

**Indian Oil corporation
Limited**

(Refineries Division)
P.O. Noonmati



CIN - L23201MH1959GOI011388

Vendor Code:.....

We are pleased to forward here with a document for your reference and action.
For any further clarifications please use following contact information:

Enquiry Number : RGRM16PA33/2142803
Document Date : 29.07.2016
Name & Designation : ,
EMAIL :
PH :
FAX :

Corporate Website: <http://www.iocl.com/>
Corporate Tenders Site: <http://www.IndianOilTenders.com/>

Regd. Office: G-9, Ali Yavar Jung Marg, Bandra(E), Mumbai-51, India

ENQUIRY CUM OFFER

Enquiry No.:RGRM16PA33/2142803

Date:29.07.2016

Enq.Due on:07.09.2016 15:00hrs IST

SINGLE BID / TWO BID

Offer Ref.....

Date.....

Dear Sir,

We shall be grateful to receive your quotation filled in the copy of this enquiry for the supply of following items.

Sr.no.Item Code and Description	Unit	Qty	Unit Price (to be filled) In fig&words
--	-------------	------------	---

GROUP: 1

CONDUCTIVITY METER

0010 8182100504	EA	1.000
	each		

SUPPLY OF SWAS SYSTEM AS PER SPEC

ITEM TEXT

Bidder to Supply SWAS system for Boiler-5,6&7 and STG -3, 4 &5 as per attached Scope of work.

BREAKUP OF QUANTITY

Guwahati Refinery : 1.000EA

0020	EA	1.000
	each		

INSTALLATION & COMMISSIONING

Signature of Vendor with Office Seal

ENQUIRY CUM OFFER

Enquiry No.:RGRM16PA33/2142803

Date:29.07.2016

Sr.no.Item Code and Description	Unit Qty	Unit Price (tobe filled) In fig&words
0030 CAMC FOR SWAS FOR 5 YEARS	SU 1.000 Service Unit

Signature of Vendor with Office Seal

ENQUIRY CUM OFFER

Enquiry No.:RGRM16PA33/2142803

Date:29.07.2016

Important:

1. You are requested to fill this format in all respects and forward us **Sealed cover so as to reach us on the due date .This tender will be opened at 15 Hrs. IST on the due date. Enquiry No.& Due date must be SUPERSCRIBED on the envelope to avoid any outright rejection.**

2. Please see our terms and conditions and mention deviation ,if any, seperately.

3. Confirm whether the tenderer is a relative of any Director of IOCL or the tenderer is a firm in which Director(s) of IOCL or his relative is a partner or tenderer is a company in which any Director, or his relative is a member or Director.(If desired, List of IOCL Directors can be referred in IOCL Website)(YES/NO)

(If YES, details are to be furnished.)

4.Vendors are required to fill up details of Terms and Conditions and Taxes in the format attached as last page.

5.The tenderers should respond to the tender either by submitting their bid or by explaining the reason for non-submission of the offer.In case, there is no response either way continuously for three times, names of such tenderers may be removed from the vendor list.

6.If the bidder is registered with NSIC under Ministry of Micro, Small and Medium enterprises, then, the bidder shall enclose the copy ofthe recent valid NSIC certificate without fail. The details of the sameare to be mentioned in this page.

The tenders will be opened in the presence of bidders, who desire to be present, at 15.00 Hrs IST on the scheduled due date.

**Yours faithfully,
For and on behalf of**

INDIAN OIL CORPORATION LTD.
(Authorised Signatory)

Signature of Vendor with Office Seal

(Contd)

ENQUIRY CUM OFFER

Enquiry No.:RGRM16PA33/2142803

Date:29.07.2016

Enq.Due on:07.09.2016 15:00hrs IST

Format for Details of Terms & conditions to be Filled By Vendor

Offer Ref. Date

Excise Registration No:

ECC NO:

VAT Registration No.(TIN No.):

NSIC Registration No for Micro/Small Scale Enterprises:

Telephone No. Price basis:

Fax No. Free Delivery at-

Email F.O.R/EX-WORKS:.....

Delivery Days

Offer Valid Till

Payment Terms

NOTE:- 1. VENDOR TO INDICATE THE FOLLOWING CHARGES (IN PERCENTAGE OF QUOTED BASIC PRICE) AS **EXTRA OR INCLUSIVE (Please tick the appropriate box)**.

