided to detect faults like earthing/short-circuit and bring the system to a safe stage.
3. **Earthing and lightning protections:** The cold storage system shall be provided with lightning & overvoltage protection. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying the required number of Lightning Arrestors. Lightning protection shall be provided as per IEC 62305 /IS 2309 standard. The protection against induced high voltages shall be provided by the use of metal oxide varistors (MOVs) based surge protection device and suitable earthing such that induced transients find an alternate route to earth. In addition, the lightning arrester/masts shall also be earthed. Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at the same potential. Separate earthing shall be provided for Controller, refrigeration unit and SPV array. For safety purposes, it shall be ensured during installation that the earthing can take care of leakage current. **All the work including civil work related to Earthing and lightning protections shall be in the Bidder's scope.**
4. The electrical system shall conform to the local electricity acts, applicable codes and laws.
5. **Performance parameters of solar cold Storage/ Cold room shall be tested at the works and a report shall be submitted for approval before dispatch clearance. The verification procedure shall be finalized during the award of the contract.**
6. **Necessary tools & tackles shall be provided for erection and maintenance purposes.**
7. Solar Cold Storage to be put on Platform (if required) as per Design, Layout and Guidelines to be finalized during detailed engineering. **The Platform construction shall be not in the scope of the Bidder and shall be done by the Employer.**
8. Adequate nos. of Danger board and signage to be provided and installed at the time of erection and commissioning. Display boards of Dos and Don'ts to be provided.
9. All the components should have a nameplate with its capacity mentioned on it.
10. Provision for the display of contact details of officials responsible for O&M and any emergency should be made.
11. Bidder shall provide a single line diagram of the system and a detailed write up

- explaining the working of the system.
12. Bidder shall indicate expected life of the various components of the solar cold storage and details of manufacturer's warranty provided by the component/ part supplier. The major components shall include:
    - i. Solar PV Panels
    - ii. Solar PV controller
    - iii. Cold storage operation controller.
    - iv. Refrigeration unit
    - v. Electrochemical battery
    - vi. Thermal storage / Phase change material unit
  - 13. Water supply during erection and commissioning shall be provided by the Employer from the nearest source. The Bidder shall make the necessary arrangement for using the water for its erection and commissioning activities.**
  - 14. Cleaning of Solar PV Modules shall be in Employer's scope.**
  - 15. Power supply required during erection and commissioning shall be provided by the Employer using the existing DG set/grid power. Bidder shall make necessary arrangement for using the power for its erection and commissioning activities.**
  16. Liaison with the concerned statutory authorities in the country, as applicable for all the Project related approvals shall be the responsibility of the Employer. The Bidder shall provide all inputs, information and documents for the same.
  17. Security, safety, watch, and ward of all materials at sites shall be the responsibility of the Employer. Safety management to be strictly complied with by the Bidder/Bidder throughout implementation activity.
  18. All local labour, employment, and other issues shall be handled independently by the Bidder.
  19. Bidder shall propose all the equipment of the system as per the standard range of the manufacturer. In case the standard manufacturing rating is less than the required rating as per the specification, the Bidder shall offer higher rated equipment in manufacture standard range at no extra cost to the Employer. Equipment over rating of a manufacturer standard rating through project specific modifications will normally will not be acceptable.
  20. Bidders may visit site before bidding for better understanding the site conditions.



#### **4. Functional requirements**

The cold storage/ system shall work on the principle of thermal energy storage system using phase change material for providing the cooling function of farm produce during non-sun hours or during the time when solar energy is not sufficient to run the refrigeration system. The electro-mechanical battery shall be used for functions of extracting thermal energy for cooling and powering auxiliary loads.

##### **4.1. System sizing criteria**

- a) All the components of the system (Viz. Solar panels, refrigeration equipment, thermal storage, battery etc.) shall be adequately sized to meet the performance requirement as given in the specification. However, the equipment sizing shall not be less than the minimum size as given in the specification. It shall be the Bidders' responsibility to size the individual equipment and the whole system and meet the performance requirement. Bidder shall furnish the sizing for all the equipment meeting the specification requirement.
- b) **The design ambient temperature for cold storage system shall be considered as 45-degree C.** The design ambient relative humidity condition shall be considered as varying from 10% to 90%
- c) The cold storage equipment/ system design sizing shall have a minimum storage capacity of 5 MT and shall be adequate for storing 5000 Kgs of potatoes or farm produce equivalent in terms of specific heat and respiration rate.
- d) The cold storage gate opening shall be considered on an average as 5 minutes every hour.
- e) The refrigeration system shall be able to pre-cool or pull down the temperature of the farm commodity like potatoes from **30°C to 5°C in 6 hours for a minimum one batch of 500 Kg and maintain the temperature for a batch of 5000 Kg at a temperature of 4 Degree C** and simultaneously charge the thermal storage system and auxiliary batteries fully. However, The Condensing units of the refrigeration unit would be of **Minimum 2.0 TR at -5°C evaporating and 50°C mean condensing temperature ambient with an Energy Efficiency ratio(EER ) of not less than 2.2**
- f) During non-sun hours and for the period without any PV or external electrical energy support, the thermal storage of the cold storage/system shall be of adequate size to maintain the **temperature at 4 degree C for 5000 Kg potatoes and simultaneously precool one batch of 500 Kgs from 35 degree C to 7 degree C in 12 hours for a period of at least 24 hours on a typical day having 40°C peak ambient temperature. However, the thermal storage capacity should be in the range of 75 – 120 MJ**
- g) The system would have a battery of adequate capacity for operation of system auxiliaries during non-sun hours and for the period without any PV or external electrical energy support. Battery capacity shall also have provision for energising 100-watt load for up to 10 hours (during the non-sun period) to connect electrical

devices like Lamps and fans external to the cold storage of battery shall be provided. However, the energy storage capacity of battery shall not be less than 3000 Wh.

- h) Adequate number of solar PV modules shall be provided for the refrigeration system and the auxiliary battery. The solar array can be common/combined or separate for the refrigeration system and for charging the battery. The arrangement shall be as per proven practice of the Bidder. The total solar PV array capacity shall be adequate to run the refrigeration system, fully charge thermal energy storage system and fully charge the battery as per equipment energy requirement as specified. The solar PV panels size shall be in accordance with the site solar irradiation and required energy during the day. **However, the total solar PV array capacity would not be less than 5.0 kWp**
- i) The voltage levels of Battery, solar panels, refrigeration system, auxiliary devices like fans and controllers etc. shall be as per Bidder's system standard design and the same shall be furnished during the bid.
- j) The cold storage farm produce storage area/ cold room would be designed to maintain the desired temperature of the produce in uniform manner in the range of 4-10°C and relative humidity in the range of 65% - 95%, operator adjustable in steps of +/-1°C temperature tolerance
- k) Temperature and Humidity level in the cold storage shall be suitably displayed.
- l) The system design shall ensure that there is no vapor condensation on the stored produce and the stored commodity does not get spoiled due to vapor condensation.

#### **4.2. Refrigeration system**

- a) Refrigeration System shall have Variable Speed Compressor with battery-less operation.
- b) Refrigerant shall be environmentally compliant and of Internationally acceptable standard (e.g. R290/R404a/R134a/407f) or as compatible with Montreal/ Kigali Agreement

#### **4.3. Thermal storage System**

- a) Thermal storage medium shall be conditioned Water or phase change material. The cooling shall be convection based.
- b) Thermal storage capacity indication must be Linear with minimum 10 graduations between maximum and minimum cooling storage capacity.
- c) The Cooling unit and allied components should be an integral part of the system to ensure higher system efficiency and better cooling mechanism.
- d) To ensure that overall system design should deliver cooling as expected with higher efficiency, system should be designed for direct cooling mechanisms

#### 4.4. Auxiliary Battery

- a) The battery shall be Lithium Ferro Phosphate (LiFePO<sub>4</sub>) type. However, if Bidder proposes any other type of battery, it shall be subject to **Employer/PMC** approval
- b) Battery shall be warranted for minimum 5 years.
- c) The battery shall operate trouble free with operation temperature ranging from minus 5 to 60 degree C.
- d) The Cell and Battery should conform to latest IEC 62133-2012 or BIS specifications and should have been certified with NABL/IEC accredited test center/ laboratory as per IEC/ BIS standard IEC 62133, IEC 61960 & UL1642: Safety of LiFePo<sub>4</sub> battery.

#### 4.5. Cold Storage / Cold Room

- a) The minimum external dimension of the cold room should be 4.5M x 2M x 2M, The cold storage should be able to hold at least 5000 kgs of potatoes or any other farm commodity equivalent to potatoes and with a provision to hold at least 250 numbers of standard 20 kg crates (approximate dimension 550mmX350mmX300mm). However, the crates for storage are excluded from the scope of supply of Bidder. The same shall be procured by country. Bidder shall provide his recommendations.
- b) Temperature set point allowable tolerance limit +/- 1 °C and Temperature variation allowable tolerance limit at any point in the room post pre-cooling +/- 1 °C without door openings
- c) Self-leakage from thermal storage shall not be more than 100 Watt at 40 °C ambient
- d) The solar panels would be mounted on the roof top of the cold storage unit.
- e) The refrigeration unit (Compressor and condensing unit), thermal storage unit, Power unit and Control unit for fans, valves, compressor would be designed in a manner to be an integral unit of the cold storage system.
- f) The cold storage along with refrigeration unit would be portable for relocation with adequate provision for loading, unloading, transportation.
- g) Galvanized iron based self-supporting mounting structure shall be provided for solar panels mounting on the cold room. Mounting structure shall be of sufficient strength to withstand maximum wind velocity of 150 km/hr.
- h) The entire unit shall be designed to ensure ease of installation and suitable for operation in a "plug and Play "mode.

