

ESP-001- 2A Rev.00		PROJECT ENGINEERING & SYSTEMS DIVISION TECHNICAL SPECIFICATION FOR WBFPS-ONGC URAN			Std. / Doc. Number	
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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company.	<u>PURCHASE SPECIFICATION</u> <u>FOR</u> <u>SUPPLY OF WATER BASED FIRE PROTECTION EQUIPMENTS</u>			
	PROJECT : ADDITIONAL LEAN GAS COMPRESSOR AT EPRU UNIT URAN PLANT CUSTOMER : OIL AND NATURAL GAS CORPORATION LIMITED (ONGC), URAN PLANT			

Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	Date :
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CHECKLIST FOR BID SUBMISSION**DOCUMENTS TO BE SUBMITTED WITH THE BID:**

The bidder must submit the following documents along with their bid.

- a) Un-priced copy of price format indicating quoted/ not quoted against each line item.
- b) Signed copy of the Technical Specification.
- c) Checklist
- d) No Deviation certificate

BHEL's decision will be final in case vendor fails to submit above documents.



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1. INTENT OF SPECIFICATION:

- 1.1. The intent of this document is to establish the minimum requirement of Supply including selection, manufacture, assembly, inspection, shop testing, shop painting, packing, transportation and delivery at ONGC URAN site in proper condition and Supervision of Erection & Commissioning at site for Water Based Fire Protection system equipment, which form part of ONGC URAN LGC.

2. NOTES TO BIDDERS

- 2.1. This specification shall be read in conjunction with all its enclosures. In case of any discrepancy arising between this job specification & its enclosures, the same shall be brought to the notice of BHEL in pre-bid queries OR the most stringent of all shall be followed. It is the responsibility of bidder to read and understand the specification and the enclosures. Any queries on the specification shall be raised by bidders during pre-bid stage and clarifications may be sought from BHEL. If the queries on the specification are raised after pre-bid stage or during order execution stage, it shall be binding on the bidder to comply with the final decision made by the BHEL without any techno-commercial implications.
- 2.2. All materials supplied under this contract shall be new and unused. All equipment connected with the above systems shall be UL/FM/VDs/LPCB/ISI approved.
- 2.3. Bidder to confirm that the performance guarantee of the equipment shall be as per data meeting specification requirements and system requirement.
- 2.4. All erection hardware including structural steel, fittings, brackets, U clamps, nuts & bolts etc. that are required for the erection of Water Based FPS equipment (as per the scope of this bid) shall be included in the scope of bidder and the same shall be included in the base price.
- 2.5. The Bidder shall accept full responsibility for the completeness and for the faultless working of all the equipment and the Water Based FPS equipment system as a whole.
- 2.6. Bidder offer shall be strictly as per these specification requirements. Unsolicited or Alternate offers from the bidders will not be entertained.
- 2.7. Only calibrated instruments shall be used for testing of the equipment.
- 2.8. Bidder shall include all the accessories that are associated with the equipment mentioned in the scope of supply. If bidder feels that some variations are necessary in the scope of supply or otherwise, the same shall be brought out in the pre-bid queries – for which a prescribed format is enclosed in annexure-2. All the issues shall be resolved in the pre-bid stage only and no deviation is allowed in the contract.
- 2.9. The design information, specifications and drawings indicate the "Minimum" requirements and are intended to enable Bidders to ascertain the extent of the work involved. Bidders are expected to supplement the information included in this specification as required and submit a comprehensive bid.



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- 2.10. Bidder to refer to the Special Conditions of the contract (SCC) & General Conditions of the Contract (GCC) of tender specifications.

3. PROJECT DESCRIPTION

Presently EPR unit of ONGC uran plant has two electrical motor driven centrifugal type lean gas compressors (K-1503 A&B) in operation since 1980. Since ONGC is suffering with heavy production loss due to non-availability of spare compressors, ONGC intends to install additional electrical motor driven (Variable Frequency Drive) lean gas compressor in ERP unit. The project's main scope includes supply of new compressor and hooking up with existing facilities.

