GHANA NATIONAL PETROLEUM CORPORATION

TENDER DOCUMENT

for

PROCUREMENT OF PETROLEUM LABORATORY EQUIPMENT, MATERIALS AND RELATED SERVICES FOR THE GNPC RESEARCH AND TECHNOLOGY CENTRE (RATC)

NATIONAL COMPETITIVE TENDERING (NCT)

PACKAGE NUMBER: GR/GNPC/PLE/GOODS/2026/15

NOVEMBER 2026

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SECTION I: INVITATION FOR TENDERS(IFT)

(GHANA NATIONAL PETROLEUM CORPORATION)

PROCUREMENT OF PETROLEUM LABORATORY EQUIPMENT, MATERIALS AND RELATED SERVICES FOR GNPC RESEARCH AND TECHNOLOGY CENTRE (RATC)

(GR/GNPC/PLE/GOODS/2026/15)

1. The **Ghana National Petroleum Corporation** (**GNPC**) intends to apply part of its 2026 budgetary allocation to fund eligible payments under the contract for the procurement of **Petroleum Laboratory Equipment, Materials and Related Services** at the GNPC Research and Technology Centre.

2. The **Ghana National Petroleum Corporation** invites sealed Tenders from eligible suppliers for the supply and installation of the following Petroleum Laboratory Equipment, Materials and Related Services.

   The scope of supply has been broken into twenty-five (25) lots as follows:

Lot 1 SLABBING, PLUGGING & CUTTING AREA **Lot 2** CORE RESINATION & WAXING ROOM **Lot 3** ROUTINE CORE ANALYSIS (RCA) LAB **Lot 4** DRYING ROOM **Lot 5** SOXHLET / SOLVENT EXTRACTION ROOM **Lot 6** SAMPLE PREPARATION LAB **Lot 7** THIN SECTION PREPARATION LAB **Lot 8** PETROGRAPHY, PALYNOLOGY & SEDIMENTOLOGY MICROSCOPE LAB **Lot 9** IMAGING ROOM - CORE PHOTOGRAPHY & UV SCREENING & SGR SCANNER **Lot 10** GEOCHEMISTRY & PYROLYSIS LAB	**Lot 13** GAS CHROMATOGRAPH **Lot 14** ELEMENTAL ANALYSER **Lot 15** LUBRICANTS ANALYZERS **Lot 16** WEIGHING BALANCE **Lot 17** DRYING EQUIPMENT Lot 18 **REFRIGERATED FLUID** **Lot 19** LABORATORY SAFETY & HEALTH (HSE) **Lot 20** IT, LIMS & DATA MANAGEMENT **Lot 21** TRAINING, COMMISSIONING & ACCREDITATION **Lot 22** CALIBRATION STANDARDS, REFERENCE MATERIALS & QC **Lot 23** PERSONAL PROTECTION EQUIPMENT

Lot 11 GAS CHROMATOGRAPHY (GC) LAB **Lot 12** DOWNSTREAM FLUID TESTING (FINISHED PRODUCT)- PETROLEUM PRODUCTS ANALYZERS (PETROL, DIESEL, RESIDUAL FUEL OIL, CRUDE OIL)	**Lot 24** PETROLEUM LABORATORY GLASSWARE, PLASTICWARE, CHEMICALS AND REAGENTS **Lot 25** LABORATORY CHEMICALS AND REAGENTS

NB: **The Tender shall be evaluated on lot-by-lot basis and awarded by lots. However, for a tender to be considered complete and part of the evaluation process, the tenderer should have submitted complete pricing for a minimum of 16 out of the 25 lots.**

3. Tendering will be conducted through the National Competitive Tendering procedures specified in the Republic of Ghana's Public Procurement Act 2003 (Act 663) as amended by 2016 (Act 914) and is open to all Tenderers from eligible source countries as defined in the Guidelines of the Public Procurement Authority of the Republic of Ghana.

   The number and identification of Sections comprising this NCT is: **GR/GNPC/PLE/GOODS/2026/15**

4. Interested eligible tenderers may obtain further information from the Office of the Supply Chain & Local Content Development Department of GNPC at the address specified below, between 9:00 am and 4:00 pm on working days, starting Monday, 23rd November 2026.