2. If charges are mentioned but 'Extra' or 'Inclusive' is not **indicated** , then it will be considered as Extra. If no rates are provided, then it will be considered as Inclusive in quoted basic price unless otherwise specified elsewhere.

	Inclusive	Extra
a. Excise Duty Tariff Rate	[]	[]
b. (i) Central Sales Tax/Sales Tax/VAT.....	[]	[]
(ii) CST/ST/VAT with concessional form C/D.....	[]	[]
c. Packing & Forwarding	[]	[]
d. Inspection charge including Third party if asked in Tender.....	[]	[]
e. Freight upto IOCL destination	[]	[]
f. Octroi.....	[]	[]
g. Transit Insurance upto IOCL destination.....	[]	[]
h. Discount On quoted basic unit price.....		
i. (i) Price gouted are as per DGS&D rate contract(Yes/No)		
(ii) If yes Contract ref.....		

Signature of Vendor with Office Seal



IndianOil



SCOPE OF WORK

SWAS SYSTEM FOR BOILERS & TGS

AT IOCL, GUWAHATI REFINERY



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Preamble

Indian Oil Corporation Limited, Guwahati Refinery, the first public sector refinery of the country, built with Romanian collaboration, was inaugurated by Late Pt. Jawaharlal Nehru, the first Prime Minister of India, on 1st January 1962. The Refinery symbolizes the Nation's march towards indigenization of the refining technology. With a capacity of 1.0 million metric tons per annum, Guwahati Refinery processes crude oil received from the Upper Assam Oil Fields and caters to the requirements of the petroleum products of the North Eastern Region.

In its endeavor to produce Total Quality Products, Guwahati Refinery has always taken a lead in adoption of latest technology available in the world to satisfy its customers by providing quality products. All our efforts at GR has been appreciated by various accreditation bodies by conferring awards like ISO-9001: 2000, OHSAS-18001 (Occupational Health Safety Associated System), Level-8 rating in ISRS (International Safety rating system), ISO-14001 certified by Det Norske Veritas of the Netherlands. For quality management, The Refinery has integrated management system or IMS. The refinery also has various system improvement initiatives like Total Productivity Maintenance (TPM) implemented in Delayed Coker Unit; Six Sigma implementation in certain areas to further ensure quality products and enhance productivity of the refinery.



1.0 Introduction

Indian Oil Corporation, Guwahati Refinery invites bids from reputed Bidders of Steam and Water Analysis System (SWAS) having latest model with state of the art technology having proven track record of performance on LSTK basis.

Definitions

The following definition shall apply:

OWNER	: Indian Oil Corporation Limited, Guwahati Refinery
BIDDER	: Bidder who is opting to quote for this tender document
SITE	: Guwahati Refinery, Guwahati, Assam, India

The Bidder to ensure that the bid is in English & is submitted separately in two parts containing the following information on its covers:

Name of the Project: Supply, Installation, Commissioning & Post warranty Annual maintenance contract (CAMC) of SWAS system for Boilers 5, 6 & 7 & Steam turbo generators (STG) 3, 4 & 5.

Priced/ Un-priced: _____

Copy No.: _____

Volume No.: _____
(If applicable)

PART-I “Un-priced bid” shall contain the complete technical & commercial bid without the price.

PART-II “Price bid” with all technical & commercial details as in Part-I & with full price details as per Price Schedule (i.e. identical to Part-I with prices).



2.0 Ambient Conditions

2.1 Atmospheric Temperature :-

Minimum Ambient Temperature	:	10 deg C
Maximum Ambient Temperature	:	48 deg C
Minimum Relative Humidity	:	20%
Maximum Relative humidity	:	98%

2.2 The SWAS system hardware shall be installed in field and normally the system shall operate in a ambient atmosphere. However the bidder should installed sufficient nos. of air conditiners in cabinets and the system shall be capable of operating continuously without any failures.