Project Details:-

Customer : - Oil and Natural Gas Corporation Limited (ONGC), Uran Plant, Uran

Plant/Project : - Additional Lean Gas Compressor at Uran

Location : - ONGC Uran Plant, Uran, Navi Mumbai

4. BIDDER'S SCOPE OF SUPPLY :

The supply for major equipment/items of Water Based Fire Protection System (WBFPS) of this project shall consists of the following:

4.1. Deluge Valve (Hydraulically Operated)

Deluge Valve (Hydraulically operated) and accessories as specified in Annexure-5 shall be in scope of bidder.

Sl. No.	Description	Quantity
1	Deluge Valve (Hydraulically Operated)-100NB.	01 Nos.

4.2. VOID

4.3. Alarm Valve (For Water Sprinkler System)

Alarm Valve (For Water Sprinkler system) with Trim Assembly as specified in Annexure-5 shall be in scope of bidder.

Sl. No.	Description	Quantity
1	Alarm Valve (for Water sprinkler system) with Trim assembly- 80NB	01 Nos.



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4.4. Tools and Tackles:

The Contractor shall supply with the equipment one complete set of special tools and tackle as required for the erection, assembly, dismantling & maintenance of the equipment. These special tools will also include special material handling equipment, jigs & fixtures for maintenance and calibration/readjustment, checking & measurement aids etc. A list of such tools & tackle shall be submitted by the Bidder along with the offer. Detailed description of each tools/tackle, its function along with the equipment/part for which it is meant for and the price of each tools/tackle shall also be indicated in the offer. These tools & tackle shall be separately packed and sent to site before the first unit commissioning. The Bidder shall also ensure that these tools are not used for erection purpose.

4.5. Supply of Spares:

4.5.1. Recommended Spares :

The Contractor shall provide a list of recommended spares giving unit prices and total prices for 2 years of normal operation of the plant for spares. This list shall take into consideration the mandatory spares specified elsewhere in the specification and should be a separate list.

Price of recommended spares will not be used for evaluation of the bids.

4.5.2. Start-up Commissioning Spares :

Start-up commissioning spares are those spares which may be required during the start-up and commissioning of the equipment/system. All spares used until the plant is handed over to the Owner shall come under this category. Said spares, properly marked, shall be supplied together with the main equipment and shall be used by the E&C Contractor, if needed, during erection & commissioning stage. All such spares which remain unused till issuance of Taking over Certificate by the Owner, along with an equipment-wise quantitative consumption report shall be returned to the Owner during time of handover. The start-up and commissioning spares shall be included in the price of main supply.

Bidder shall provide list of start-up and commissioning spares after the award of contract and the same shall be identified in Billing Break-Up.

4.5.3. Mandatory Spare Parts :

NOT APPLICABLE

~~List of Mandatory Spare applicable:~~

~~Bidder shall quote item wise prices and these are under evaluation.~~

~~Purchaser will have the option to procure any or all of the mandatory spares at his discretion.~~

4.5.4. ~~Bidder's Scope Of Services (Supervision of Erection & Commissioning):~~

~~Supervision of erection, commissioning performance testing till final handing over to end customer for the supplied equipment shall be included in bidder's scope of service.~~

~~Bidder to note that the supervision charges for erection & commissioning shall consists of the following:~~

- ~~a. Per day supervision charges of an Engineer including all other expenses like boarding, lodging, local travel, insurance etc.~~
- ~~b. Travel expenses (inclusive of any clearance charges like Visa fee etc, insurance) from / to vendor works to site.~~

~~Per diem charges shall be applicable from the day bidder's person reaches site, up to the day he leaves the site.~~



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~~For the purpose of tender a total no of 05 man days to be covered in 02 visits have been considered. However, either or both of the number of man days or no of visits may change on either side based on the actual site requirement.~~

~~All payments towards supervision of E&C shall be made only after BHEL site supervision.~~

~~Bidder to mobilize concerned competent person for supervision of Erection & commissioning activities within a period of 7 days of receipt of intimation in this regard by BHEL.~~

~~Bidder to quote supervision of erection and commissioning activities strictly as per BHEL's price format.~~