   Supply Chain & Local Content Development Department
   1st Floor Petroleum House
   Community 1, Meridian Road, Tema.
   Telephone: +233 303 206020 (1662)

5. Interested eligible tenderers may pay a non-refundable fee of **One Thousand Ghana Cedis (GHS1,000.00)**. Payment will be made via ghana.gov, accessible via the link on Ghaneps.

6. Tenders must be delivered to the GNPC via the Ghana Electronic Procurement System (GHANEPS) portal (https://www.ghaneps.gov.gh) on or before **14:00 hours GMT Tuesday, 8th December 2026. Late Tenders will not be accepted.**

   Formal Tender submissions must be made via the GHANEPS portal as indicated above. However, Tenderers are required to submit one (1) original copy of their tender in a sealed envelope to the address below by 14:00 hours on 9th December 2026. NB: No hard copies will be accepted if the tenderer fails to submit their Tender through the GHANEPS portal by the specified deadline (i.e., 14:00 hours GMT 8th December 2026).

7. All tenders shall remain valid for 150 days from the Tender submission deadline. All Tenders must be accompanied by Tender Security of not less than two per cent (2%) of the Tender price as stated in the Tender Data Sheet.

8. It is mandatory that Tenderers include in their tender the underlisted statutory requirements:

- Valid GRA Tax Clearance Certificate
- Valid SSNIT Clearance Certificate
- Valid VAT Registration Certificate
- Valid Registration Certificate from PPA
- Valid Company Registration Certificate under the current Companies Act.
- Notarised Power of Attorney under the current Powers of Attorney Act. (For companies, the Power of Attorney must be made pursuant to a Board Resolution.)
- Brochures of offered products with Technical Specifications

SECTION II. INSTRUCTIONS TO TENDERERS (ITT)

A. INTRODUCTION

1. Scope of Tender

1.1 The Ghana National Petroleum Corporation (hereinafter referred to as the Purchaser) invites tenders for the Procurement of Petroleum Laboratory Equipment, Materials, and Related Services described in Sections V and VI hereof (hereinafter referred to as the Goods).

1.2 All Tenders are to be completed and returned to the Purchaser in accordance with these Instructions to Tenderers.

2. Source of Funds

2.1 The Purchaser shall fund this procurement from part of its budgetary allocation to pay for the contract (hereinafter referred to as the "Contract") for which this Invitation for Tenders is issued.

2.2 Payments will be made only at the request of the Purchaser and upon approval by a designated official of the Republic of Ghana in accordance with the terms and conditions of the contract agreement between the Purchaser and the Supplier (hereinafter referred to as the "Contract") and will be subject in all respects to the Public Financial Management Act, 2016, Act 921 of the Republic of Ghana. This Agreement shall not be valid unless the purchase is duly authorized in the form of a Purchase Order (PO) generated from the Ghana Integrated Financial Management Information Systems (GIFMIS) or in a form specified by the Ministry of Finance (MoF) pursuant to the Applicable Law

3. Eligible Tenderers

3.1 This Invitation for Tenders is open to all eligible suppliers who meet the following requirements unless otherwise indicated in the Tender Data Sheet.

- Valid GRA Tax Clearance Certificate
- Valid SSNIT Clearance Certificate
- Valid VAT Registration Certificate (if applicable)
- Valid Registration Certificate from PPA
- Valid Company Registration Certificate under the current Companies Act.
- Notarised Power of Attorney under the current Powers of Attorney Act. (For companies, the

Power of Attorney must be after a Board Resolution.)

- Brochures of offered products with Technical Specifications (if applicable)
- Manufacturer's Authorisation

3.2 State-owned enterprises may participate only if they are legally and financially autonomous and are not a dependent agency of the Purchaser.

3.3 Tenderers should not be associated or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the Purchaser to provide consulting services for the preparation of the design, specifications, and other documents to be used for the procurement of goods to be purchased under this Invitation for Tenders.

3.4 Tenderers shall not be under a declaration of ineligibility for corrupt and fraudulent practices as issued by the Public Procurement Authority in accordance with sub-clause 38.1.

4. Eligible Goods

4.1 All goods and related services to be supplied under the and Services contract shall have their origin in eligible source countries, as specified in the ITT Clause 3.1 and all expenditures made under the contract will be limited to such goods and services.