- i) Insulation of cold room shall be minimum 100 mm thick Polyurethane Foam (PUF). Panels enclosed with 0.5 mm thick PPGI sheet or equivalent insulation
- j) Lockable, Heavy-Duty door along with PVC curtain before the door shall be provided.
- k) There would be a Name Plate fixed on the back side of Solar PV module which will have following minimum details: Name of the Manufacturer or Distinctive Logo, rated capacity, Model Number, Serial Number, Year of manufacture etc.

#### 4.6. Solar PV Module

The Solar PV module comprises of PV cell(s) connected in any combination to achieve the required module power output. PV cells directly produces DC power on receipt of solar irradiation.

The technical details of Solar PV Modules shall be as given below:

- a) The total solar PV array capacity would not be less than **5 KWp**
- b) The capacity of each of the solar module shall **not be less than 300 Wp** and no negative tolerance from quoted power rating on solar module shall be allowed in any strings of the inverter. The module would be PID resistant.
- c) The temperature coefficient of power for the module would be better than -0.45% per° C
- d) Module should have visual distinct identification mark based on the measured output in a band of maximum 5 Wp. The glass used for making module shall be 3.2 mm thickness for module up to 72 cell configurations. Each string shall have identical Wp rating Solar PV modules.
- e) Each PV module used must have a Radio Frequency Identification Tag (RFID) capable of withstanding harsh environmental conditions carrying technical details of the Module, but not less than in following manner;
  - i. Name of the manufacturer of the PV module and Solar cells, month, and year of manufacture (separately for solar cells and modules) and Country of origin (separately for solar cells and modules)
  - ii. IV curve of module, Wattage, Im, Vm, Voc, Isc of the module
  - iii. Unique Serial No and Model No of the module
  - iv. Name of the test lab issuing IEC certificate
  - v. Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001
- f) Solar PV modules used in plant(s)/ system(s) must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. Warranty certificate mentioning output peak watt capacity shall be duly submitted by the Bidder.

- g) The PV modules would comply with the following Codes/Standard (or other Code/Standard, if proven equivalent) as a minimum.

<u>Codes</u>	<u>Description</u>
IEC 61215-1:	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1: Test requirements
IEC 61215-1-1:2021	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1-1: Special requirements for testing of crystalline silicon photovoltaic (PV) modules
IEC 61215-2:2021	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 2: Test procedures
IEC 61730 – 1 -2016	Photovoltaic (PV) module safety qualification – Part 1: Requirements for construction
IEC 61730 – 2 -2016	Photovoltaic (PV) module safety qualification – Part 2: Requirements for Testing
IEC 61701 – Edition 2.0 2011-12	Salt mist corrosion testing of photovoltaic (PV) modules
IEC 62804 – 1: 2015	Photovoltaic (PV) modules - Test methods for the detection of potential-induced degradation - Part 1: Crystalline silicon

- h) **Junction Box:** Junction box at the back glass of the module should be weatherproof, dust proof and designed to be used with standard wiring or conduit connection. Additionally, cables coming out of the junction box shall be suitably sealed providing complete electric isolation. In case the junction box houses diode, the junction box shall be of IP 67 or better.
- i) **Documentation:** Factory test reports/ flash reports of Electrical characteristics, namely current voltage (I-V) curves of supplied modules to be provided as per serial no. Also, Current Voltage (I-V) & power-voltage (P-V) performance curves at standard temperatures and irradiance to be provided. Factory test reports/flash reports would be provided in paper and soft format(digital). Also, I-V Curve Report (in hard copy) of individual Solar Module should be pasted at the back sheet of every module. Pasting of the I-V Curve report should be such that it should remain intact till the modules are installed at the sight.

#### 4.7. Control and Auxiliary Systems

Control and auxiliary systems shall consist of drive control, power converters Battery charging controllers, control system for Fans, valves compressors etc Ambient temperature considered: -20°C to 50°C, Humidity: 95 % Non-condensing

- a) The control devices shall be housed in enclosure. The Protection of Enclosure:

shall be IP-20(Minimum) for indoor: IP-65 (Minimum) for outdoor.

- b) No-load losses: Less than 2% of rated power

#### **4.8. Monitoring and alarms local to the cold storage including Mobile Application.**

- a) Local monitoring shall include the running/ fault/ not running status of all devices.
- b) Temperature and humidity meters and set point adjustments
- c) Fault alarms for important conditions thru lamps and common audible alarm
- d) Automatic changeover to Grid power / Diesel generator when backup power is available, and the thermal storage system is not charged.

#### **4.9. Remote monitoring & Controlling**

- a. Remote Mobile Android app-based application along with handset for remote alarm monitoring and control unit shall be provided. Monitoring shall include-room temperature, room humidity, ambient temperature, Solar Radiation, compressor power consumption, Charge level of thermal storage, whether the door is open or closed. It shall preferably have features of Predictive maintenance. These data including alarm and set point shall be logged with time stamp and stored for a period of minimum one year for future use and reference.
- b. The alarms shall include system and equipment faults, temperature and Humidity Low/ High than set value Refrigerant leak detection etc.
- c. The monitoring would be done at an interval of not more than 2 minutes.
- d. It shall also have Commodity-specific, picture-based set point control, Post-Harvest Management Training, and consulting.
- e. The cold Storage/ Cold room should have remote controlling facility of room temperature and room humidity
- f. The cold Storage/ Cold room should have a remote monitoring facility through internet/Bluetooth to monitor various aspects including but not limited to the following:
  - i. Room temperature, room humidity
  - ii. Ambient temperature, ambient humidity
  - iii. Compressor power consumption
  - iv. Status of door (open or closed)
  - v. Power generated by PV panels
  - vi. Fault monitoring system

### **5. Acceptance Test for the Solar PV System**

The Acceptance test shall be conducted at site and witnessed by Employer's representative. Based upon the result, representative deputed by country will accept the system.

During the acceptance test Bidder shall demonstrate the adequacy of sizing of all major components like PV modules, refrigeration capacity, thermal storage, battery storage. The sizing shall be adequate to meet the performance requirement of the cold storage system as specified.

The Bidder will be responsible to conduct the Acceptance test only after achieving the physical completion. If failed to achieve the performance as per specifications, the Bidder will at its own cost rectify all the defects identified during the test and take necessary steps/efforts to pass the test within the stipulated time span.

Acceptance procedure shall be in line with relevant international standards. **The Bidder shall furnish acceptance test procedure along with the bid and the same shall be finalised during detailed engineering**

## **6. Spare Parts**

**Mandatory Spares:** The bidder shall necessarily provide the mandatory spares as part of the equipment supply. The list of such spares is as under:

<b><u>S.No.</u></b>	<b><u>Item</u></b>	<b><u>Unit</u></b>	<b><u>Quantity</u></b>
1	Solar panel of each type	No.	1
2	DC cable of each type and rating as installed	Length	5%
3	Fuse of each type and rating used in system	Percentage	100%
4	Surge protection device of each type and rating used in the system	Percentage	100%

**Recommended Spares:** Bidder shall recommend and furnish details for essential spare parts required for at least 10 years after completion of warranty. The bidder will provide the detailed specifications, supplier details and tentative cost for such future purchase. Employer, at its discretion, will purchase the spare as required for future operation.

## **7. Inspection and Testing: -**

- a) The bidder shall provide Test certificates duly signed by an authorized person for scrutiny. PMC/ISA/Employer may go for sampling to cross check the test results. **No equipment shall be delivered without prior written clearance from PMC.**

## **8. Tools and Tackles**

1. Detailed project execution program shall be submitted along with the offer.
2. The bidder shall be responsible for arranging tools / tackles e.g., hoists, ladders, scaffoldings, basic tool set etc. successful installation and commissioning the complete system.
3. Special tools & tackles which may be required during erection, commissioning and testing of plant/equipment in contract shall be arranged by the bidder

## **9. Warranty**

1. The Bidder shall transfer the warranty/ guarantees of the equipment as such from the OEM/ supplier in the name of the Employer. e.g., PV module(s), electrochemical battery as per technical specifications
2. Any repaired, replaced or re-performed activity under the warranty period shall be the liability of Bidder without any charge. The Bidder must ensure that the goods supplied under the Contract are new, unused and of most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.

3. **Standard Warranty/Defect Liability period** for first year from the date of commissioning and handing over of the system to the employer shall be part of the equipment cost. The work done/ material supplied would be warranted for satisfactory operation and against any defect in design, engineering, material and workmanship of the plant and equipment supplied and work executed there of as per scope of work.
4. **Extended warranty of two years** after completion of one year of standard warranty/defect liability period: The work done/ material supplied would be warranted for satisfactory operation and against any defect in design, engineering, material and workmanship of the plant and equipment supplied and work executed thereof as per scope of work.

Bidders if registered in the country other than the country where the project is to be implemented may tie-up with the local agencies in the country where the project is to be implemented to discharge the requirement of extended warranty of 2 years

5. If during the warranty/extended warranty period any defect is found in the design, engineering, materials and workmanship of the Plant and Equipment supplied or of the work executed by the Bidder, the Bidder shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Bidder shall, at its discretion, determine) such defect as well as any damage to the Facilities caused by such defect.
6. **The eligible Bidder shall ensure that the system can be made functional within ten days from the communication in writing/email of breakdown of the system during the warrantee period.** If the Bidder is not able to address the issue within the timeframe due to reasons attributable to Bidder, damages and not as penalty shall be recovered at USD 50 for each day of delay per incident. The Bidder will maintain adequate spares with its authorized representative/sub-contractor/local service partner to restore the system in stipulated time as mentioned above. The names and contact details of officials of Bidder should be mentioned at the appropriate location at the installation site, preferably at the front portion of the PCU.
7. Bidder shall provide details of its organizational set up for discharge of warranty and extended warranty.