4.6. Documentation and Deliverables:

4.6.1. Engineering Documentation:

- a) General arrangement drawings of all equipment
- b) Datasheet of all equipment
- c) Instrument Hook-up drawing
- d) Submission and approvals of engineering documents as per the master documentation list given in Annexure-2
- e) O&M manuals
- f) Erection and commissioning procedure

4.6.2. Project Documentation:

- a) Billing Break-up
- b) QAP
- c) Inspection reports and test certificates as applicable
- d) Schedule of delivery
- e) Packing lists of each consignments
- f) Site storage instructions

NOTE:

Bidder to note that the above list is not exhaustive and any other service required as per the intent of this specification/project requirements/good engineering practice shall be deemed to be included in bidder's scope without any commercial implication to the purchaser.

5. EXCLUSIONS:

- i. Storage, preservation of Materials/Equipment at site (however detailed storage and preservation procedure shall be furnished by bidder)
- ii. All Erection and Commissioning
- iii. All civil works

6. GENERAL TECHNICAL DETAILS:

6.1. Applicable Codes & Standards

The codes and standards shall be applicable as mentioned in the datasheet.

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- 6.2. Latest edition of applicable codes/Standards/Statutory Regulations referred to in the Bid Document shall correspond to the edition as on the date of issue of bid.
- 6.3. All addenda including the latest addenda to all the above codes and standards (latest editions) shall be followed by the bidder.
- 6.4. All equipment/items supplied shall conform to the provisions of statutory & other regulations in force in India and the State/Province where the project is executed, such as the Indian Factories Act, Indian Electricity (Supply) Act, Indian Electricity Act, Indian Electricity Rules, International Electric Technical Commission (IEC) Publication, Environmental Rules, etc. Obtaining of all permission and approvals from statutory authorities for the installation of the plant and machinery, and to ensure that the purchaser /end customer does not face any problems in future on account of non-conformance with these regulations as indicated above, shall be the responsibility of the bidder. All the legal formalities including preparation of documents, furnishing clarifications, information etc. as and when required, for obtaining any of the permissions and approvals related to the Items/Equipments/Accessories being procured will have to be done by the bidder.
- 6.5. BHEL will not provide copies of any standards to bidders. It is the responsibility of bidder to arrange / refer to applicable latest standards.

7. SUB VENDOR LIST

- 7.1. The equipment shall be sourced from recommended Bidders (as specified in annexure-7).
- 7.2. Further, the supplied model shall be under regular manufacturing range and have Proven Track Record (PTR).
- ~~7.3. Packages vendors will not source any items from his sub vendors who are part of EIL HOLIDAY LIST OF VENDORS".~~
- 7.4. Bidder may propose additional sub vendors for items that have three vendors or less in the vendor list given in annexure-7. These proposed vendors shall have proven track record (validated with credentials) for the above items and subjected to BHEL / customer approval during post ordering of the package. Non-acceptance of any sub-vendor by BHEL / customer shall not have any commercial & delivery implication.
- 7.5. Bidder to comply with sub-vendor list enclosed with the specification. The sub-vendors for any item that is not appearing in the sub-vendor list (annexure-7) may be proposed for BHEL's approval. Non-acceptance of any sub-vendor by BHEL / customer shall not have any commercial & delivery implication. While submitting sub-vendors for approval of BHEL, bidder shall furnish following documents :

i. ISO certificate of Sub-vendors

ii. Proven track record & references for makes and models supplied earlier.

8. INSPECTION AND TESTING (Refer GCC, SCC)

- 8.1. Bidder shall maintain an effective Quality Assurance System, to ensure that all equipment and material supplied as a part of the Water Based FPS equipment meet required Quality standards and specifications.

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- 8.2. Bidder to follow the Quality plan for the equipment /items as attached as Annexure. After award of contract bidder shall submit Quality Plan for approval as per the attached format only (for equipment /items, where QAP are not attached). The quality plan shall be submitted in EIL/DCPL quality plan format.
- 8.3. Bidder to confirm that instruments required for performance testing of various Equipment / systems of the package shall be arranged by bidder at site without any cost Implication to BHEL.
- 8.4. The instruments and test kits required for pre-commissioning checks (for the equipment under scope of supply) shall be provided by bidder. Bidder can take these items back after the checks are performed at site. No additional cost shall be claimed for this purpose. The checks shall be performed with calibrated instruments only.
- 8.5. Bidder to confirm that all instruments for testing shall be calibrated before taking up testing.