3.0 Area Classification

3.1 Plant Area where the system hardware is installed is a non-hazardous area.



4.0 Bidder's Scope of Work

- 4.1 This specification and its enclosed attachments covers the minimum requirements for design, engineering, manufacture, selection & supply of all material & accessories, assembly at manufacturer's works, testing, Factory acceptance test, packing & forwarding to IOCL site, supervision of installation of Pre-Commissioning, Commissioning and handing over of **Two nos. complete SWAS for continuous monitoring of water and steam purity in Boilers and Turbines (STG)** along with all accessories & sample handling system for TPS of Guwahati Refinery. Each SWAS system shall consist of sample handling system (Wet Panel) and dry panel with analyzer instruments as minimum
- 4.2 The intent of this specification is to provide minimum requirements as required by the Bidder and does not relieve the Bidder from his responsibility regarding design, reliable, efficient and safe operation of the supplied system. Any omission in the specification (hardware and or software) will not relieve the Bidder from his obligation to supply the system compatible with the intent of this specification.
- 4.3 In case of any conflict between this specifications, enclosed data sheets, enclosed attachments, related codes and standards etc. Bidder shall refer the matter in writing to the IOCL and shall obtain clarification in writing before starting the manufacturing. However, In general more stringent requirements will prevail & IOCL decision will be final & binding to Bidder for execution without any implication to IOCL.
- 4.4 All system hardware and software shall be completely seamless integrated, factory tested and ready to function as soon as powered and connected to field devices. Bidder shall be responsible to comply with this specification & its attached enclosures, codes, standards and statutory requirements (if any). Bidder shall be responsible for selection of the hardware.
- 4.5 Any hardware or software not specifically mentioned in this tender document but required to make the system complete for the safe operation shall be included in the Bidder's scope of supply.
- 4.6 **Prior to submission of Techno-Commercial offer, a pre bid meeting shall be held, during which Bidders shall be given opportunity to ask queries and get clarifications with respect to the Tender.**
- 4.7 The offered system shall be complete with sample conditioning devices and monitoring instruments (for temperature, pressure, flow & sample) and analyzers as well as all required accessories to provide a complete and integrated sampling and analysis system as per the intent and requirements of this specification.
- 4.8 All internal piping, tubing and system components required for making the system complete shall be shop installed and tested prior to shipment to IOCL.
- 4.9 All tubing and wiring shall be located behind the face of the panel with projections allowed only for indicator faces, valve handles, manual grab sample lines etc. All the fittings on sample lines in the sample conditioning system should be of SS316 double



ferrule compression type and of SWAGELOCK/PARKER make. The tubes shall be 316 Stainless Steel fully annealed, seamless and cold drawn as per ASTM A 269.

- 4.10** IOCL shall provide UPS & NON UPS power of each analyzer at one point near each analyzer. Further distribution shall be done by bidder. Bidder shall supply all other items like power distribution boxes, power cables, terminals etc. required for further connection.
- 4.11** Bidder shall provide junction boxes with cable glands for signals (4-20 ma) and alarm cables (contact) separately which shall serve as interfaces for IOCL's cables going to remote control room DCS/PLC system.
- 4.12** IOCL shall supply all utilities at one point near each analyzer. Bidder shall do further distribution. Bidder shall supply all other items like pipes, fittings, flanges etc required for further connections.
- 4.13** Any other item not listed /indicated but required to meet specification indicated elsewhere and for proper functioning /operation of analyzer system shall also be bidder's scope of supply.

5.0 Job Specifications for Sample Conditioning System

- 5.1** Sample conditioning system shall be designed and constructed to receive and condition all samples as required by the respective analyzers connected to the sample streams. This will include conditioning components as specified herein and shall cover the following as minimum:
- a) Sample cooling using cooling water.
 - b) Sample filtering
 - c) Pressure reduction and control as required. The pressure regulating device should be capable of regulating the output pressure, irrespective of the upstream fluctuations, even at low flow or low pressure conditions.
 - d) Flow rate control with the help of glass tube rotameter with a built-in regulating valve. A back pressure regulator is essential to ensure stable, regulated & priority sample flow condition to the analyzers
 - e) Any other equipment which may be required to bring down the process parameters to the analyzers requirement level.
- 5.2** Sample line to analyzer elements shall incorporate an anti-siphon design to prevent possibility of running dry because of a broken or plugged sample line.
- 5.3** The sample conditioning system shall provide samples as specified by OEM of analyzer, at a pressure and flow rates as required by individual analyzers/streams. Design of the sample conditioning system shall meet ASME PTC 19.11-2008. Sample Cooling using individual coolers shall be provided as per specifications given below as minimum.
- 5.4** Primary Sample Cooling: The sample temperature of 45 Deg C or less as suitable for proper functioning of analysers shall be achieved by using cooling water provided by the IOCL. Primary cooling will be carried out in field using primary sample coolers designed



to withstand pressure and temperature of the individual samples as specified in point no 14.2 of this specification.