## **10. Training**

1. Bidder would provide online training to the technicians before supply of equipment for proper storage, handling and erection and commissioning activities and offline training on the various aspects of design, operation, and maintenance of the system at the time of commissioning.
2. The training shall be provided to around 10-15 members using the interpretation services of a translator in **French Language**.



3. Bidder must do post-harvest management training session for the end beneficiary and usage of mobile based app to the cold storage operators maximize the value out of the project at site in **French Language**.

### **11.Documentation**

Bidder must provide detailed Engineering Document with specification, schematic drawing, circuit drawing, cable routing plans and test results, Bill of Materials, manuals for all deliverable items, Operation, Maintenance & Safety Instruction Manual and other information about the project are submitted for the equipment in adequate number of soft and hard copies. Also, as-built drawings shall be provided showing any change that may have become necessary in drawings during the execution of the work i.e corrections, adjustments & deviations etc.

Minimum one hard copy in English language and two hard copies in French shall be provided. Soft copies will also be in English and French.

### **12.Packing and Marking**

The Bidder shall be responsible for securely protecting and packing the plant & equipment as per prescribed standards in force to withstand the journey and ensuring safety of materials and also arrival of materials at destination in original condition and good for contemplated use. Packing case size & weight shall take into consideration the remoteness of the final destination of goods and absence of heavy material handling facilities at all points in transit. Packing lists of materials shall be provided in each package to facilitate checking up of the contents at the destination. Bidder shall take necessary insurances to ensure safe transit & consequential risks. All packing material is the property of the Employer.

### **13.Acceptance by Employer**

- 1) Installation & Commissioning as per technical specifications.
- 2) The Plant Performance Guarantee in accordance with the procedure specified in "Technical Specifications" has been successfully completed and the Functional Guarantees are met.
- 3) Rectifications of all defects/deficiencies/incomplete work noted during erection & commissioning and testing.
- 4) Completion of the Facilities have been achieved as per Technical Specifications
- 5) Acceptance Test for Solar PV System

Following shall be completed in not more than 45 days of the commissioning

1. Documentation as mentioned above in technical specification is provided.
2. Inventory of recommended spares (if any) and mandatory spares at project Site are provided
3. List of punch points, duly signed, is provided.
4. Certificates of tests performed for various Works.

5. Material appropriation, Statement for the materials issued by the Employer, if applicable for the Work and list of surplus materials returned to the Employer's store duly supported by necessary documents.
6. Warranty certificates for each equipment are handed over to Employer' and 'Statutory approvals/ permits/ NOC are handed over to Employer'

## 14. Data sheets

Following information may be filled out in the data sheets by the Bidder,

### 1. General

- a. Single Line diagram of the system: Yes/ No
- b. Write up explain functioning of the cold storage Provided: Yes/ No.
- c. Bidder shall provide details of its organizational set up for discharge of warranty and extended warranty discharge.

### 2. Cold Room

- a. Operating Temperature and RH level
- b. Insulation used and thickness
- c. Inner dimension
- d. Outer dimension
- e. Door Detail
- f. Remote monitoring features and sample report of data logger

### 3. Data sheet for Solar PV Modules

- a. Technical data sheet and catalogue provided at: Page No./ section
- b. Manufacturers name and address:
- c. Total solar PV array capacity kWp
- d. Photovoltaic panels Type: Polycrystalline /Monocrystalline
- e. Coefficient of power for the module:-----
- f. Module efficiency: -----
- g. Fill Factor: -
- h. **Module Power Wp**
- i. Manufacturer's warranty for efficiency after 10 years/ after 25 years :

### 4. Data sheet for Refrigeration unit

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Manufacturers name and address
- c. Type of Compressor
- d. Compressor protection
- e. Type of refrigerant used
- f. Temperature operating range in Degree C, Max/Min
- g. **Air flow**

### 5. Data sheet for Thermal Energy Storage system

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Type of Phase Change Material (PCM), temperature and latent energy
- c. Indication of available thermal storage capacity
- d. PCM encapsulation
- e. Mass of PCM
- f. Thermal Energy Storage in MJ

### 6. Data sheet for auxiliary battery

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Manufacturers name and address

- c. Type of Battery
- d. Calculations for Battery sizing and details of the loads connected to battery provided: Yes/ No
- e. Total electrical energy storage capacity in Kilo Watt hour and Battery Voltage
- f. Capacity of individual cell in Volts and Ampere hours
- g. Battery Charging Rate
- h. Maximum discharge capacity of the battery.
- i. Temperature operating range of the battery in Degree C, Max/Min

**7. Data sheet for Earthing and lightning protections**

- a. Details of Lightning arresters
- b. Details of earthing pit/s
- c. Single line diagram of lightning and earthing

**TECHNICAL SPECIFICATIONS FOR SUPPLY,  
INSTALLATION AND COMMISSIONING OF  
SOLAR PV BASED COLD STORAGE**

**IN**

**SEYCHELLES**

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## **1. Scope for Work**

- 1.1.** Bidder shall provide one (1) number solar PV based cold storage system/plant & equipment and related services as per the technical specifications. This shall include design, engineering, manufacturing, fabrication, assembly, pre-shipment testing at manufacturer's works, proper packing for transportation, transportation along-with transit insurance, delivery at the plant site, unloading, storage, installation, interconnection with related equipment, calibration, testing, commissioning to a fully operational condition as covered under this specification.
- 1.2.** Bidder shall also provide remote monitoring for the system, training of intended beneficiaries and discharge of guarantee & warranty as covered under this specification.
- 1.3.** Bidder shall also provide all material, equipment and services which may not be specifically stated in the specifications but are required for completeness of the equipment/systems furnished by the Bidder and for meeting the intent and requirement of the project/specification. The work shall be consistent with the latest practices and shall be following all applicable international codes, standards, guidelines, and safety requirements in force on the date of award in the country.

## **2. General Requirements**

1. Though the cold storage will be an off-grid solution it should be capable of running on **415V three phase or 240V single phase grid power** or power from a DG set in the unforeseen event of prolonged cloudy period/outage of solar power. The Cold Storage should have the capability to shift to grid power if solar power is not sufficiently available or shift to diesel generator if solar power is not sufficient for operation and also grid power is not present. Such changeover shall be automatic or manual as per operator selection. Suitable contacts and status of grid power, DG set running shall be provided by the Bidder. The changeover shall be alarmed.
2. The entire cold storage system shall be electrically safe to use, without the danger of electrical shock. Adequate provision of protection from lightning and equipment earthing shall be done and protection shall be provided to detect faults like earthing/short-circuit and bring the system to a safe stage.
3. **Earthing and lightning protections:** The cold storage system shall be provided with lightning & overvoltage protection. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying the required number of Lightning Arrestors. Lightning protection shall be provided as per IEC 62305 /IS 2309 standard. The protection against induced high voltages shall be provided by the use of metal oxide varistors (MOVs) based surge protection device and suitable earthing such that induced transients find an alternate route to earth. In addition, the lightning arrester/masts shall also be earthed. Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at

the same potential. Separate earthing shall be provided for Controller, refrigeration unit and SPV array. For safety purposes, it shall be ensured during installation that the earthing can take care of leakage current. **All the work including civil work related to Earthing and lightning protections shall be in the Bidder's scope.**

4. The electrical system shall conform to the local electricity acts, applicable codes and laws.
5. **Performance parameters of solar cold Storage/ Cold room shall be tested at the works and a report shall be submitted for approval before dispatch clearance. The verification procedure shall be finalized during the award of the contract.**
6. **Necessary tools & tackles shall be provided for erection and maintenance purposes.**
7. Solar Cold Storage to be put on Platform (if required) as per Design, Layout and Guidelines to be finalized during detailed engineering. **The Platform construction shall be not in the scope of the Bidder and shall be done by the Employer.**
8. Adequate nos. of Danger board and signage to be provided and installed at the time of erection and commissioning. Display boards of Dos and Don'ts to be provided.
9. All the components should have a nameplate with its capacity mentioned on it.
10. Provision for the display of contact details of officials responsible for O&M and any emergency should be made.
11. Bidder shall provide a single line diagram of the system and a detailed write up explaining the working of the system.
12. Bidder shall indicate expected life of the various components of the solar cold storage and details of manufacturer's warranty provided by the component/ part supplier. The major components shall include:
  - i. Solar PV Panels
  - ii. Solar PV controller
  - iii. Cold storage operation controller.
  - iv. Refrigeration unit
  - v. Electrochemical battery
  - vi. Thermal storage / Phase change material unit
13. **Water supply during erection and commissioning shall be provided by the Employer from the nearest source. The Bidder shall make the necessary arrangement for using the water for its erection and commissioning activities.**
14. **Bidder Cleaning of Solar PV Modules in Employer's scope.**
15. **Power supply required during erection and commissioning shall be provided by the Employer using the existing DG set/grid power. Bidder shall make necessary arrangement for using the power for its erection and commissioning activities.**
16. Liaison with the concerned statutory authorities in the country, as applicable for all the Project related approvals shall be the responsibility of the Employer. The Bidder shall provide all inputs, information and documents for the same.
17. Security, safety, watch, and ward of all materials at sites shall be the responsibility of the Employer. Safety management to be strictly complied with by the Bidder/Bidder



throughout implementation activity.