4.2 For purposes of this clause, "Origin" means the place where the goods are mined, grown, or produced, or the place from which the related services are supplied. Goods are produced when, through manufacturing, processing, or substantial and major assembly of components, a commercially Recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

4.3 The origin of goods and services is distinct from the nationality of the Tenderer.

5. Cost of Tender

5.1 The Tenderer shall bear all costs associated with the preparation and submission of its Tender, and the Purchaser will, in no case, be responsible or liable for those costs, regardless of the conduct or outcome of the Tendering process.

6. Site Visit and Pre-Tender Meeting

6.1 The Tenderer, at the Tenderer's own responsibility and risk, is advised to visit and examine the site on which service(s) are to be provided and obtain for itself all information that may be necessary for preparing the Tender and entering into a Contract for the provision of the service(s). The costs of visiting the Site shall be at the Tenderer's own expense.

6.2 The Procurement Entity/Employer may conduct a site visit and a pre-tender meeting whose purpose shall be to clarify issues and to answer questions on any matter that may be raised at that stage.

6.3 The Tenderer's designated representative is invited to attend the site visit and a pre-Tender meeting, which, if convened, will take place at the venue and time stipulated in the **Tender Data Sheet**.

6.4 The Tenderer is requested as far as possible, to submit any questions in writing or in electronic forms that provide record of the content of communication, to reach the Procurement Entity/Employer before the pre-Tender meeting. It may not be practicable at the meeting to answer all questions received late, but questions and responses will be transmitted in accordance with **ITT Clause 6.5.**

6.5 Minutes of the pre-Tender meeting, including the text of the questions raised and the responses given together with any responses prepared after the pre-Tender meeting will be transmitted within five (5) days to all purchasers of the Tender Documents. Any modification of the Tender Documents listed in **ITT Clause 23.**1 that may become necessary as a result of the pre-tender meeting shall be made by the Procurement Entity/Employer exclusively through the issue of an Addendum pursuant to **ITT Clause 9** and not through the minutes of the pre-tender meeting.

6.6 Non-attendance during the site visit or pre-tender meeting will not be a cause for the disqualification of a Tenderer.

B. THE TENDER DOCUMENTS

7. Content of Tender Documents

7.1 The goods required, Tender procedures and contract terms are Tender prescribed in the Tender Documents. In addition to the Invitation for Tenders, the Tender Documents include:

a. Instruction to Tenderers (ITT);
b. Tender Data Sheet;
c. General Conditions of Contract (GCC);
d. Special Conditions of Contract (SCC);
e. Schedule of Requirements;
f. Technical Specifications;
g. Tender Form and Price Schedules (Bill of Quantities);
h. Tender Security Form;
i. Contract Form and Contract Data Sheet;
j. Performance Security Form;
k. Bank Guarantee for Advance Payment Form;
l. Manufacturer's Authorization Form.

7.2 The Tenderer is expected to examine all instructions, forms, terms, and specifications in the Tender Documents. Failure to furnish all information required by the Tender Documents or submission of a Tender not substantially responsive to the Tender Documents in every respect will be at the Tenderer's risk and may result in the rejection of its Tender.

8. Clarification of Tender Documents

8.1 A prospective Tenderer requiring any clarification of the Tender Documents may request the Purchaser in writing or by fax at the Purchaser's address indicated in the Tender Data Sheet. The Purchaser will respond in writing or by fax or by email to any request for clarification of the Tender documents which it receives no later than fourteen (14) days prior to the deadline for the submission of Tenders. The Purchaser's response (including an explanation of query without identifying the source of inquiry) will be sent in writing or fax or email to all prospective Tenderers, who have purchased the Tender Documents.

9. Amendment of Tender Documents

9.1 At any time prior to the deadline for submission of Tenders, the Purchaser may, for any reason, modify the Tender Documents by issuing Addenda.

9.2 Any Addendum will be notified in writing or fax to all prospective Tenderers which have purchased the Tender Documents and shall be a part of the Tender document.

9.3 Where the Purchaser issues the Addendum very close to deadline for submission of Tenders, the Purchaser may

extend the deadline for submission of Tenders in accordance with sub-clause 20.2 to afford prospective Tenderers a reasonable time to take the Addendum into account in preparing their Tenders.

