

**Bhabha Atomic Research Centre**  
**Chemical Engineering & Technology Group**  
**Chemical Technology Division**

Ref: ChTD/PTS/AV/2089

Date:20/11/2018

**Tender enquiry**

Dear sir,

Quotations are invited for 'Design, fabrication, testing and delivery of recovery vessel as per the technical specification'

1. The quotations should be complete with all taxes, P & F charges, transportation, testing charges etc. and the other charges if any, with complete breakup.
2. The purchaser reserves the right to place a part of full order of items mentioned in the tender enquiry.
3. The parties shall give the details of their manufacturing capability for the item and facilities they have. These facilities shall be open to purchaser for evaluation before placement of order.
4. The entire component shall be delivered at CTD Stores, Trombay, Mumbai after receiving clearance of Inspection certificate from purchasers' representative.
5. If any of above details is not furnished in the quotation, such quotation is liable to be rejected
6. Rate(s) in the quotation shall be type written only and hand written rate shall not be considered.
7. Late /fax quotation will not be accepted
8. Quotation should indicate clearly the due date.
9. Quotation shall be properly sealed in the envelope. Open or stapled envelop shall not be accepted.
10. Quotation without PAN no & GST no shall not be accepted.
11. **Completion period:** 3 months from the date of receipt of work order. Failure on the part of the bidders by not adhering to delivery schedule will invite penalty.
12. **Guarantee:** Eighteen months (18 months) after the completion of delivery.
13. The quotations in the sealed envelope super scribed with the title of work, the above reference number and the stipulated due date must be dispatched **by speed post** to reach to Head, Process technology section. Chemical Technology Division by **17/12/2018** at 14.00 Hours.
14. The address on the envelope should read  
Head,  
Chemical Technology Division  
CEL-2, Bhabha Atomic Research Centre,  
Trombay, Mumbai - 400 085  
Attn: Anoop V, SO/E, PTS, ChTD
15. Head, Chemical Technology Division, BARC reserves the right to accept or reject any or all the quotations without assigning any reason thereof

sd/-

**Anoop V**  
**(SO/E,PTS,ChTD)**

Encl: Technical specification

## **Technical specification**

### **1 Scope of supply:**

- 1.1 The scope of supply is procurement of the raw materials, preparation of fabrication drawings. fabrication of process equipment detailed in enclosed 'sketch 1' as per approved QAP (quality assurance plan), inspection, testing, documentation, guarantee, forwarding, transportation, safe delivery at BARC, Trombay, Mumbai-400085 of recovery vessel.
- 1.2 Quantity: 1 set of recovery vessel
- 1.3 The equipment shall conform in all respect to high standards of engineering practices and be capable of performing trouble free operation with vendor's guarantee in a manner acceptable to the purchaser.
- 1.4 In the event of any conflict between or within the various sections of these specifications or in case of any doubt, vendor is supposed to get it clarified the same well before the quotation is submitted. In case the vendor fails, the interpretations of the purchaser shall be final and binding on both the parties.
- 1.5 The purchaser reserves the right to make minor changes in the vessels in such a way that, this change will not affect the functional strength of the equipment.
- 1.6 Party should submit the details of fabrication plan at the time of quotation. Details given shall be considered and verified at the time of offer evaluation.
- 1.7 MoC of all the items are SS 316L unless otherwise specified.

### **2 Material Testing**

- 2.1 All material tests, physical and chemical, shall be carried out in reputed govt. approved test laboratories , in case original traceable mill test certificates are not available. Tests will be witnessed by purchaser's representative. Supplier should intimate 15 days in advance for witnessing the material testing. Supplier must ensure that the material being used is new and conforms to relevant standard mentioned in this specification.

### **3 Recovery vessel**

Refer sketch 1 for details of recovery vessel.

- 3.1 Design pressure : 21 bar  
Design temperature : 40°C
- 3.2 Limpet coils made of 1'' dia tube shall be welded on the outer side of Recovery vessel. There should be minimum 21 turns of coil at a pitch of 35.4 mm.