18. All local labor, employment, and other issues shall be handled independently by the Bidder.
19. Bidder shall propose all the equipment of the system as per the standard range of the manufacturer. In case the standard manufacturing rating is less than the required rating as per the specification, the Bidder shall offer higher rated equipment in manufacture standard range at no extra cost to the Employer. Equipment over rating of a manufacturer standard rating through project specific modifications will normally will not be acceptable.
20. Bidders may visit site before bidding for better understanding the site conditions.

### **3. Functional requirements**

The cold storage/ system shall work on the principle of thermal energy storage system using phase change material for providing the cooling function of farm produce during non-sun hours or during the time when solar energy is not sufficient to run the refrigeration system. The electro-mechanical battery shall be used for functions of extracting thermal energy for cooling and powering auxiliary loads.

#### **3.1. System sizing criteria**

- a) All the components of the system (Viz. Solar panels, refrigeration equipment, thermal storage, battery etc.) shall be adequately sized to meet the performance requirement as given in the specification. However, the equipment sizing shall not be less than the minimum size as given in the specification. It shall be the Bidders' responsibility to size the individual equipment and the whole system and meet the performance requirement. Bidder shall furnish the sizing for all the equipment meeting the specification requirement.
- b) **The design ambient temperature for cold storage system shall be considered as 45-degree C.** The design ambient relative humidity condition shall be considered as varying from 10% to 90%
- c) The cold storage equipment/ system design sizing shall have a minimum storage capacity of 5 MT and shall be adequate for storing 5000 Kgs of potatoes or farm produce equivalent in terms of specific heat and respiration rate.
- d) The cold storage gate opening shall be considered on an average as 5 minutes every hour.
- e) The refrigeration system shall be able to pre-cool or pull down the temperature of the farm commodity like potatoes from **30°C to 5°C in 6 hours for a minimum one batch of 500 Kg and maintain the temperature for a batch of 5000 Kg at a temperature of 4 Degree C** and simultaneously charge the thermal storage system and auxiliary batteries fully. However, The Condensing units of the refrigeration unit would be of **Minimum 2.0 TR at -5°C evaporating and 50°C mean condensing temperature ambient with an Energy Efficiency ratio (EER) of not less than 2.2**

- f) During non-sun hours and for the period without any PV or external electrical energy support, the thermal storage of the cold storage/system shall be of adequate size to maintain the temperature at **4 degree C for 5000 Kg potatoes and simultaneously precool one batch of 500 Kgs from 35 degree C to 7 degree C in 12 hours for a period of at least 24 hours on a typical day having 40°C peak ambient temperature. However, the thermal storage capacity should be in the range of 75 – 120 MJ**
- g) The system would have a battery of adequate capacity for operation of system auxiliaries during non-sun hours and for the period without any PV or external electrical energy support. Battery capacity shall also have provision for energising 100-watt load for up to 10 hours (during the non-sun period) to connect electrical devices like Lamps and fans external to the cold storage of battery shall be provided. However, the energy storage capacity of battery shall not be less than 3000 Wh.
- h) Adequate number of solar PV modules shall be provided for the refrigeration system and the auxiliary battery. The solar array can be common/combined or separate for the refrigeration system and for charging the battery. The arrangement shall be as per proven practice of the Bidder. The total solar PV array capacity shall be adequate to run the refrigeration system, fully charge thermal energy storage system and fully charge the battery as per equipment energy requirement as specified. The solar PV panels size shall be in accordance with the site solar irradiation and required energy during the day. **However, the total solar PV array capacity would not be less than 5.0 kWp**
- i) The voltage levels of Battery, solar panels, refrigeration system, auxiliary devices like fans and controllers etc. shall be as per Bidder's system standard design and the same shall be furnished during the bid.
- j) The cold storage farm produce storage area/ cold room would be designed to maintain the desired temperature of the produce in uniform manner in the range of 4-10°C and relative humidity in the range of 65% - 95%,, operator adjustable in steps of +/-1°C temperature tolerance
- k) Temperature and Humidity level in the cold storage shall be suitably displayed.
- l) The system design shall ensure that there is no vapor condensation on the stored produce and the stored commodity does not get spoiled due to vapor condensation.

### 3.2. Refrigeration system

- a) Refrigeration System shall have Variable Speed Compressor with battery-less operation.
- b) Refrigerant shall be environmentally compliant and of Internationally acceptable standard (e.g. R290/R404a/R134a/407f) or as compatible with Montreal/ Kigali Agreement

### 3.3. Thermal storage System

- a) Thermal storage medium shall be conditioned Water or phase change material. The cooling shall be convection based.
- b) Thermal storage capacity indication must be Linear with minimum 10 graduations between maximum and minimum cooling storage capacity.
- c) The Cooling unit and allied components should be an integral part of the system to ensure higher system efficiency and better cooling mechanism.
- d) To ensure that overall system design should deliver cooling as expected with higher efficiency, system should be designed for direct cooling mechanisms

### 3.4. Auxiliary Battery

- a) The battery shall be Lithium Ferro Phosphate (LiFePO<sub>4</sub>). However, if Bidder proposes any other type of battery, it shall be subject to **Employer** approval
- b) Battery shall be warranted for minimum 5 years.
- c) The battery shall operate trouble free with operation temperature ranging from minus 5 to 60 degree C.
- d) The Cell and Battery should conform to latest IEC 62133-2012 or BIS specifications and should have been certified with NABL/IEC accredited test center/ laboratory as per IEC/ BIS standard IEC 62133, IEC 61960 & UL1642: Safety of LiFePo<sub>4</sub> battery.

### 3.5. Cold Storage / Cold Room

- a) **The minimum external dimension of the cold room should be approximately 4.5M x 2M x 2M.** The cold storage should be able to hold at least 5000 kgs of potatoes or any other farm commodity equivalent to potatoes and with a provision to hold at least 250 numbers of standard 20 kg crates (approximate dimension 550mmX350mmX300mm). However, the crates for storage are excluded from the scope of supply of Bidder. The same shall be procured by country. Bidder shall provide his recommendations.
- b) Temperature set point allowable tolerance limit +/- 1 °C and Temperature variation allowable tolerance limit at any point in the room post pre-cooling +/- 1 °C without door openings
- c) Self-leakage from thermal storage shall not be more than 100 Watt at 40 °C ambient
- d) The solar panels would be mounted on the roof top of the cold storage unit.
- e) The refrigeration unit (Compressor and condensing unit), thermal storage unit, Power unit and Control unit for fans, valves, compressor

would be designed in a manner to be an integral unit of the cold storage system.

- f) The cold storage along with refrigeration unit would be portable for relocation with adequate provision for loading, unloading, transportation.
- g) Galvanized iron based self-supporting mounting structure shall be provided for solar panels mounting on the cold room. Mounting structure shall be of sufficient strength to withstand maximum wind velocity of 150 km/hr.
- h) The entire unit shall be designed to ensure ease of installation and suitable for operation in a “plug and Play “mode.
- i) Insulation of cold room shall be minimum 100 mm thick Polyurethane Foam (PUF). Panels enclosed with 0.5 mm thick PPGI sheet or equivalent insulation
- j) Lockable, Heavy Duty door along with PVC curtain before the door shall be provided.
- k) There would be a Name Plate fixed on the back side of Solar PV module which will have following minimum details: Name of the Manufacturer or Distinctive Logo, rated capacity, Model Number, Serial Number, Year of manufacture etc.

### 3.6. Solar PV Module

The Solar PV module comprises of PV cell(s) connected in any combination to achieve the required module power output. PV cells directly produces DC power on receipt of solar irradiation. The technical details of Solar PV Modules shall be as given below:

- a) The total solar PV array capacity would not be less than **5 KWp**
- b) The capacity of each of the solar module shall **not be less than 300 Wp** and no negative tolerance from quoted power rating on solar module shall be allowed in any strings of the inverter. The module would be PID resistant.
- c) The temperature coefficient of power for the module would be better than -0.45% per° C
- d) Module should have visual distinct identification mark based on the measured output in a band of maximum 5 Wp. The glass used for making module shall be 3.2 mm thickness for module up to 72 cell configurations. Each string shall have identical Wp rating Solar PV modules.
- e) Each PV module used must have a Radio Frequency Identification Tag (RFID) capable of withstanding harsh environmental conditions carrying technical details of the Module, but not less than in following manner;
  - i. Name of the manufacturer of the PV module and Solar cells, month, and year of manufacture (separately for solar cells and modules) and Country of origin (separately for solar cells and modules)

- ii. IV curve of module, Wattage, Im, Vm, Voc, Isc of the module
  - iii. Unique Serial No and Model No of the module
  - iv. Name of the test lab issuing IEC certificate
  - v. Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001
- f) Solar PV modules used in plant(s)/ system(s) must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. Warranty certificate mentioning output peak watt capacity shall be duly submitted by the Bidder.
- g) The PV modules would comply with the following Codes/Standard (or other Code/Standard, if proven equivalent) as a minimum.