5.5 Specifications for Sample Handling System Components:

5.5.1 Sample Isolation valves & Blow down valves :

a) For High pressure & High Temperature Lines:

All sample isolation valves & blow down valves for sample pressures of 30 Kg/Cm² and/or above 200 Deg.C. must be “Globe type with back seat arrangement”, integral stelled seat and welded body/bonnet design. These Valves must be IBR approved & selected as per Valves Pressure Class- ANSI B16.34-1996; Material must be suitable to withstand this high pressure and high temperature. Preformed pure graphite rings should be used as gland packing material (graphoil ropes are not acceptable). The plug & spindle should be single piece & of non-rotating type. The plug should be guided throughout its travel. The spindle should be roller burnished to ensure leakage free performance.

b) For Low pressure & Low Temperature Lines:

For Low Pressure (below 10 Kg/Cm²) and temperature (below 100 Deg C) application. Needle valves are acceptable suitable for these application. Material for these valves must be SS316.

5.5.2 Sample Cooler

- a) All samples having a temperature in excess of 45 Deg C shall be cooled by use of sample cooler.
- b) The sample cooler shall use general service water (softened water) as cooling water. This cooling water is tapped from general service water whose temperature may vary from 20 DegC to 35 DegC. A maximum cooling water temperature of 35°C shall be considered for design of sample cooling system. Capacity of cooler shall be adequate to cool the sample to 45 Deg C or less as suitable for proper functioning of analysers considering the combined flow of each analyzer connected to sample cooler and one manual grab sample at flow rate of 20 Liters/Hour. Cooler capacity calculations shall be submitted by the bidder.
- c) A local indicator shall be provided to measure the temperature of a sample after cooler.
- d) Each sample cooler must be protected by a built-in shell relief valve. The sample coil should not be welded to any part of the cooler. There should be a drain plug provided at the bottom of each cooler. Each cooler should be protected with a check valve on the coolant outlet of the cooler and a common relief valve on the cooling water header.



- e) Sample cooler shall be of submerged helical coil type of shell and tube design with removable shell. The sample tube shall be of seamless with no welds and other joint inside the cooling jacket. Unions shall be provided to facilitate removal of coils. The Sample cooler tube shall be of INCONEL 625 or better. The cooler design should conform to ASTM standards.
- f) Sample cooler model number & catalogue should be submitted. Sample coolers must be designed to withstand very high temperature and pressure (80 Kg/Cm² @ 500 DegC).
- g) Provision shall be made for shell drain, which will be connected to drain header.

5.5.3 Sample Filters

Sample particles removal shall be accomplished by passing all samples through filters with type 316 stainless steel body. The filter design should allow the removal of filter element without di-assembling the Filter from the line. The filter element shall be redundant type with one filter in standby mode capable of retaining particles for healthy operation of the system. The filter should be located before the pressure regulator. Provision should be there to take individual filter in line or offline.

5.5.4 Cooling water isolation

For setting the appropriate cooling water flow to individual sample coolers, a gate valve shall be provided at the outlet of each cooler and a ball valve shall be provided at the inlet of each cooler

5.5.5 Sample Pressure Conditioning

Regulated pressure irrespective of upstream pressure fluctuations is essential to ensure accurate, reliable & stable performance of analyzers. The pressure reduction of samples shall therefore be accomplished by using pressure regulator.

5.5.6 Sample system temperature gauge, pressure gauge and flow indicator

The pressure and temperature gauge shall be minimum 100 mm size with SS casing. Sample rate of flow indicator shall be rotameter with panel mounting bezel and SS float body.

5.5.7 Grab samples

Grab sample valves shall be arranged to allow grab sample flow to be directed to either a drain header or through grab sample nozzles. A back pressure regulator must be used before the grab sample valve to ensure priority flow to analyzers in the event of grab sample valve being in fully opened condition.



5.5.8 Sample Conditioning and Analyzer Shelter

The sample conditioning system (i.e. the Wet cabinet) shall be installed in non-air-conditioned open area with a proper canopy arrangement. The Dry cabinet which shall be having the analyzers to be kept in a separate cabinet supplied by the bidder. Maximum distance between the dry and wet panel shall be 10 Meter.