C. PREPARATION OF TENDERS

10. Language of Tender

10.1 The Tender prepared by the Tenderer and all correspondence Tender and supporting documents relating to the Tender exchanged by the Tender and the Purchaser, shall be written in the English language.

11 Documents Comprising the Tender

11.1 The Tenderer's Tender shall comprise the following Comprising the components:

a. A Tender Form and a price schedule completed in accordance with clauses 11,12 and 13.
b. Documentary evidence established in accordance with Clause 14 that the Tenderer is eligible to Tender and is qualified to perform the contract if its Tender is accepted.
c. Documentary evidence established in accordance with Clause 15 that the goods to be supplied by the Tenderer are genuine and newly manufactured goods and conform to the Tender Documents; and
d. Tender security furnished in accordance with Clause 16 and in the form specified in Section VII.

12. Tender Form

12.1 The Tenderer shall complete the Tender Form and the appropriate price schedule furnished in the Tender Documents, indicating the goods to be supplied, a brief description of the goods, their country-of-origin quality and prices.

13. Tender Price

13.1 The Tenderer shall indicate on the appropriate Price Schedule the unit prices (where applicable) and total Tender price of the goods it proposes to supply under the contract. This form must be completed without any alteration to its format, and no substitute shall be accepted. 'Prices indicated on the Price Schedule shall be entered separately in the following manner:

i. the price of the goods quoted EXW (ex-works, ex-factory, ex-warehouse, ex showroom, or off-the-shelf, as applicable), including all customs, excise and other duties and sales and other taxes already paid or payable;
ii. the price for Inland Transportation, Insurance, and other Local Costs incidental to Delivery of the Goods to their final destination, if specified in the Tender Data Sheet;

iii. the price of other incidental services, if any, listed in the *Tender Data Sheet*.

13.2 The terms EXW, CIP, etc. shall be governed by the rules prescribed in the current edition of *Incoterms* published by the *International Chamber of Commerce, Paris.*

13.3 The Tenderer's separation of price components in accordance with ITT Clause 12.1 above will be solely for the purpose of facilitating the comparison of Tenders by the Purchaser and will not in any way limit the Purchaser's right to contract on any of the terms offered.

13.4 Price quoted by the Tenderer shall remain fixed and valid until completion of the Contract performance and will not be subject to variation on any account.

13.5(a) A foreign Tenderer wishing to have or already having a local agent should state the following:

i. Name and address of the Agent/Representative,
ii. The Agent/Representative providing type of services,
iii. Amount of commission if the Agent/ Representative is entitled to get such payment with specific reference to the tendering procedure,
iv. Other agreement with Agent/Representative, if any,
v. Tenderer should certify in the Letter of Authorization as follows;

"We certify that the statement and disclosure made by us on the above are complete and true to the best of our knowledge and belief"

13.5(b) If the agent has not been appointed:

i. Source of information about tender invitation,
ii. The remuneration given to the individual or firm/company or organization to work on his behalf for submitting tender, representation in the Tender opening and other required action in connection with the tender,
iii. Transfer or handover evidence of foreign currency exchanged which is required to be submitted with the tender,
iv. If the bank account of any Ghanaian citizen has been used for the exchange of foreign currency specify the name of the individual and his address. If the foreign currency has been exchanged by self, then the certificate of currency exchanged issued by the bank.

13.6 If the Tenderer intends to offer any discount, it should always be expressed in fixed percentage that will not vary as the quantity varies and be applicable to each unit rate.

13.7 A Tender submitted with an adjustable price quotation shall be treated as non-responsive and rejected pursuant to Clause 26.

14. Currency of Tender

14.1 Prices shall be quoted in Ghanaian Cedis (GHS)

15. Document Establishing Tenderer's Eligibility and Qualifications

15.1 Pursuant to Clause 10, the Tenderer shall furnish, as part of its Tender, documents establishing the Tenderer's eligibility to Tender and its qualifications to perform the contract if its Tender is accepted.

15.2 The documentary evidence of the Tenderer's eligibility to Tender shall establish to the Purchaser's satisfaction that the Tenderer, at the time of submission of its Tender, is from an eligible country that is, a country as provided for under Section VIII.