<u>Codes</u>	<u>Description</u>
IEC 61215-1:	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1: Test requirements
IEC 61215-1-1:2021	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1-1: Special requirements for testing of crystalline silicon photovoltaic (PV) modules
IEC 61215-2:2021	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 2: Test procedures
IEC 61730 – 1 -2016	Photovoltaic (PV) module safety qualification – Part 1: Requirements for construction
IEC 61730 – 2 -2016	Photovoltaic (PV) module safety qualification – Part 2: Requirements for Testing
IEC 61701 – Edition 2.0 2011-12	Salt mist corrosion testing of photovoltaic (PV) modules
IEC 62804 – 1: 2015	Photovoltaic (PV) modules - Test methods for the detection of potential-induced degradation - Part 1: Crystalline silicon

- h) **Junction Box:** Junction box at the back glass of the module should be weatherproof, dust proof and designed to be used with standard wiring or conduit connection. Additionally, cables coming out of the junction box shall be suitably sealed providing complete electric isolation. In case the junction box houses diode, the junction box shall be of IP 67 or better.
- i) **Documentation:** Factory test reports/ flash reports of Electrical characteristics, namely current voltage (I-V) curves of supplied modules to be provided as per serial no. Also, Current Voltage (I-V) & power-voltage (P-V) performance curves at standard temperatures and irradiance to be provided. Factory test reports/flash reports would

be provided in paper and soft format(digital). Also, I-V Curve Report (in hard copy) of individual Solar Module should be pasted at the back sheet of every module. Pasting of the I-V Curve report should be such that it should remain intact till the modules are installed at the sight.

### **3.7. Control and Auxiliary Systems**

Control and auxiliary systems shall consist of drive control, power converters Battery charging controllers, control system for Fans, valves compressors etc Ambient temperature considered: -20°C to 50°C, Humidity: 95 % Non-condensing

- a) The control devices shall be housed in enclosure. The Protection of Enclosure: shall be IP-20(Minimum) for indoor: IP-65 (Minimum) for outdoor.
- b) No-load losses: Less than 2% of rated power

### **3.8. Monitoring and alarms local to the cold storage including Mobile Application.**

- a) Local monitoring shall include the running/ fault/ not running status of all devices.
- b) Temperature and humidity meters and set point adjustments
- c) Fault alarms for important conditions thru lamps and common audible alarm
- d) Automatic changeover to Grid power / Diesel generator when backup power is available, and the thermal storage system is not charged.
- e)

### **3.9. Remote monitoring & Controlling**

- a. Remote Mobile Android app-based application along with handset for remote alarm monitoring and control unit shall be provided. Monitoring shall include- room temperature, room humidity, ambient temperature, Solar Radiation, compressor power consumption, Charge level of thermal storage, whether the door is open or closed. It shall preferably have features of Predictive maintenance. These data including alarm and set point shall be logged with time stamp and stored for a period of minimum one year for future use and reference.
- b. The alarms shall include system and equipment faults, temperature and Humidity Low/ High than set value Refrigerant leak detection etc.
- c. The monitoring would be done at an interval of not more than 2 minutes.
- d. It shall also have Commodity-specific, picture-based set point control, Post-Harvest Management Training, and consulting.
- e. The cold Storage/ Cold room should have remote controlling facility of room temperature and room humidity
- f. The cold Storage/ Cold room should have a remote monitoring facility through internet/Bluetooth to monitor various aspects including but not limited to the following:
  - i. Room temperature, room humidity
  - ii. Ambient temperature, ambient humidity
  - iii. Compressor power consumption
  - iv. Status of door (open or closed)

- v. Power generated by PV panels
- vi. Fault monitoring system

#### **4. Acceptance Test for the Solar PV Cold Storage System**

The Acceptance test shall be conducted at site and witnessed by Employer's representative. Based upon the result, representative deputed by country will accept the system.

During the acceptance test Bidder shall demonstrate the adequacy of sizing of all major components like PV modules, refrigeration capacity, thermal storage, battery storage. The sizing shall be adequate to meet the performance requirement of the cold storage system as specified.

The Bidder will be responsible to conduct the Acceptance test only after achieving the physical completion. If failed to achieve the performance as per specifications, the Bidder will at its own cost rectify all the defects identified during the test and take necessary steps/efforts to pass the test within the stipulated time span.

Acceptance procedure shall be in line with relevant international standards. **The Bidder shall furnish acceptance test procedure along with the bid and the same shall be finalised during detailed engineering**

#### **5. Spare Parts**

**Mandatory Spares:** The bidder shall necessarily provide the mandatory spares as part of the equipment supply. The list of such spares is as under:

<b><u>S.No.</u></b>	<b><u>Item</u></b>	<b><u>Unit</u></b>	<b><u>Quantity</u></b>
1	Solar panel of each type	No.	1
2	DC cable of each type and rating as installed	Length	5%
3	Fuse of each type and rating used in system	Percentage	100%
4	Surge protection device of each type and rating used in the system	Percentage	100%

**Recommended Spares:** Bidder shall recommend and furnish details for essential spare parts required for at least 10 years after completion of warranty period. The bidder will provide the detailed specifications, supplier details and tentative cost for such future purchase. Employer, at its discretion, will purchase the spare as required for future operation.

#### **6. Inspection and Testing: -**

- a) The bidder shall provide Test certificates duly signed by an authorized person for scrutiny. PMC/ISA/Employer may go for sampling to cross check the test results. No equipment shall be delivered without prior written clearance from PMC.

#### **7. Tools and Tackles**

- 1. Detailed project execution program shall be submitted along with the offer.
- 2. The bidder shall be responsible for arranging tools / tackles e.g., hoists, ladders,

scaffoldings, basic tool set etc. successful installation and commissioning the complete system.

3. Special tools & tackles which may be required during erection, commissioning and testing of plant/equipment in contract shall be arranged by the bidder

## **8. Warranty**

1. The Bidder shall transfer the warranty/ guarantees of the equipment as such from the OEM/ supplier in the name of the Employer. e.g., PV module(s), electrochemical battery as per technical specifications
2. Any repaired, replaced or re-performed activity under the warranty period shall be the liability of Bidder without any charge. The Bidder must ensure that the goods supplied under the Contract are new, unused and of most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.
3. **Standard Warranty/Defect Liability period** for first year from the date of commissioning and handing over of the system to the employer shall be part of the equipment cost. The work done/ material supplied would be warranted for satisfactory operation and against any defect in design, engineering, material and workmanship of the plant and equipment supplied and work executed thereof as per scope of work.
4. **Extended warranty of two years** after completion of one year of standard warranty/defect liability period: The work done/ material supplied would be warranted for satisfactory operation and against any defect in design, engineering, material and workmanship of the plant and equipment supplied and work executed thereof as per scope of work.

Bidders if registered in the country other than the country where the project is to be implemented may tie-up with the local agencies in the country where the project is to be implemented to discharge the requirement of extended warranty of 2 years.

5. If during the warranty period any defect is found in the design, engineering, materials and workmanship of the Plant and Equipment supplied or of the work executed by the Bidder, the Bidder shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Bidder shall, at its discretion, determine) such defect as well as any damage to the Facilities caused by such defect.
6. **The eligible Bidder shall ensure that the system can be made functional within ten days from the communication in writing/email of breakdown of the system during the warrantee period.** If the Bidder is not able to address the issue within the timeframe due to reasons attributable to Bidder, damages and not as penalty shall be recovered at USD 50 for each day of delay per incident. The Bidder will maintain adequate spares with its authorized representative/sub-contractor/local service



partner to restore the system in stipulated time as mentioned above. The names and contact details of officials of Bidder should be mentioned at the appropriate location at the installation site, preferably at the front portion of the PCU.

7. Bidder shall provide details of its organizational set up for discharge of warranty/extended warranty

## **9. Training**

1. Bidder would provide online training to the technicians before supply of equipment for proper storage, handling and erection and commissioning activities and offline training on the various aspects of design, operation, and maintenance of the system at the time of commissioning.
2. The training shall be provided to around (10-15) members using the interpretation services of a translator in **English Language**.
3. Bidder must do post-harvest management training session for the end beneficiary and usage of mobile based app to the cold storage operators maximize the value out of the project at site in **English Language**.

## **10. Documentation**

Bidder must provide detailed Engineering Document with specification, schematic drawing, circuit drawing, cable routing plans and test results, Bill of Materials, manuals for all deliverable items, Operation, Maintenance & Safety Instruction Manual and other information about the project are submitted for the equipment in adequate number of soft and hard copies. Also, as-built drawings shall be provided showing any change that may have become necessary in drawings during the execution of the work i.e. corrections, adjustments & deviations etc. Minimum two hard copy in English language. Soft copies will also be provided in English.

## **11. Packing and Marking**

The Bidder shall be responsible for securely protecting and packing the plant & equipment as per prescribed standards in force to withstand the journey and ensuring safety of materials and also arrival of materials at destination in original condition and good for contemplated use. Packing case size & weight shall take into consideration the remoteness of the final destination of goods and absence of heavy material handling facilities at all points in transit. Packing lists of materials shall be provided in each package to facilitate checking up of the contents at the destination. Bidder shall take necessary insurances to ensure safe transit & consequential risks. All packing material is the property of the Employer.