- 3.3 PUF insulation of 150mm thickness and 48kg/m<sup>3</sup> is to be applied on the outer surface of RV with SS protective cladding.
- 3.4 Pressure testing of the vessel and coils will be carried out as per prevailing industry standards. (Mentioned test type & conditions)
- 3.5 The internal surface of the vessel should have good surface finish, since it is going to be used in oil applications.

#### **4 General notes**

- 4.1 All the valves and other fittings should be of reputed make and should come with all necessary certificates like material testing certificates, physical test certificates etc.
- 4.2 Supports of suitable rating and size: two vertical legs for Recovery vessel of ~1.2 M height shall be provided. Temporary supports shall be arranged by the party for inspection & testing at their works.
- 4.3 The party shall prepare the detailed fabrication drawings from the sketches (part of this specification) and submit it for approval by the purchaser before starting the fabrication in case of placement of purchase order.
- 4.4 Welding consumable electrodes shall be of standard make like Advani, L&T, D&H and ESAB only.
- 4.5 DM water shall be used for cleaning, hydro-test of the equipment. Equipment should be thoroughly cleaned after hydro test and dried with hot air.

#### **5 Inspection, testing and reports**

- 5.1 All the tests and inspections shall be carried out in conformation with the performance as specified in this document at supplier's works. No deviation shall be acceptable.
- 5.2 The party shall prepare inspection reports for each component after their inspection, in suitable format acceptable to the purchaser.
- 5.3 Party shall inform the purchaser for inspection after his internal inspection report is ready.
- 5.4 Purchaser or his representative shall be permitted free access to the party's or his subcontractor's premises at all reasonable times for the purpose of inspection at all stages of fabrication.
- 5.5 Chemical analysis of materials used for fabrication of items for at least eight elements e.g. C, Cr, Ni, Fe, Mn, S, N, Si is required.
- 5.6 Hydro and pneumatic tests will be conducted for the vessels at party's works and the party should make the arrangement for the same.
- 5.7 Mechanical test and IGC as per ASTM requirement.

- 5.8 Purchaser shall be at their liberty to specify additional inspection procedures, or change the one being used, to ascertain the conformance with the specification.
- 5.9 Purchaser or his representative shall be given full assistance in the form of tools, gauges, instruments, skilled manpower, etc. to facilitate inspection.

## **6. Guarantee:**

- 6.1 The vendor shall guarantee that the equipment and materials mentioned in the scope of supply are new and they conform to high quality such that the equipment and material are free from defects in material fabrication and workmanship as per the requirement of this technical specification for a period of **eighteen month** after the completion of all delivery or **twelve months** from the date of commissioning whichever is earlier. This guarantee shall strictly be in the form of performance bank guarantee.
- 6.2 If within the guarantee period stipulated above, the equipments and materials, mentioned in the scope of supply or any part of the same are found defective because of bad materials, improper fabrication or any deviation in the operation carried out from standard manufacturing practices(QAP) by the vendor in the scope of supply, then the vendor at his own expense either repair them preferably on the site or transport them to their workshop and repair/replace them and deliver back at site again. The decision of repair and replacement will be taken in consideration with the function, end use and life of that equipment.

## **7. Packaging:**

- 7.1 After obtaining written dispatch clearance from purchaser's representative, the equipments shall be delivered, safely, at BARC, Trombay, Mumbai, in good condition.
- 7.2 The items shall be properly packed to protect them from any damage during transit
- 7.3 Size of the package shall be convenient to handle.
- 7.4 Sound packing material of suitable size and weight of the contents shall be used.
- 7.5 All packages shall be clearly marked on with (a) destination, (b) Purchase order No. and date, (c) dimensions, (d) gross weight, (e) handling instructions if any, in block letters with water proof paint.

## **8. Delivery:**

- 8.1 The items after written clearance on inspection and acceptance by purchaser's representative shall be delivered to BARC, Trombay 400 085.
- 8.2 **Supplies to be completed within 3 months from the date of placement of the purchase order.**

In case the party is not able to meet the above delivery schedule, they may state in their quotation the delivery schedule that they would be able to adhere to realistically. Any departure from the accepted delivery schedule, after placement of the purchase order would be viewed very seriously and the same shall be treated as sufficient reason for cancelling the order at any stage without any liability to the purchaser.

## **9. Quotation**

The following information shall be furnished along with the quotation, but for which the offer is liable to be treated as incomplete and rejected.