15.3 The documentary evidence of the Tenderer's qualifications to perform the contract if its Tender is accepted shall establish to the Purchaser's satisfaction:

a. that, in the case of a Tenderer offering to supply goods under the contract which the Tenderer did not manufacture or otherwise produce, the Tenderer shall be an established dealer in the goods of at least one year's standing and shall produce documentary evidence to show that he has been duly authorized by the good's manufacturer or producer to supply the goods in Ghana.
b. that the Tenderer has the financial, technical and production capability necessary to perform the contract.
c. that the Tenderer meets the Qualifications as specified in the Tender Data Sheet

16. Document Establishing Goods' Eligibility and Conformity to Tender Documents

16.1 Pursuant to Clause 10, the Tenderer shall furnish, as part of its Tender documents establishing the eligibility and conformity to the Tender Documents of all goods and services which the Tenderer proposes to supply under the contract.

16.2 The documentary evidence of the goods' eligibility shall consist of a statement in the Price Schedule on the country of origin of the Goods and services offered which shall be confirmed by a certificate of origin issued at the time of shipment.

16.3 The documentary evidence of conformity of the Goods and Services to the Tender documents may be in the form of Literature, Drawings, and Data, and shall consist of:

a. a detailed description of the essential Technical and Performance characteristics of the Goods;
b. a list giving full particulars, including available sources and current prices of Spare Parts, Special Tools, etc., necessary for the proper and continuing functioning of the Goods for a period to be specified in the *Tender Data Sheet* following commencement of the use of the Goods by the Purchaser

17. Tender Security or Tender Securing Declaration.

17.1 Pursuant to Clause 10, the Tenderer shall furnish as part of its Tender, Tender security or Tender Securing Declaration as specified in the Tender Data Sheet. The Tender security is required to protect the Purchaser against the risk of the Tenderer's conduct, which would warrant the security's forfeiture pursuant to para. 16.6.

17.2 The Tender Security shall, at the Purchaser' option as specified in the *Tender Data Sheet* be in the form of either a certified cheque, or Bank Guarantee from a bank in Ghana or a bond issued by an insurance or bonding institution, or Tender Securing Declaration. The format should be in accordance with one of the Sample Forms included in Section VII or another form acceptable to the Purchaser. The Tender Security shall be valid for 28 days beyond the period of validity of the Tender.

17.3 Any Tender not secured in accordance with paragraphs 16.1 and 16.2 will be rejected by the Purchaser as non-responsive pursuant to clause 26

17.4 The Tender Security of unsuccessful Tenders will be returned within 14 days after the expiration of the Tender validity period prescribed in sub-clause 17.1

17.5 The Tender Security of the successful Tenderer will be discharged when the Tenderer has furnished the required Performance Security and signed Contract.

17.6 The Tender Security shall be forfeited:

a. if a Tenderer withdraws its Tender during the period of Tender Validity specified by the Tenderer on the Tender form; or
b. in case of a successful Tender, if the Tenderer fails within the specified time limit to:
    i. sign the contract in accordance with Clause 36 or
    ii. furnish performance security in accordance with Clause 37.

18. Period of Validity of Tenders

18.1 Tenders shall remain valid for the period as specified in the *Tender Data* Sheet after the date of Tender opening prescribed by the Purchaser in Clause 20. A Tender valid for a shorter period shall be rejected by the Purchaser as non-responsive.

18.2 In exceptional circumstances, the Purchaser may solicit the Tenderers' consent to an extension of the period of Tender validity. The request and the responses thereto shall be in writing or by fax or by email. The validity of Tender security period provided under Clause 16 shall also be suitably extended. A Tenderer may refuse the request without forfeiting its Tender security. A Tenderer granting the request will not be required or permitted to modify its Tender.

19. Format and Signing of Tender

19.1 The Tenderer shall prepare one original of the documents comprising the Tender as described in ITT Clause 10, bound

with the volume containing the Form of Tender and Price Schedule, and clearly marked **"ORIGINAL"**. In addition, the Tenderer shall submit one copy of the Tender and clearly marked as **"COPY"**. In the event of any discrepancy between them, the original shall prevail.

19.2 The original and copy of the Tender shall be typed or written in indelible ink and shall be signed by the Tenderer or a person or persons duly authorised to sign on behalf of the Tenderer. The latter authorisation shall be indicated by written power-of-attorney accompanying the Tender. All pages of the Tender, where entries or amendments have been made, shall be initialled by the person or persons signing the Tender.