## **12. Acceptance by Employer**

- 1) Installation & Commissioning as per technical specifications.
- 2) Rectifications of all defects/deficiencies/incomplete work noted during erection & commissioning and testing.
- 3) Completion of the Facilities have been achieved as per Technical Specifications

#### 4) Acceptance Test for Solar PV Cold Storage System

Following shall be completed in not more than 45 days of the commissioning

1. Documentation as mentioned above in technical specification is provided.
2. Inventory of recommended spares (if any) and mandatory spares at project Site are provided
3. List of punch points, duly signed, is provided.
4. Certificates of tests performed for various Works.
5. Material appropriation, Statement for the materials issued by the Employer, if applicable for the Work and list of surplus materials returned to the Employer's store duly supported by necessary documents.
6. Warranty certificates for each equipment are handed over to Employer' and 'Statutory approvals/ permits/ NOC are handed over to Employer'

### 13. Data sheets

Following information may be filled out in the data sheets by the Bidder,

#### 1. General

- a. Single Line diagram of the system: Yes/ No
- b. Write up explain functioning of the cold storage Provided: Yes/ No.
- c. Bidder shall provide details of its organizational set up for discharge of warranty/extended warranty

#### 2. Cold Room

- a. Operating Temperature and RH level
- b. Insulation used and thickness
- c. Inner dimension
- d. Outer dimension
- e. Door Detail
- f. Remote monitoring features and sample report of data logger

#### 3. Data sheet for Solar PV Modules

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Manufacturers name and address:
- c. Total solar PV array capacity kWp: -----
- d. Photovoltaic panels Type : Polycrystalline /Monocrystalline
- e. Coefficient of power for the module:-----
- f. Module efficiency: -----
- g. Fill Factor: -
- h. **Module Power Wp**
- i. Manufacturer's warranty for efficiency after 10 years/ after 25 years :

#### 4. Data sheet for Refrigeration unit

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Manufacturers name and address
- c. Type of Compressor
- d. Compressor protection
- e. Type of refrigerant used
- f. Temperature operating range in Degree C ,Max/Min
- g. Air flow

#### 5. Data sheet for Thermal Energy Storage system

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Type of Phase Change Material (PCM), temperature and latent energy
- c. Indication of available thermal storage capacity
- d. PCM encapsulation
- e. Mass of PCM
- f. Thermal Energy Storage in MJ

#### 6. Data sheet for auxiliary battery

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Manufacturers name and address

- c. Type of Battery
- d. Calculations for Battery sizing and details of the loads connected to battery provided: Yes/ No
- e. Total electrical energy storage capacity in Kilo Watt hour and Battery Voltage
- f. Capacity of individual cell in Volts and Ampere hours
- g. Battery Charging Rate
- h. Maximum discharge capacity of the battery.
- i. Temperature operating range of the battery in Degree C ,Max/Min

**7. Data sheet for Earthing and lightning protections**

- a. Details of Lightning arresters
- b. Details of earthing pit/s
- c. Single line diagram of lightning and earthing

**TECHNICAL SPECIFICATIONS FOR SUPPLY,  
INSTALLATION AND COMMISSIONING OF  
SOLAR PV BASED COLD STORAGE**

**IN**

**SUDAN**

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## 1. Scope for Work

- 1.1. Bidder shall provide one (1) number solar PV based cold storage system/plant & equipment and related services as per the technical specifications. This shall include design, engineering, manufacturing, fabrication, assembly, pre-shipment testing at manufacturer's works, proper packing for transportation, transportation along-with transit insurance, delivery at the plant site, unloading, storage, installation, interconnection with related equipment, calibration, testing, commissioning to a fully operational condition as covered under this specification.
- 1.2. Bidder shall also provide remote monitoring for the system, training of intended beneficiaries and discharge of guarantee & warranty as covered under this specification.
- 1.3. Bidder shall also provide all material, equipment and services which may not be specifically stated in the specifications but are required for completeness of the equipment/systems furnished by the Bidder and for meeting the intent and requirement of the project/specification. The work shall be consistent with the latest practices and shall be following all applicable international codes, standards, guidelines, and safety requirements in force on the date of award in the country.

## 2. Project Location

Project Location	Assunaytah, West kordofan Stat which is about (639) km from Khartoum capital of Sudan. The nearest port is Port Sudan
The geographical site coordinates	12°10'05.6"N 29°00'31.2"E
Site connectivity	There is no grid connectivity at site



*(Proposed Project Site)*



*Figure 6 (Distance from Capital City)*



### **3. General Requirements**

1. Though the cold storage will be an off-grid solution it should be capable of running on **415V three phase or 240V single phase grid power** or power from a DG set in the unforeseen event of prolonged cloudy period/outage of solar power. The Cold Storage should have the capability to shift to grid power if solar power is not sufficiently available or shift to diesel generator if solar power is not sufficient for operation and also grid power is not present. Such changeover shall be automatic or manual as per operator selection. Suitable contacts and status of grid power, DG set running shall be provided by the Bidder. The changeover shall be alarmed.
2. The entire cold storage system shall be electrically safe to use, without the danger of electrical shock. Adequate provision of protection from lightning and equipment earthing shall be done and protection shall be provided to detect faults like earthing/short-circuit and bring the system to a safe stage.
3. **Earthing and lightning protections:** The cold storage system shall be provided with lightning & overvoltage protection. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying the required number of Lightning Arrestors. Lightning protection shall be provided as per IEC 62305 /IS 2309 standard. The protection against induced high voltages shall be provided by the use of metal oxide varistors (MOVs) based surge protection device and suitable earthing such that induced transients find an alternate route to earth. In addition, the lightning arrester/masts shall also be earthed. Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at the same potential. Separate earthing shall be provided for Controller, refrigeration unit and SPV array. For safety purposes, it shall be ensured during installation that the earthing can take care of leakage current. **All the work including civil work related to Earthing and lightning protections shall be in the Bidder's scope.**
4. The electrical system shall conform to the local electricity acts, applicable codes and laws.
5. **Performance parameters of solar cold Storage/ Cold room shall be tested at the works and a report shall be submitted for approval before dispatch clearance. The verification procedure shall be finalized during the award of the contract.**
6. **Necessary tools & tackles shall be provided for erection and maintenance purposes.**
7. Solar Cold Storage to be put on Platform (if required) as per Design, Layout and Guidelines to be finalized during detailed engineering. **The Platform construction shall be not in the scope of the Bidder and shall be done by the Employer.**
8. Adequate nos. of Danger board and signage to be provided and installed at the time of erection and commissioning. Display boards of Dos and Don'ts to be provided.
9. All the components should have a nameplate with its capacity mentioned on it.
10. Provision for the display of contact details of officials responsible for O&M and any emergency should be made.
11. Bidder shall provide a single line diagram of the system and a detailed write up

- explaining the working of the system.
12. Bidder shall indicate expected life of the various components of the solar cold storage and details of manufacturer's warranty provided by the component/ part supplier. The major components shall include:
    - i. Solar PV Panels
    - ii. Solar PV controller
    - iii. Cold storage operation controller.
    - iv. Refrigeration unit
    - v. Electrochemical battery
    - vi. Thermal storage / Phase change material unit
  13. **Water supply during erection and commissioning shall be provided by the Employer from the nearest source. The Bidder shall make the necessary arrangement for using the water for its erection and commissioning activities.**
  14. **Cleaning of Solar PV Modules in Employer's scope.**
  15. **Power supply required during erection and commissioning shall be provided by the Employer using the existing DG set/grid power. Bidder shall make necessary arrangement for using the power for its erection and commissioning activities.**
  16. Liaison with the concerned statutory authorities in the country, as applicable for all the Project related approvals shall be the responsibility of the Employer. The Bidder shall provide all inputs, information and documents for the same.
  17. Security, safety, watch, and ward of all materials at sites shall be the responsibility of the Employer. Safety management to be strictly complied with by the Bidder/Bidder throughout implementation activity.
  18. All local labour, employment, and other issues shall be handled independently by the Bidder.
  19. Bidder shall propose all the equipment of the system as per the standard range of the manufacturer. In case the standard manufacturing rating is less than the required rating as per the specification, the Bidder shall offer higher rated equipment in manufacture standard range at no extra cost to the Employer. Equipment over rating of a manufacturer standard rating through project specific modifications will normally will not be acceptable.
  20. Bidders may visit site before bidding for better understanding the site conditions.

#### **4. Functional requirements**

The cold storage/ system shall work on the principle of thermal energy storage system using phase change material for providing the cooling function of farm produce during non-sun hours or during the time when solar energy is not sufficient to run the refrigeration system. The electro-mechanical battery shall be used for functions of extracting thermal energy for cooling and powering auxiliary loads.

#### 4.1. System sizing criteria

- a) All the components of the system (Viz. Solar panels, refrigeration equipment, thermal storage, battery etc.) shall be adequately sized to meet the performance requirement as given in the specification. However, the equipment sizing shall not be less than the minimum size as given in the specification. It shall be the Bidders' responsibility to size the individual equipment and the whole system and meet the performance requirement. Bidder shall furnish the sizing for all the equipment meeting the specification requirement.
- b) **The design ambient temperature for cold storage system shall be considered as 45-degree C.** The design ambient relative humidity condition shall be considered as varying from 10% to 90%
- c) The cold storage equipment/ system design sizing shall have a minimum storage capacity of 5 MT and shall be adequate for storing 5000 Kgs of potatoes or farm produce equivalent in terms of specific heat and respiration rate.
- d) The cold storage gate opening shall be considered on an average as 5 minutes every hour.
- e) The refrigeration system shall be able to pre-cool or pull down the temperature of the farm commodity like potatoes from **30°C to 5°C in 6 hours for a minimum one batch of 500 Kg and maintain the temperature for a batch of 5000 Kg at a temperature of 4 Degree C** and simultaneously charge the thermal storage system and auxiliary batteries fully. However, The Condensing units of the refrigeration unit would be of **Minimum 2.0TR at -5°C evaporating and 50°C mean condensing temperature ambient with an Energy Efficiency ratio(EER ) of not less than 2.2.**
- f) During non-sun hours and for the period without any PV or external electrical energy support, the thermal storage of the cold storage/system shall be of adequate size to maintain the **temperature at 4 degree C for 5000 Kg potatoes and simultaneously precool one batch of 500 Kgs from 35 degree C to 7 degree C in 6 hours for a period of at least 24 hours on a typical day having 40°C peak ambient temperature. However, the thermal storage capacity should be in the range of 75 – 120 MJ**
- g) The system would have a battery of adequate capacity for operation of system auxiliaries during non-sun hours and for the period without any PV or external electrical energy support. Battery capacity shall also have provision for energising 100-watt load for up to 10 hours (during the non-sun period) to connect electrical devices like Lamps and fans external to the cold storage of battery shall be provided. However, the energy storage capacity of battery shall not be less than 3000 Wh.
- h) Adequate number of solar PV modules shall be provided for the refrigeration system and the auxiliary battery. The solar array can be common/combined or separate for the refrigeration system and for charging the battery. The arrangement shall be as per proven practice of the Bidder. The total solar PV array

capacity shall be adequate to run the refrigeration system, fully charge thermal energy storage system and fully charge the battery as per equipment energy requirement as specified. The solar PV panels size shall be in accordance with the site solar irradiation and required energy during the day. **However, the total solar PV array capacity would not be less than 5.0 kWp**