6.0 Power supply and Utility

- 6.1 Availability of Power supply 230 V \pm 10 %, 50 \pm 2 Hz to System at single point shall be in the scope of IOCL. The total power requirement should be clearly specified by the Bidder.
- 6.2 Availability of Cooling Water at single point.

7.0 SWAS Panel/Cabinet and Accessories

- 7.1 The SWAS Panels shall have two sections namely sample conditioning section and analyzer section. The first section shall be the wet section of SWAS panels, which shall be called as the "Sample conditioning system (i.e. the Wet Rack/ Panel) ". The second section shall be the dry section housing the analytical transmitters, signal conditioning devices and other requisite accessories.
- 7.2 All monitoring instruments for sampling system shall be located on the front & shall be grouped accordingly to function in a logical and orderly fashion.
- 7.3 All Indicating instruments such as pressure, temperature and flow shall be arranged and tagged so that there is no confusion in reading these instruments.
- 7.4 Sample conditioning (wet panel) and analyzer panel (dry panel) shall be designed for ready access of components. Panel design shall ensure that:-
- Parts subject to wear, corrosion or other deterioration or requiring adjustments, inspection or repair are readily accessible and capable of convenient removal, when required.
 - Individual components or groups of components mounted on sub-panels can be removed for replacement or repair without the need of prior removal of components of other healthy streams.
 - Flow meters, pressure gauges and temperature indicators can be removed for repair or replacement from the front of the panel without disturbing any piping.
 - Filter elements and pressure regulators can be easily dis-assembled for periodic cleaning. The general arrangement drawings of panels as well as location and spacing of all instruments and equipment shall be given for IOCL approval.
 - Each sample inlet shall be provided with bulkhead type tubing connection and an isolation valve suitable for sample operating conditions.



- f) Strainers, filters, relief valves etc. shall be provided as specified and as required to properly protect the coolers, valves, analyzer elements etc.
- g) All individual drains shall be piped into one drain header.

7.5 The SWAS panel (wet panel) shall be of open frame free standing type construction with a canopy. Analyzer Panel (Dry Panel) shall be of minimum IP 52 enclosed type construction closed analyzer cabinet with viewing window, suitable for outdoor installation and shall be provided with a key lock. Cabinet shall be fabricated out of minimum 2.0 mm CRCA sheet reinforced with angles of suitable sizes. All SWAS panels shall be furnished with 100 mm base angle for bolting to 100 mm high concrete curb.

7.6 Following panels are to be supplied under SWAS package:-

- a. Sample conditioning panel (Wet Panel).
- b. Analyzer Shelter Cabinet (Dry Panel).

Above mentioned panels shall be suitable for outdoor installation and to be supplied along with FRP canopy.

7.7 The final colour shall be as specified below (or) as may be finally approved:

- Exterior : RAL 7032
Interior : Brilliant white enamel

8.0 Documentation Requirements

Consistent with attempts to minimize unnecessary documentation, only documents that provide key information will be required for review/approval by IOCL.

8.1 SWAS System Specification Document:

Following documents shall be submitted by Bidder after award of contract.

- a. General Specifications and engineering documentation. Cabinets drawing (Layout & wiring) etc. shall be submitted by Bidder.
- b. Power load calculation of AC & DC power supply.

8.2 Project schedule: The schedule shall be kept updated at all times showing proposed, revised and actual completions.

8.3 Commissioning Plan: IOCL shall review, comment and approve this plan and return it to the Bidder for final preparation.

8.4 Periodic Progress Report: This shall be submitted by the Bidder on a regular basis. Periodicity shall be agreed during kick off meeting (KOM) after placement of FOA/Purchase order. The report shall indicate the progress made during the preceding



period. It shall show detailed progress of each item as well as cumulative progress towards schedule completion, expressed as percentage of all items comprised in the manufacturing schedule. It shall also include detail problem areas, potential future problems and restraints caused by internal problems of Bidder's or IOCL's.

8.5 Hardware and software manuals: These documents shall contain all the necessary information to install, operate and maintain the system at all levels. They have to be comprehensive and of the highest professional quality. Examples contained shall be free of errors.

8.6 As built documentation of SWAS system shall be provided at final stage after completion of the site work and commissioning.