19.3 The Tender shall contain no inter lineation, erasures or Overwriting alterations or additions except as necessary to correct errors made by the Tenderer or those to comply with instructions issued by the Purchaser, in which case, such corrections shall be initialled by the person or persons signing the Tender.

D. SUBMISSION OF TENDERS

20. Sealing and Marking of Tenders

20.1 The Tenderer shall seal the original and the copy of the Tender in two inner envelopes and an outer envelope, duly marking the inner envelopes as "Original" and "Copy".

20.2 The inner and outer envelopes shall:

a. be addressed to the Purchaser at the address given in the *Tender Data Sheet*:
b. bear (the Project Name, the Invitation for Tenders number and Identification number if any).
c. provide a warning **"Not to Open Before"** the time and date for Tender opening as specified in the *Tender Data Sheet*.

20.3 In addition to the identification required in sub-clause 19.2, the inner envelope shall indicate the name and address of the Tenderer to enable the Tender to be returned unopened in case it is declared "Late", pursuant to sub-clause 21.

20.4 If the outer envelope is not sealed and marked as required by paragraph 19.2, the Purchaser will assume no responsibility for the Tender's misplacement or premature opening.

21. Deadline for Submission of Tenders

21.1 Tenders must be received by the Purchaser at the address and no later than the time and date specified in the *Tender Data Sheet*.

21.2 The Purchaser may, at its discretion, extend this deadline for the submission of Tenders by issuing an amendment in accordance with Clause 8, in which case, all rights and obligations of the Purchaser and Tenderers previously

subject to the original deadline will thereafter be subject to the deadline as extended.

22. Late Tenders

22.1 Any Tender not received within the date and time specified in ITT Clause 20 will not be accepted and will be returned unopened.

23. Modification and Withdrawal of Tenders

23.1 The Tenderer may modify or withdraw its Tender after the Tender submission, provided that written notice of the modification or withdrawal is received by the Purchaser twenty-four (24) hours prior to the deadline prescribed for submission of Tenders in Clause 20.

23.2 The Tenderer's modification or withdrawal notice shall be prepared, sealed, marked and dispatched in accordance with the provisions of Clause 18 and 19, with the outer and inner envelopes additionally marked "Modification" or "Withdrawal" as appropriate. A withdrawal notice may also be sent by fax or email but followed by a signed confirmation copy, received not later than the deadline for submission of Tenders.

23.3 No Tender may be modified or withdrawn subsequent to the deadline for submission of Tenders.

23.4 No Tender may be withdrawn in the interval between the deadline for submission of Tenders and the expiration of the period of Tender validity specified by the Tenderer on the Tender Form. Withdrawal of a Tender during this interval shall result in the Tenderer's forfeiture of its Tender security, pursuant to Clause 16.6.

23.5 Tenderers may only offer discounts, or otherwise modify the prices of their Tenders by submitting Tender modifications in accordance with ITT Clause 22 or included in the original Tender submission.

E. TENDER OPENING AND EVALUATION

24. Opening of Tenders by Purchaser

24.1 The Purchaser will open Tenders including modifications made pursuant to Clause 22, in the presence of Tenderers representatives who choose to attend, at *(Date and Time)* and at the place specified in the *Tender Data Sheet*. The Tenderers' representatives who are present shall sign a register evidencing their attendance.

24.2 Envelopes marked "WITHDRAWAL" shall be opened and read out first. Tenders for which an acceptable notice of withdrawal has been submitted pursuant to ITT Clause 22 shall not be opened.

24.3 The Tenderers' names, Tender prices, modifications, discounts offered, Tender withdrawals and the presence or absence of the requisite Tender security and such other details as the Purchaser, at its discretion, may consider

appropriate will be announced and read aloud by the Purchaser at the Tender opening session.

24.4 The Purchaser will prepare minutes of the Tender opening, including the information disclosed to those present in accordance with sub-clause 23.3. Representatives of tenderers who attend the tender opening must sign an attendance sheet and this must be attached to the minutes of the Tender Opening.

25. Process to be Confidential

25.1 Information relating to the examination, clarification evaluation, and comparison of Tenders and recommendations for the Award of Contract shall not be disclosed to Tenderers or any other persons not officially concerned with such process until the Award to the successful Tenderer has been announced.