9. DOCUMENTATION:

9.1. MASTER DOCUMENT LIST

~~Bidder shall ensure submission of all documentation as per Master Document List (Annexure 3) as attached in the purchase specification.~~

9.2. DRAWING APPROVAL / REVIEW CATEGORY:

- a) Following classes of review shall be followed for all the documents engineered by the bidder
- APPROVAL (A)
Approval is mandatory and bidder cannot proceed without obtaining Purchaser's approval (eg. Layouts, schemes etc.)
 - INFORMATION / RECORDS (I)
This type of documents shall be submitted to Purchaser for his information (eg. data sheets, GA drawings etc.)

Type of Code used as per BHEL for approval/comments of Documents:

Code-1 : No comments

Code-2 : Comments as marked cleared for manufacturing

Code-3 : Comments as marked but not cleared for manufacturing

Code-4 : Retained for information

9.3. DRAWINGS REVIEW AND APPROVALS

- a) Bidder to understand that efficient handling of drawings and documents to be prepared by him under the contract is the key to the timely completion of the Water Based FPS equipment. By accepting the contract the bidder undertakes to ensure that all drawings and documents to be submitted by him to the Purchaser/ End Customer shall be of professional quality and conforming to the contractual requirements.

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- b) Each drawing submitted by the bidder shall be clearly marked with the name of the Owner, the unit designation, the specifications, title, the specification number and the name of the Project with revision No. and date. If standards, catalogue pages are submitted the applicable items shall be indicated therein. All titles, noting, markings and writings on the drawings shall be in English.
- c) Approval/review of drawings do not obviate the bidder from in-correct/faulty design or manufacturing of equipment/materials. It is the sole responsibility of bidder to rectify the faulty or incorrect designs at any stage of contract.
- d) Review of drawings and documents issued by bidder shall be carried out by Purchaser /End customer.

Bidder shall furnish the first set of drawings/document within 30 days progressively. All revised drawings/documents after incorporating the comments shall be furnished within 14 days. BHEL shall furnish comments (if any) /approval on the documents within 14 days after the receipt of same.

9.4. Engineering Completion

- a) The Engineering shall be considered as completed after the following activities are finished:
- Final approval of all the Documents which are in 'Approval' Category as per Master Document List (MDL)
 - After successful review of drawings/documents which are in 'Information' Category as per Master Document List (MDL)
 - Submission of erection and commissioning procedures.
 - Submission of O&M manuals

9.5. Erection & Commissioning Documentation

- a) Erection and commissioning procedures
The erection manuals shall be submitted prior to the supply of materials to site. The erection manual should contain the following as a minimum.
- Erection strategy.
 - Sequence of erection.
 - Erection instructions and procedures
 - Safety procedures to be followed during erection/installation.
 - Pre-commissioning checks and tests.
 - Commissioning procedures

- b) Following may be noted wrt the drawing submission schedule:

SL NO.	DESCRIPTION	NUMBER OF COPIES TO BE SUBMITTED	WHEN TO SUBMIT
1.	Initial drawings / documents under approval and information	2	As per approved Master document list



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SL NO.	DESCRIPTION	NUMBER OF COPIES TO BE SUBMITTED	WHEN TO SUBMIT
	category.		
2.	Revised drawings / documents incorporating BHEL's comments.	2	Within 1 week of receipt of commented drawings from BHEL
3.	Final Drawings/ documents	11	Within 2 months of placement of order.
4.	Erection Drawings / documents	11	1 Month before dispatch of equipment, The list of documents identified under master document list for erection to be furnished in 5 nos. of folders.
5.	FINAL Erection / Installation Manual for distribution	7	
6.	As built Drawings / documents	7	
7.	Operation & Maintenance Manual	7	2 months before the delivery date of equipment
8.	Performance & functional Guarantee test reports	7	
9. 6	Type Test Certificate	2	Within one month after dispatch of equipment
10. 7	Commissioning & Performance Procedure Manual	3	Within one month after dispatch of equipment
11.	Commissioning & Performance Procedure Manual	2	