8.7 Soft copy of all type of documentations shall be provided by Bidder on CD/DVDs.

9.0 Factory Acceptance Test (FAT)

9.1 Bidder shall test and demonstrate the functional integrity of the system hardware and software. No material or equipment shall be transported until all required tests are successfully completed and certified "**Ready for Shipment**" by the IOCL.

9.2 Bidder to note that acceptance of any system or the exemption of inspection or testing shall in no way absolve the Bidder of the responsibility for delivering the system meeting all the requirements as specified in tender document.

10.0 Site Acceptance Test (SAT)

10.1 IOCL shall provisionally take over the system from Bidder after site acceptance test. Site acceptance test shall be started only after the satisfactory performance of commissioning and verification of records by Engineer-in-charge.

10.2 The site acceptance test shall be carried out in the presence of IOCL representative and Engineer-in-charge or his authorized representative.

10.3 Bidder shall carry out the following functional tests, as a part of site acceptance test as a minimum :-

- Hardware verification
- Visual and mechanical check-up for proper workmanship, identification, ferruling, nameplates etc.
- System configuration as per approved System architecture diagram.
- Demonstration of all system diagnostics.
- Checking of correct change-over of redundant devices



11.0 Warranty & Post -Warranty Maintenance (CAMC):

11.1 Warranty

- a. The warranty of the complete system supplied against this tender including bought out items shall be 12 months (1 year) from the date of commissioning or 18 months from the date of supply whichever is earlier.
- b. During warranty period, bidder shall carryout the preventive, emergency and Hardware/software maintenance services as per scope mentioned in point no. 11.2 Services provided during the warranty period shall be without any additional cost or any commercial implications to IOCL.

11.2 Comprehensive Annual Maintenance Contract (CAMC)

- a. The Bidders shall provide offer for five years Comprehensive Annual Maintenance Contract (CAMC) of the complete system as part of their offer. The offer for CAMC for 5 (Five) years shall be considered in the price bid evaluation of the offer, and will be part of the P.O. against this tender.
- b. The quote for CAMC shall be made year-wise up to 5 Years as per the format given in the Price Schedule. The quoted prices shall remain firm and there shall be no price escalation until end of CAMC period. Bidder shall execute CAMC order as per the quoted rate after expiry of warranty period. Rates shall be freezed & shall be mentioned in the PO placed for this tender.
- c. The Bidder shall depute well experienced Service Engineer having sufficient experience & expertise in maintaining the reliable & trouble free operation of SWAS system during the Warranty & CAMC period.
- d. In the event of any malfunction of the SWAS system analyzer, Sample Handling system or AC system, experienced expert service engineer shall be made available at IOCL site within 72 hours on the receipt of such information from the IOCL.
- e. Bidder shall provide total maintenance of the complete analyzer system including sampling system / sensor unit, electronic enclosure, control unit, calibration unit, all hardware / software, and any related accessories, peripherals etc. supplied by the Bidder including all bought out items supplied against this tender. Supply of any spare required for rectification of the analyzer shall be in the scope of the Bidder.
- f. The Warranty service & CAMC charges shall include supply of all types of spares including PH & Conductivity sensors & third party spares, and all the consumables, reagents as required for trouble free operation of SWAS system. Travel, boarding and lodging required for service engineer visit shall also to be included in the offered price of CAMC.
- g. The CAMC includes complete servicing, regular & preventive maintenance and breakdown maintenance whenever required for the complete analyzer system. This also



includes all the maintenance spares, spare parts which require routine replacement, all consumables etc. required for repair or replacement of the all items supplied including bought out item.

- (i) **Preventive Maintenance Visits:** The Bidder's field Service engineer shall visit the site for minimum two days for routine maintenance, hardware / software checks, inspections, full system checkouts, preventive maintenance adjustments and carry out corrective actions for the complete system on quarterly basis. The visit shall also include calibration, servicing and regular replacement / replenishment of analyzer spares periodically or as required.
 - (ii) **Emergency Visits:** For any emergency situation, the engineer shall report to site within 72 hours after receipt of a written intimation / telephone call from IOCL for restoring the system.
- h.** Bidder to note that while carrying out the Post Warranty CAMC activities IOCL engineers shall associate with SWAS system engineers. On-job training of these associated engineers shall be covered under this scope.