26. Clarification of Tenders

26.1 To assist in the examination, evaluation and comparison of Tenders, the Purchaser may, at its discretion, ask any Tenderer for clarification of its Tender, including breakdowns of unit rates. The request for clarification and the response shall be in writing and no change in the price or substance of the Tender shall be sought, offered or permitted, except as required to confirm the correction of arithmetic errors discovered by the Purchaser in the evaluation of the Tenders.

27 Examination of Tenders and Determination of Responsiveness

27.1 The Purchaser will determine whether each Tender:

a. meets the eligibility criteria defined in ITT Clause 3;
b. has been properly signed;
c. is accompanied by the required securities;
d. is substantially responsive to the requirements of the Tender documents

27.2 Arithmetical errors will be rectified on the following basis:

a. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If the Tenderer does not accept the correction of the errors, its Tender will be rejected, and its Tender Security may be forfeited,
b. If there is a discrepancy between words and figures, the amount in words will prevail.

27.3 Prior to the detailed evaluation, pursuant to Clause 28, the Purchaser will determine the substantial responsiveness of each Tender to the Tender Documents. For purposes of these clauses, a substantially responsive Tender is one, which conforms to all the terms and conditions of the Tender Documents without material deviations. The Purchaser's determination of a Tenderer's responsiveness is to be based on the contents of the Tender itself without recourse to extrinsic evidence. A material deviation or reservation is one which:

a. affects in any substantial way the Scope, Quality, or Performance of the Contract; the following shall constitute such material deviations
    i. failure to sign the Tender Form and Price Schedules by authorised person or persons.
    ii. inability to meet the critical delivery schedule or work schedule clearly specified in the tender document, where such schedule is a critical condition with which tenderer must comply;
    iii. subcontracting in a substantially different amount or manner than that permitted;
    iv. failure to submit the required Manufacturer Authorization (if applicable) for equipment not manufactured by the Tenderer/Agent/Accredited Dealer.

b. which limits in any substantial way, inconsistent with the Tender documents, the Purchaser's rights or the Tenderer's obligations under the contract; material deviations include the following:
    i. failure to submit documents establishing the Tenderer's eligibility to Tender.
    ii. failure to submit its qualifications to perform the contract if its Tender is accepted.
    iii. failure to submit a tender security as specified in the tender document.
    iv. failure to satisfy the tender validity period
    v. failure to comply with minimum experience criteria as specified in the tender document;
    vi. conditional tenders such as conditions in a tender which limit the tenderer's responsibility to accept an award;

    For example
    - inability to accept the price adjustment formulae of the tendering documents;
    - stipulating price adjustment when fixed price tenders were invited;

c. whose rectification would affect unfairly the competitive position of other Tenderers presenting substantially responsive Tenders.

27.4 Tender determined as not substantially responsive will be rejected by the Purchaser and may not subsequently be made responsive by the Tenderer by correction or withdrawal of nonconforming deviation or reservation

27.5 Purchaser may waive any minor informality or nonconformity or irregularity in a Tender which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Tender

28 Evaluation and Comparison of Tenders

28.1 The Purchaser will evaluate and compare only the Tenders determined to be substantially responsive in accordance with ITT Clause 26.

28.2 The Purchaser's evaluation of a Tender will be on the basis of Tender Price as specified in the Price Schedule.

28.3 The Purchaser reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the Tender documents or otherwise result in unsolicited benefits for the Purchaser will not be taken into account in Tender evaluation

28.4 The Purchaser's evaluation of a Tender will take into account, in addition to the Tender Price quoted in accordance with ITT
Clause 12.1, one or more of the following factors as specified in the *Tender Data Sheet*, and quantified in ITT Clause 28.6:

a. Delivery schedule offered in the Tender;
[Specify factors, if necessary as per departmental requirements]

b. the cost of components, mandatory spare parts, and service; *[Specify factors, if necessary as per departmental requirements]*

c. Contractual and Commercial Deviations:
[Specify factors, if necessary as per departmental requirements]

d. Other specific criteria indicated in the *Tender Data Sheet* and /or in the Technical Specifications.

e. Other specific criteria indicated in the *Tender Data Sheet* and /or in the Technical Specifications