### **9.1 Manufacturing facilities:**

Party shall mention, in their offer, the facilities available with them or their sub-contractor to execute the specified job. This is mandatory & must be submitted in the quotation.

### **9.2 Inspection facilities:**

Clearly state the inspection procedure to be followed and the inspection facility available.

### **9.3 Experience:**

Highlight the experience in fabrication of similar equipments. Submit details of past supply made to DAE or BARC & other companies with purchase order nos., clients name, address & telephone number, brief description of the job with sketch, and date of completion.

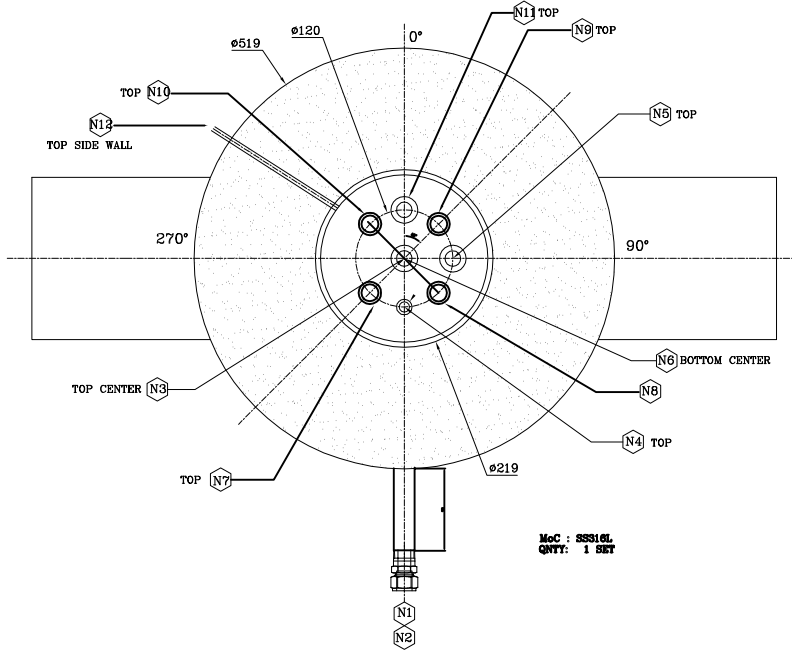
## **10. Documentation**

At the time of delivery following shall be submitted.

- i) As built drawing
- ii) Brochures & guarantee certificates of bought out components.
- iii) Inspection reports.
- iv) Quality compliance report.
- v) All above documents in scanned form in CD-2 Nos.