- i) The voltage levels of Battery, solar panels, refrigeration system, auxiliary devices like fans and controllers etc. shall be as per Bidder's system standard design and the same shall be furnished during the bid.
- j) The cold storage farm produce storage area/ cold room would be designed to maintain the desired temperature of the produce in uniform manner in the range of 4-10°C and relative humidity in the range of 65% - 95%, operator adjustable in steps of +/-1°C temperature tolerance
- k) The system shall have provision for adjusting temperature and relative humidity levels for the pre-cooling and storage temperatures as suitable for different farm produce having different heat respiration rates, relative humidity levels and storage temperature requirements. Bidder shall provide settings and requirements for precooling and storage conditions for generally available farm produce in the country. Temperature and Humidity level in the cold storage shall be suitably displayed.
- l) The system design shall ensure that there is no vapor condensation on the stored produce and the stored commodity does not get spoiled due to vapor condensation.

#### **4.2. Refrigeration system**

- a) Refrigeration System shall have Variable Speed Compressor with battery-less operation.
- b) Refrigerant shall be environmentally compliant and of Internationally acceptable standard (e.g. R290/R404a/R134a/407f) or as compatible with Montreal/ Kigali Agreement

#### **4.3. Thermal storage System**

- a) Thermal storage medium shall be conditioned Water or phase change material. The cooling shall be convection based.
- b) Thermal storage capacity indication must be Linear with minimum 10 graduations between maximum and minimum cooling storage capacity.
- c) The Cooling unit and allied components should be an integral part of the system to ensure higher system efficiency and better cooling mechanism.
- d) To ensure that overall system design should deliver cooling as expected with higher efficiency, system should be designed for direct cooling mechanisms

#### 4.4. Auxiliary Battery

- a) The battery shall be Lithium Ferro Phosphate LiFePO<sub>4</sub> type. However, if Bidder proposes any other type of battery, it shall be subject to **Employer/PMC approval**
- b) Battery shall be warranted for minimum 5 years.
- c) The battery shall operate trouble free with operation temperature ranging from minus 5 to 60-degree C.
- d) The Cell and Battery should conform to latest IEC 62133-2012 or BIS specifications and should have been certified with NABL/IEC accredited test center/ laboratory as per IEC/ BIS standard IEC 62133, IEC 61960 & UL1642: Safety of LiFePo<sub>4</sub> battery.

#### 4.5. Cold Storage / Cold Room

- a) The minimum external dimension of the cold room should be approximately 4.5M x 2M x 2M, The cold storage should be able to hold at least 5000 kgs of potatoes or any other farm commodity equivalent to potatoes and with a provision to hold at least 250 numbers of standard 20 kg crates (approximate dimension 550mmX350mmX300mm). However, the crates for storage are excluded from the scope of supply of Bidder. The same shall be procured by country. Bidder shall provide his recommendations.
- b) Temperature set point allowable tolerance limit +/- 1 °C and Temperature variation allowable tolerance limit at any point in the room post pre-cooling +/- 1 °C without door openings
- c) Self-leakage from thermal storage shall not be more than 100 Watt at 40 °C ambient
- d) The solar panels would be mounted on the roof top of the cold storage unit.
- e) The refrigeration unit (Compressor and condensing unit), thermal storage unit, Power unit and Control unit for fans, valves, compressor would be designed in a manner to be an integral unit of the cold storage system.
- f) The cold storage along with refrigeration unit would be portable for relocation with adequate provision for loading, unloading, transportation.
- g) Galvanized iron based self-supporting mounting structure shall be provided for solar panels mounting on the cold room. Mounting structure shall be of sufficient strength to withstand maximum wind velocity of 150 km/hr.
- h) The entire unit shall be designed to ensure ease of installation and suitable for operation in a "plug and Play "mode.

- i) Insulation of cold room shall be minimum 100 mm thick Polyurethane Foam (PUF). Panels enclosed with 0.5 mm thick PPGI sheet or equivalent insulation
- j) Lockable, Heavy Duty door along with PVC curtain before the door shall be provided.
- k) There would be a Name Plate fixed on the back side of Solar PV module which will have following minimum details: Name of the Manufacturer or Distinctive Logo, rated capacity, Model Number, Serial Number, Year of manufacture etc.

#### 4.6. Solar PV Module

The Solar PV module comprises of PV cell(s) connected in any combination to achieve the required module power output. PV cells directly produces DC power on receipt of solar irradiation. The technical details of Solar PV Modules shall be as given below:

- a) The total solar PV array capacity would not be less than **5 KWp**
- b) The capacity of each of the solar module shall not be less than 300 Wp and no negative tolerance from quoted power rating on solar module shall be allowed in any strings of the inverter. The module would be PID resistant.
- c) The temperature coefficient of power for the module would be better than -0.45% per° C
- d) Module should have visual distinct identification mark based on the measured output in a band of maximum 5 Wp. The glass used for making module shall be 3.2 mm thickness for module up to 72 cell configurations. Each string shall have identical Wp rating Solar PV modules.
- e) Each PV module used must have a Radio Frequency Identification Tag (RFID) capable of withstanding harsh environmental conditions carrying technical details of the Module, but not less than in following manner;
  - i. Name of the manufacturer of the PV module and Solar cells, month, and year of manufacture (separately for solar cells and modules) and Country of origin (separately for solar cells and modules)
  - ii. IV curve of module, Wattage, Im, Vm, Voc, Isc of the module
  - iii. Unique Serial No and Model No of the module
  - iv. Name of the test lab issuing IEC certificate
  - v. Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001
- f) Solar PV modules used in plant(s)/ system(s) must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. Warranty certificate mentioning output peak watt capacity shall be duly submitted by the Bidder.

- g) The PV modules would comply with the following Codes/Standard (or other Code/Standard, if proven equivalent) as a minimum.

<u>Codes</u>	<u>Description</u>
IEC 61215-1:	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1: Test requirements
IEC 61215-1-1:2021	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1-1: Special requirements for testing of crystalline silicon photovoltaic (PV) modules
IEC 61215-2:2021	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 2: Test procedures
IEC 61730 – 1 -2016	Photovoltaic (PV) module safety qualification – Part 1: Requirements for construction
IEC 61730 – 2 -2016	Photovoltaic (PV) module safety qualification – Part 2: Requirements for Testing
IEC 61701 – Edition 2.0 2011-12	Salt mist corrosion testing of photovoltaic (PV) modules
IEC 62804 – 1: 2015	Photovoltaic (PV) modules - Test methods for the detection of potential-induced degradation - Part 1: Crystalline silicon

- h) **Junction Box:** Junction box at the back glass of the module should be weatherproof, dust proof and designed to be used with standard wiring or conduit connection. Additionally, cables coming out of the junction box shall be suitably sealed providing complete electric isolation. In case the junction box houses diode, the junction box shall be of IP 67 or better.
- i) **Documentation:** Factory test reports/ flash reports of Electrical characteristics, namely current voltage (I-V) curves of supplied modules to be provided as per serial no. Also, Current Voltage (I-V) & power-voltage (P-V) performance curves at standard temperatures and irradiance to be provided. Factory test reports/flash reports would be provided in paper and soft format(digital). Also, I-V Curve Report (in hard copy) of individual Solar Module should be pasted at the back sheet of every module. Pasting of the I-V Curve report should be such that it should remain intact till the modules are installed at the sight.

#### 4.7. Control and Auxiliary Systems

Control and auxiliary systems shall consist of drive control, power converters Battery charging controllers, control system for Fans, valves compressors etc Ambient temperature considered: -20°C to 50°C, Humidity: 95 % Non-condensing

- a) The control devices shall be housed in enclosure. The Protection of Enclosure: shall be IP-20(Minimum) for indoor: IP-65 (Minimum) for outdoor.