9.6. Document submission procedure

- a) Hard copies of all the documents shall be forwarded to the following address:

Name: (Name will be intimated during detail engineering)

Address: Bharat Heavy Electrical Limited



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New Engineering Building, Project Engineering and Systems Division

RC Puram, Hyderabad- 32

- b) A copy document submittal note shall be furnished to purchase dept. /BHEL.

9.7. Operation and Maintenance Manual

- a) Bidder shall prepare and submit draft maintenance manual to Purchaser for review at least three months prior to the mechanical completion.
- b) Final maintenance manual incorporating all comments shall be submitted by bidder within one month after issue of comments.
- c) O&M shall consist of the following as minimum:
- Operation and maintenance procedures of all equipment
 - Approved drawings/Datasheets
 - GA drawing and catalogue of all equipment
 - Quality plan
 - Test certificates
 - Installation procedure

10. PRICE BID FORMAT (Refer Annexure-1)

- 10.1. Supply of Water Based FPS equipment as envisaged in this bid document shall be executed by the bidder on UNIT RATE contract basis.
- 10.2. All the items included in the price bid format shall be quoted as per tender specification and pre-bid clarifications, if any. Responsibility of ensuring correctness & completeness of scope of supply as per specification requirement solely lies with bidder.
- 10.3. Prices quoted by the bidder shall remain firm till the successful handing over of the Water Based FPS equipment to end customer. Any request for upward revision of price during any intermediate stage before handing over the plant to end customer will be rejected by BHEL.
- 10.4. Bidder to refer to GCC & SCC for the applicable taxes and duties. Bidder to quote only base rates for all the items. Applicable taxes and duties shall be indicated separately.
- 10.5. **Bidder shall confirm that he has quoted all items by marking "Quoted" in the price bid and enclose the same in their technical offer. Price shall not be specified in the technical offer.**

11. BILLING BREAKUP METHODOLOGY:

- 11.1. The BBU shall be prepared only for the pro-rata billing purpose.
- 11.2. BBU will contain complete list of items required for the completion of the project as per specification and shall be dispatched by bidder irrespective of the items/quantities are indicated in the document or not.

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- 11.3. For any changes in quantity or items, the BBU shall suitably revised.
- 11.4. Wherever “SET” items are indicated, same shall be quantified in details in a separate annexure. Similarly all Accessories/ Instruments/ items are to be defined with comprehensive details.
- 11.5. In case any changes in items are envisaged at any stage of the contract, BBU shall be revised to reflect the same. However all these additional items shall be supplied as a ‘Zero Value Item’, without any additional commercial implication to BHEL. All the contractual stipulations/clauses shall be valid for these additional items also.

12. DEVIATIONS TO SPECIFICATIONS:

- 12.1. Any deviation or variation from the scope, requirement and/or intent of this specification shall be clearly defined under relevant attachment (refer Annexure - 2) of the Bid forms irrespective of the fact that such deviations/ variations may be standard practice or a possible interpretation of the specification by the Bidder. Except for those deviations/ variations covered as a part of pre bid clarification, it will be the responsibility of the bidder to fully meet the intent and the requirements of the specification within the quoted price. No other deviation whatsoever from this specification, except for the have been specifically agreed by purchaser as a part of pre-bid clarification shall be considered.
- 12.2. In case the bidder considers requirement of additional instrumentation, controls, safety devices and any other accessories/auxiliaries essential for safe and satisfactory operation of the equipment, he shall recommend the same along with reasons in a separate section as a part of pre-bid query to enable purchaser take a suitable decision on the requirement of the same.
- 12.3. Information like Bill of materials (BOM), Instrument list, datasheets, and typical specifications enclosed by the bidder as a part of their bid, shall be retained for information only and shall not be referred by contractor as contractual agreement. No implication shall be admissible on the basis of these documents during any stage of contract execution. System wise BOQ shall be finalized based on approved drawings during detail engineering stage.