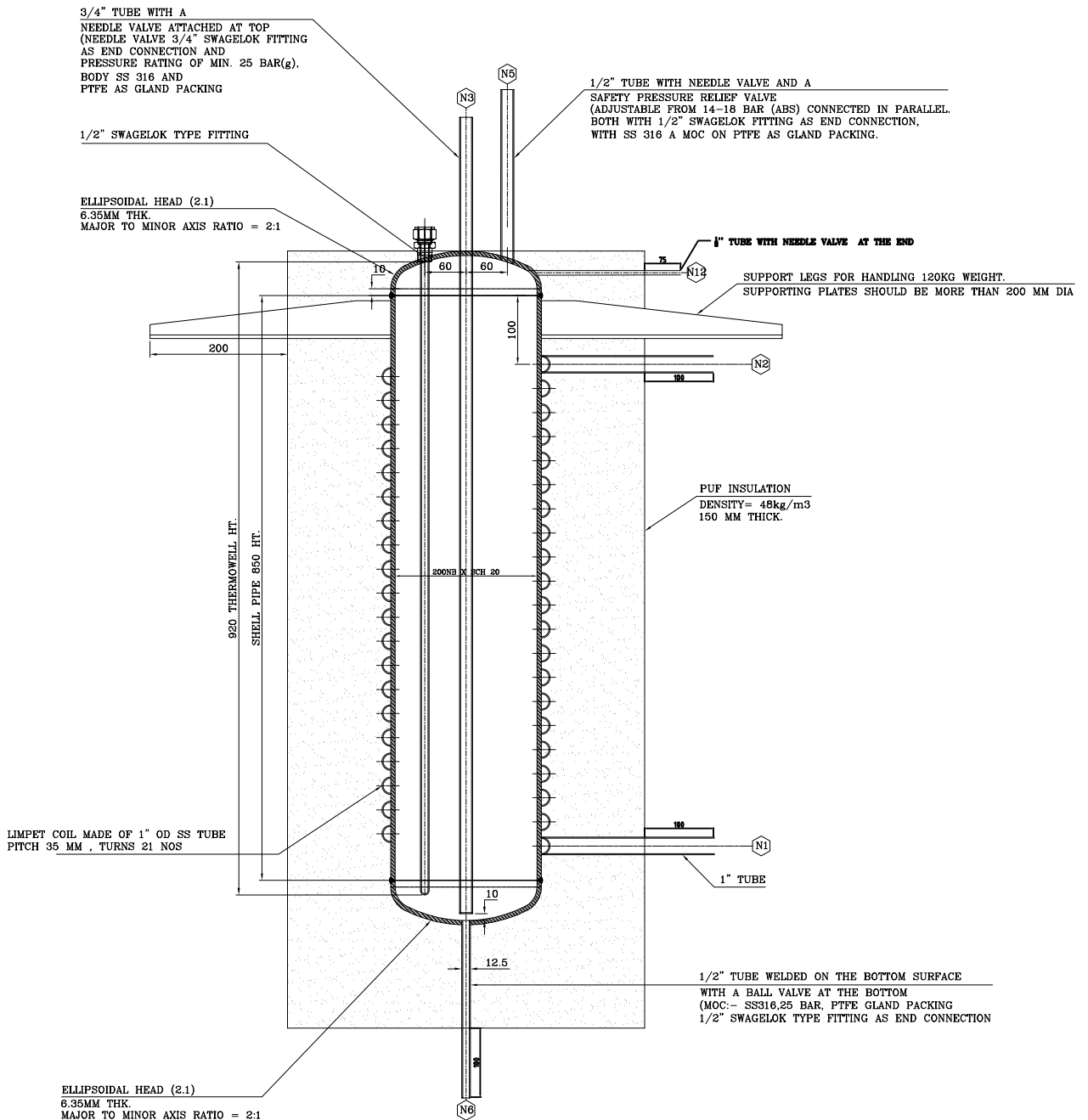
RECOVERY VESSEL

SKETCH 1



NO.	SIZE	SERVICE	END CONNECTION
12	N12 1/2"	TUBE WITH NEEDLE VALVE AT THE END	SWAGELOK FITTING
11	N11 3/4"	TUBE WITH FERRULE FITTING AT THE END	SWAGELOK FITTING
10	N10 1"	1"NB X SCH40S PIPE WITH 920 MM DEPTH AND BOTTOM CLOSURE FOR HEATER INSERTION, WELDED	THERMOWELL TUBE
09	N9 1"	1"NB X SCH40S PIPE WITH 920 MM DEPTH AND BOTTOM CLOSURE FOR HEATER INSERTION, WELDED	THERMOWELL TUBE
08	N8 1"	1"NB X SCH40S PIPE WITH 920 MM DEPTH AND BOTTOM CLOSURE FOR HEATER INSERTION, WELDED	THERMOWELL TUBE
07	N7 1"	1"NB X SCH40S PIPE WITH 920 MM DEPTH AND BOTTOM CLOSURE FOR HEATER INSERTION, WELDED	THERMOWELL TUBE
06	N6 1/2"	DRAIN TUBE WITH TUBE FITTING AT THE END	SWAGELOK FITTING
05	N5 1/2"	PROCESS TUBE WITH SRV AND NEEDLE VALVE	TUBE
04	N4 1/2"	1" TUBE WITH 920 MM DEPTH AND BOTTOM CLOSURE FOR THERMOWELL, WELDED	THERMOWELL TUBE
03	N3 3/4"	PROCESS TUBE WITH NEEDLE VALVE	TUBE
02	N2 3/4"	LIFTY OUTLET	SWAGELOK FITTING
01	N1 3/4"	LIFTY INLET	SWAGELOK FITTING

NOZZLE SCHEDULE



ELEVATION