- b) No-load losses: Less than 2% of rated power

#### **4.8. Monitoring and alarms local to the cold storage including Mobile Application.**

- a) Local monitoring shall include the running/ fault/ not running status of all devices.
- b) Temperature and humidity meters and set point adjustments
- c) Fault alarms for important conditions thru lamps and common audible alarm
- d) Operator selection for changeover to Grid power / Diesel generator

#### **4.9. Remote monitoring & Controlling**

- a. Remote Mobile Android app-based application along with handset for remote alarm monitoring and control unit shall be provided. Monitoring shall include-room temperature, room humidity, ambient temperature, ambient humidity, Solar Radiation, compressor power consumption, Charge level of thermal storage, whether the door is open or closed. It shall preferably have features of Predictive maintenance. These data including alarm and set point shall be logged with time stamp and stored for a period of minimum one year for future use and reference.
- b. The alarms shall include system and equipment faults, temperature and Humidity Low/ High than set value Refrigerant leak detection etc.
- c. The monitoring would be done at an interval of not more than 2 minutes.
- d. It shall also have Commodity-specific, picture-based set point control, Post-Harvest Management Training, and consulting.
- e. The cold Storage/ Cold room should have remote controlling facility of room temperature and room humidity
- f. The cold Storage/ Cold room should have a remote monitoring facility through internet/Bluetooth to monitor various aspects including but not limited to the following:
  - i. Room temperature, room humidity
  - ii. Ambient temperature, ambient humidity
  - iii. Compressor power consumption
  - iv. Status of door (open or closed)
  - v. Power generated by PV panels
  - vi. Fault monitoring system

### **5. Acceptance Test for the Roof top Solar PV System**

The Acceptance test shall be conducted at site and witnessed by Employer's representative. Based upon the result, representative deputed by country will accept the system.

During the acceptance test Bidder shall demonstrate the adequacy of sizing of all major components like PV modules, refrigeration capacity, thermal storage, battery storage. The sizing shall be adequate to meet the performance requirement of the cold storage system as specified.



The Bidder will be responsible to conduct the Acceptance test only after achieving the physical completion. If failed to achieve the guaranteed performance levels, the Bidder will at its own cost rectify all the defects identified during the test and take necessary steps/efforts to pass the test within the stipulated time span.

Acceptance procedure shall be in line with relevant international standards. **The Bidder shall furnish acceptance test procedure along with the bid and the same shall be finalised during detailed engineering**

## 6. Spare Parts

**Mandatory Spares:** The bidder shall necessarily provide the mandatory spares as part of the equipment supply. The list of such spares is as under:

<u>S.No.</u>	<u>Item</u>	<u>Unit</u>	<u>Quantity</u>
1	Solar panel of each type	No.	1
2	DC cable of each type and rating as installed	Length	5%
3	Fuse of each type and rating used in system	Percentage	100%
4	Surge protection device of each type and rating used in the system	Percentage	100%

**Recommended Spares:** Bidder shall recommend and furnish details for essential spare parts required for at least 10 years after completion of warranty period. The bidder will provide the detailed specifications, supplier details and tentative cost for such future purchase. Employer, at its discretion, will purchase the spare as required for future operation.

## 7. Inspection and Testing: -

- a) The bidder shall provide Test certificates duly signed by an authorized person shall be submitted for scrutiny. PMC/ISA/Employer may go for sampling to cross check the test results. **No equipment shall be delivered without prior written clearance from PMC.**

## 8. Tools and Tackles

1. Detailed project execution program shall be submitted along with the offer.
2. The bidder shall be responsible for arranging tools / tackles e.g., hoists, ladders, scaffoldings, basic tool set etc. successful installation and commissioning the complete system.
3. Special tools & tackles which may be required during erection, commissioning and testing of plant/equipment in contract shall be arranged by the bidder

## 9. Warranty

1. The Bidder shall transfer the warranty/ guarantees of the equipment as such from the OEM/ supplier in the name of the Employer. e.g., PV module(s), electrochemical battery as per technical specifications
2. Any repaired, replaced or re-performed activity under the warranty period shall be the liability of Bidder without any charge. The Bidder must ensure that the goods

supplied under the Contract are new, unused and of most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.

3. **Standard Warranty/Defect Liability period** for first year from the date of commissioning and handing over of the system to the employer shall be part of the equipment cost. The work done/ material supplied would be warranted for satisfactory operation and against any defect in design, engineering, material and workmanship of the plant and equipment supplied and work executed there of as per scope of work.
4. **Extended warranty of two years** after completion of one year of standard warranty/defect liability period: The work done/ material supplied would be warranted for satisfactory operation and against any defect in design, engineering, material and workmanship of the plant and equipment supplied and work executed thereof as per scope of work.

Bidders if registered in the country other than the country where the project is to be implemented may tie-up with the local agencies in the country where the project is to be implemented to discharge the requirement of extended warranty of 2 years

5. If during the warranty period any defect is found in the design, engineering, materials and workmanship of the Plant and Equipment supplied or of the work executed by the Bidder, the Bidder shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Bidder shall, at its discretion, determine) such defect as well as any damage to the Facilities caused by such defect.
6. **The eligible Bidder shall ensure that the system can be made functional within ten days from the communication in writing/email of breakdown of the system during the warrantee period.** If the Bidder is not able to address the issue within the timeframe due to reasons attributable to Bidder, damages and not as penalty shall be recovered at USD 50 for each day of delay per incident. The Bidder will maintain adequate spares with its authorized representative/sub-contractor/local service partner to restore the system in stipulated time as mentioned above. The names and contact details of officials of Bidder should be mentioned at the appropriate location at the installation site, preferably at the front portion of the PCU.
7. Bidder shall provide details of its organizational set up for discharge of warranty/extended warranty

## **10.Training**

1. Bidder would provide online training to the technicians before supply of equipment for proper storage, handling and erection and commissioning activities and offline training on the various aspects of design, operation, and maintenance of the system at the time of commissioning.

2. The training shall be provided to around 10-15 members using the interpretation services of a translator in Arabic Language.
3. Bidder must do post-harvest management training session for the end beneficiary and usage of mobile based app to the cold storage operators maximize the value out of the project at site in Arabic/English Language.

## **8. Documentation**

Bidder must provide detailed Engineering Document with specification, schematic drawing, circuit drawing, cable routing plans and test results, Bill of Materials, manuals for all deliverable items, Operation, Maintenance & Safety Instruction Manual and other information about the project are submitted for the equipment in adequate number of soft and hard copies. Also, as-built drawings shall be provided showing any change that may have become necessary in drawings during the execution of the work i.e corrections, adjustments & deviations etc. Minimum one hard copy in English language and two hard copies in Arabic shall be provided. Soft copies will also be in English and Arabic.

## **9. Packing and Marking**

The Bidder shall be responsible for securely protecting and packing the plant & equipment as per prescribed standards in force to withstand the journey and ensuring safety of materials and also arrival of materials at destination in original condition and good for contemplated use. Packing case size & weight shall take into consideration the remoteness of the final destination of goods and absence of heavy material handling facilities at all points in transit. Packing lists of materials shall be provided in each package to facilitate checking up of the contents at the destination. Bidder shall take necessary insurances to ensure safe transit & consequential risks. All packing material is the property of the Employer.

## **10. Acceptance by Employer**

- 1) Installation & Commissioning as per technical specifications.
- 2) The Plant Performance Guarantee in accordance with the procedure specified in "Technical Specifications" has been successfully completed and the Functional Guarantees are met.
- 3) Rectifications of all defects/deficiencies/incomplete work noted during erection & commissioning and testing.
- 4) Completion of the Facilities have been achieved as per Technical Specifications

Following shall be completed in not more than 45 days of the commissioning

1. Documentation as mentioned above in technical specification is provided.
2. Inventory of recommended spares (if any) and mandatory spares at project Site are provided
3. List of punch points, duly signed, is provided.
4. Certificates of tests performed for various Works.

5. Material appropriation, Statement for the materials issued by the Employer, if applicable for the Work and list of surplus materials returned to the Employer's store duly supported by necessary documents.
6. Warranty certificates for each equipment are handed over to Employer' and 'Statutory approvals/ permits/ NOC are handed over to Employer'

## 11. Data sheets

Following information may be filled out in the data sheets by the Bidder,

### 1. General

- a. Single Line diagram of the system: Yes/ No
- b. Write up explain functioning of the cold storage Provided: Yes/ No.
- c. Bidder shall provide details of its organizational set up for discharge of warranty/extended warranty.

### 2. Cold Room

- a. Operating Temperature and RH level
- b. Insulation used and thickness
- c. Inner dimension
- d. Outer dimension
- e. Door Detail
- f. Remote monitoring features and sample report of data logger

### 3. Data sheet for Solar PV Modules

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Manufacturers name and address:
- c. Total solar PV array capacity kWp: -----
- d. Photovoltaic panels Type : Polycrystalline /Monocrystalline
- e. Coefficient of power for the module:-----
- f. Module efficiency: -----
- g. Fill Factor: -
- h. **Module Power Wp**
- i. Manufacturer's warranty for efficiency after 10 years/ after 25 years :

### 4. Data sheet for Refrigeration unit

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Manufacturers name and address
- c. Type of Compressor
- d. Compressor protection
- e. Type of refrigerant used
- f. Temperature operating range in Degree C ,Max/Min
- g. **Air flow**

### 5. Data sheet for Thermal Energy Storage system

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Type of Phase Change Material (PCM), temperature and latent energy
- c. Indication of available thermal storage capacity
- d. PCM encapsulation
- e. Mass of PCM
- f. Thermal Energy Storage in MJ

### 6. Data sheet for auxiliary battery

- a. Technical data sheet and catalogue provided at: Page No./ section :-----
- b. Manufacturers name and address

- c. Type of Battery
- d. Calculations for Battery sizing and details of the loads connected to battery provided: Yes/ No
- e. Total electrical energy storage capacity in Kilo Watt hour and Battery Voltage
- f. Capacity of individual cell in Volts and Ampere hours
- g. Battery Charging Rate
- h. Maximum discharge capacity of the battery.
- i. Temperature operating range of the battery in Degree C ,Max/Min

**7. Data sheet for Earthing and lightning protections**

- a. Details of Lightning arresters
- b. Details of earthing pit/s
- c. Single line diagram of lightning and earthing