13. MARKING , PACKING AND DESPATCH

13.1. MARKING

- All items shall be marked (stamped/etched) in accordance with the applicable code/standard/specification. In addition, the item code, if available, shall also be marked.
- For ease of identification, the color of painted strip (wherever required) shall be as per the applicable standard.
- Paint or ink for marking shall not contain any harmful metal or metal salts which can cause corrosive attack either ordinarily or in service. Special items/smaller items shall have attached corrosion resistant tag providing salient features.

13.2. DISPATCH

- All the equipment shall be divided into several sections for protection and ease of handling during transportation. The equipment shall be properly packed for transportation by ship/rail or trailer. The equipment shall be wrapped in polythene sheets before being placed in crates/cases to prevent damage to the finish. Crates/cases shall have skid bottom for handling.



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- ii. Special notations such as 'Fragile', 'This side up', 'Center of gravity', 'Weight', 'Owner's particulars', 'PO Nos.' etc. shall be clearly marked on the package together with other details as per purchaser order.
- iii. The equipment may be stored outdoors for long periods before installation. The packing shall be completely suitable for outdoor storage in areas with heavy rains/high ambient temperature, unless otherwise agreed.
- iv. A separate document indicating the details of all the items having shelf life shall be furnished. Prior permission from BHEL shall be taken before dispatch of any of the item having shelf life. Bidder to note that any eventual delay on account of this will not be attributable to them.

13.3. The following minimum packing procedures shall be followed :

- i. All items shall be protected from rust, corrosion, and mechanical damage during transportation, shipment and storage.
- ii. Rust preventive on machined surfaces to be welded shall not be harmful to welding and shall be easily removable with a petroleum solvent.
- iii. Each variety and size of item shall be supplied in separate packaging marked with the purchase order no., item code (if available), and the salient specifications.
- iv. All instrumentation items shall be properly packed to prevent damage during transit due to vibration, physical contact, moisture ingress, rainwater and pilferage.
- v. All the items which the Bidders considered liable to be damaged during shipment or storage, shall be packaged for separate shipment. If instruments are removed from the panel, they and their connection shall be suitably tagged to ensure simple re installation at the job site. Each instrument shall be sealed in plastic bags containing moisture absorbing desiccants.
- vi. It shall be bidder's sole responsibility to protect all the material during period of dispatch, storage and erection against corrosion, incidental damage due to vermin, sunlight, rain, high temperature, humid atmosphere, rough handling in transit and including delays in transit. Bidder shall be responsible for any damage to equipment/material due to above reasons.
- vii. Spare parts shall be packaged separately and clearly marked as 'Spare Parts'
- viii. Loose vendor items sent by Vendors to sites shall be quantified/numbered/tagged and not merely mentioned as ONE lot of loose items
- ix. Mandatory spares should be supplied separately with green colour painted box.
- x. A packing list covering items having shelf life are to be intimated to site. Also, shelf life items shall be packed separately in black color painted box for easy identification at site.

14. LIST OF ANNEXURES:

LIST OF ANNEXURES

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Sl. No	Drawings/Documents	Drg/Doc no
1.	PRICE BID FORMAT	ANNEXURE-1
2.	PRE BID QUERY FORMAT	ANNEXURE-2
3.	MANUFACTURING QUALITY PLAN FOR EQUIPMENT, GUIDELINES & FORMAT	ANNEXURE-3
4.	NO DEVIATION CERTIFICATE FORMAT	ANNEXURE-4
5.	DATASHEET OF FPS EQUIPMENT	ANNEXURE-5
6.	BHEL STANDARD FOR DOMESTIC PACKING PROCEDURE	ANNEXURE-6
7.	SUB-VENDOR LIST	ANNEXURE-7

Bidder to note that the above annexures are preliminary in nature .These drawings may get revised and /or new drawings will be furnished to bidder. Bidder to however note that they will not be eligible to raise any extra charges on account of this.

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09.02.2019	00	Original	--SD--	--SD--
09.02.2019	01	Revised	--AMT--	--KD--
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