12.0 Special instructions to Bidder

- 12.1** Bidder shall meet the PQC criteria, failing which the offer shall not be considered for evaluation. It is mandatory for the bidder to visit site within seven days of information given by IOCL for supervision of installation without any commercial implication to IOCL.
- 12.2** **Prior to submission of Techno-Commercial offer, a pre bid meeting shall be held, during which Bidders shall be given opportunity to ask queries and get clarifications with respect to the Tender.**
- 12.3** All the accessories required for complete installation shall be supplied along with the SWAS system.
- 12.4** Bidder to indicate in their offer the source of all bought out item & it shall be premium quality of reputed make. However IOCL's concurrence regarding bought-out items is must before finalizing the order.
- 12.5** Bidder to note that the prices for five years CAMC shall be considered for evaluation of the bid & placement of the order. It is mandatory for the Bidder to quote for the CAMC and a minimum of 20% of total value of supply & installation should be kept for CAMC. This 20% value shall be distribute as 10%, 15%, 20%, 25% & 30% for first to five year of CAMC respectively.
- 12.6** The offer shall be in following format. Each section shall be separately segregated & highlighted with distinct Marker / Flags between the sections.

Section 1: Signed and stamped (on each page) copy of complete specifications shall be submitted as a confirmation of acceptance of this tender specification without any deviations. Bidder to fill values in Bidder response column wherever it is required to be



indicated, simply writing noted /confirmed in place of value is not acceptable. Bidder to submit Bidder response sheet duly filled for every clause of tender document in the following format, without which the offer of Bidder shall not be evaluated.

Section 2: Deviations to specification if any shall be clearly listed under this section. If there are no deviations, Bidder shall say “NO DEVIATIONS” under this section. Deviations mentioned elsewhere in the offer shall be considered null and void and shall not be considered for offer evaluation. In absence of any written deviation clearly specified in the offer under this section, it will be assumed that all the specifications and requirements of the subject tender are complied with and No deviations whatever will be accepted after the placement of order.

S. No.	CLAUSE NO.	DEVIATION	TECHNICAL REASON FOR DEVIATION

Section 3: Complete technical catalogues, calculation sheets, dimensional and installation drawings of the offered items shall be attached against this section. Wherever asked to furnish details under the technical specifications, the same shall be included in this section. Offer without calculation sheets & Dimensional drawings of each item shall not be accepted.

Section 4: The offer shall be in the Price Schedule Format as given below. Offer in any other format is not accepted & may be liable for rejection.



13.0 Price Schedule

S. No.	Description	Unit	Rate
1	Supply of complete SWAS system along with all associated hardware & software including all accessories as specified in tender document	Lot	
2	Erection, Installation, Testing, Commissioning SAT & handing over of complete SWAS system as specified in tender document	Lot	
3	Post Warranty CAMC for SWAS System		
3.1	Charges for CAMC of SWAS System along with all associated hardware & software including all accessories/consumables during CAMC for 1st year of post warranty period as specified in tender document	Lump Sum	
3.2	Charges for CAMC of SWAS System along with all associated hardware & software including all accessories/consumables during CAMC for 2nd year of post warranty period as specified in tender document	Lump Sum	
3.3	Charges for CAMC of SWAS System along with all associated hardware & software including all accessories/consumables CAMC for 3rd year of post warranty period as specified in tender document	Lump Sum	
3.4	Charges for CAMC of SWAS System along with all associated hardware & software including all accessories/consumables CAMC for 4th year of post warranty period as specified in tender document	Lump Sum	
3.5	Charges for CAMC of SWAS System along with all associated hardware & software including all accessories/consumables CAMC for 5th year of post warranty period as specified in tender document	Lump Sum	



14.0 Analyzers: general requirements

14.1 Single channel analyzers must be offered for Conductivity & pH, multichannel analyzers are not acceptable. All the analyzers should work with samples at temperatures up to 60°C even without chilled water requirement.

14.2 Analyzer requirement and Service details.

Sl. No	Name Plate Title	Normal Operating Parameter		Type Of Meas.	Normal Operating Range
		Pressure	Temperature		
a. Boiler SWAS					
1	Boiler 5 continuous Blow Down	44 KG/CM2	260 Deg C	a. pH b. Sp.Conductivity	a. 0-14 PH b. 0-1000 μS
2	Boiler 5 Main Steam	39 KG/CM2	450 Deg C	a. pH b. Sp.Conductivity	a. 0-14 PH b. 0-10 μS
3	Boiler 6 continuous Blow Down	44 KG/CM2	260 Deg C	a. pH b. Sp.Conductivity	a. 0-14 PH b. 0-1000 μS
4	Boiler 6 Main Steam	39 KG/CM2	450 Deg C	a. pH b. Sp.Conductivity	a. 0-14 PH b. 0-10 μS
5	Boiler 7 continuous Blow Down	44 KG/CM2	260 Deg C	a. pH b. Sp.Conductivity	a. 0-14 PH b. 0-1000 μS
6	Boiler 7 Main Steam	39 KG/CM2	450 Deg C	a. pH b. Sp.Conductivity	a. 0-14 PH b. 0-10 μS
7	Boiler Feed Water	55 KG/CM2	110 Deg C	Cationic Conductivity	0-10 μS
b. STG SWAS					
1	STG-3 condensate	10 KG/CM2	105 Deg C	a. pH b. Conductivity	a. 0-14 PH b. 0-20 μS
2	STG-4 condensate	10 KG/CM2	105 Deg C	a. pH b. Conductivity	a. 0-14 PH b. 0-20 μS
3	STG-5 condensate	10 KG/CM2	105 Deg C	a. pH	a. 0-14 PH



				b. Conductivity	b. 0-20 μ S
7	Boiler Feed Water	55 KG/CM2	110 Deg C	Cationic Conductivity	0-10 μ S

15.0 Analyzer datasheet

15.1 Conductivity Analyzer & Sensors

S/ No	Description	Specifications	Bidder's Response
Sensor Details			
1	Principle	Resistive conductivity measurement	
2	Measuring Ranges	As per list mentioned in point no. 14.2	
3	Relative accuracy	$\pm 1\%$ of full scale reading or better	
4	Resolution	0.1 $^{\circ}$ C / $^{\circ}$ F	
5	Relative Accuracy	± 0.5 $^{\circ}$ C (± 1.0 $^{\circ}$ F)	
6	Temperature Sensor	PT100	
7	Temperature Compensation	Auto / manual (reference at 25 $^{\circ}$ C)	
Transmitter Details			
8	Type	Microprocessor based; Non-volatile memory	
9	Power Supply	24 V DC; Loop Powered	
10	Output	4-20 mA DC, 2 WIRE (HART)	
11	Display	LCD/LED Type with simultaneous display of Sample Conductivity & Sample Temp.	
12	Electromagnetic compliance(EMC)	EN 61 326	
13	Ambient temp. operating range	0 to 45 $^{\circ}$ C	
14	Maximum Relative humidity	80% up to 31 $^{\circ}$ C decreasing linearly to 50% at 40 $^{\circ}$ C	
15	Programming	Both through HART 375/475 & Local Keypad	
16	Housing Protection	IP 65 or better	
17	Housing	Chemically resistant coating with Epoxy-polyester painted.	



18	Diagnostic Features	Sample Temp, Sensor fail, Electronics fail etc.	
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15.2 pH Cell and Transmitters

S/ No	Description	Specifications	Bidder's Response
Sensor Details			
1	Type	Combination electrode, Glass electrode with High purity pH measurement reference electrode.	
2	Range	0-14 PH (Programmable)	
3	Relative accuracy	± 1% of full scale reading or better	
4	Resolution	0.1 °C / °F	
5	Relative Accuracy	± 0.5 °C (± 1.0 °F)	
6	Temperature Sensor	PT100	
7	Temperature Compensation	Auto / manual (reference at 25 °C)	
Transmitter Details			
8	Type	Microprocessor based; Non-volatile memory	
9	Power Supply	24 V DC; Loop Powered	
10	Output	4-20 mA DC, 2 WIRE (HART)	
11	Display	LCD/LED Type with simultaneous display of Sample Conductivity & Sample Temperature.	
12	Electromagnetic compliance(EMC)	EN 61 326	
13	Ambient temp. operating range	0 to 45 °C	
14	Maximum Relative humidity	80% up to 31°C decreasing linearly to 50% at 40°C	
15	Programming	Both through HART 375/475 & Local Keypad	
16	Housing Protection	IP 65 or better	
17	Housing	Chemically resistant coating with Epoxy-polyester painted.	
18	Diagnostic Features	Sample Temp., Sensor fail, Electronics fail etc.	