28.5 For factors retained in the *Tender Data Sheet* pursuant to ITT 27.4, one or more of the following quantification methods will be applied, as detailed in the *Tender Data Sheet:*

a. **Delivery schedule:** The Goods covered under this Invitation are required to be delivered (shipped) within an acceptable range of days/weeks/months *[as applicable]* specified in the Schedule of Requirement. No credit will be given to earlier deliveries, and Tenders offering delivery beyond this range will be treated as nonresponsive. Within this acceptable range, an adjustment per day, as specified in the *Tender Data Sheet*, will be added for evaluation to the Tender Price of Tenders offering delivery later than the Earliest Delivery Period specified in the Schedule of Requirements.
[specify factors, if necessary as per departmental requirements. This Clause should be the elaboration of ITT Clause 27.5 (b)]

b. **Cost of spare parts and services:** The list of items and quantities of major assemblies, components, and selected spare parts, likely to be required during the initial period of operation specified in the *Tender Data Sheet,* is annexed to the Technical Specifications. The total cost of these items, at the unit prices quoted in each Tender, will be added to the Tender Price. The cost to the purchaser of establishing the minimum service facilities and part inventories as outlined in the Tender data Sheet or elsewhere in the Tender Document if quoted separately shall be added to the Tender Price.

c. **Contractual and Commercial Deviations:** The cost of all quantifiable deviations and omissions from the contractual and commercial conditions shall be evaluated. The Purchaser will make its own assessment of the cost of any deviations for the purpose of ensuring fair comparison of Tenders.

d. **Specific additional criteria:** The relevant evaluation method shall be detailed in the *Tender Data Sheet* and/or in the Technical Specification.

29. Environmental Factors & Social Consideration

29.1 Tenders shall be evaluated taking into account compliance with Environmental protection, policies, laws and regulations applicable in Ghana as well as policies for the promotion of sustainable development.

29.2 The Purchaser may specify in its evaluation criteria, a method to determine or assess how Tenders promote general as well as specific policies and programmes for sustainability and environmental protection.

30. Margin of Preference

30.1 A margin of Preference where applicable shall be provided as *specified in Tender Data Sheet.*

31. Contacting the Purchaser

31.1 Subject to Clause 25, no Tenderer shall contact the Purchaser on any matter relating to its Tender, from the time of the Tender opening to the time the Contract is awarded. If the Tender wishes to bring additional information to the notice of the Purchaser, it should do so in writing.

31.2 Any effort by a Tenderer to influence the Purchaser in the Purchaser's Tender evaluation, Tender comparison or contract award decisions may result in the rejection of the Tenderer's Tender

F. AWARD OF CONTRACT

32. Post Qualification

32.1 In the absence of prequalification, the Purchaser will determine to its satisfaction whether the Tenderer selected as

having submitted the lowest evaluated responsive Tender is qualified to satisfactorily perform the Contract.

32.2 The determination will take into account the Tenderer's financial, technical and production capabilities/ resources. It will be based upon an examination of the documentary evidence of the Tenderer's qualifications submitted by the Tenderer, pursuant to Clause 14.3, as well as such other information as the Purchaser deems necessary and appropriate

32.3 An affirmative determination will be a prerequisite for award of the Contract to the Tenderer. A negative determination will result in rejection of the Tenderer's Tender, in which event the Purchaser will proceed to the next lowest evaluated Tender to make a similar determination of that Tenderer's capabilities to perform satisfactorily.

33. Award Criteria

33.1 Subject to Clause 34, the Purchaser will award the Contract to the successful Tenderer whose Tender has been determined to be substantially responsive and has been determined as the lowest-evaluated Tender, provided further that the Tenderer is determined to be qualified to perform the Contract satisfactorily.

34. Purchaser's Right to Vary Quantities at Time of Award

34.1 The Purchaser reserves the right at the time of award of Contract to increase or decrease by the percentage as specified in the *Tender Data Sheet*, the quantity of goods and services originally specified in the Schedule of Requirements without any change in unit prices or other terms and conditions.

35. Purchaser's Right to Accept Any Tender and Reject Any or All Tenders.

35.1 The Purchaser reserves the right to accept or reject any Tender, and to annul the Tender process and reject all Tenders, at any time prior to award of Contract, without thereby incurring any liability to the affected Tenderer or Tenderers or any obligation to inform the affected Tenderer or Tenderers of the grounds for the Purchaser's action.

36. Notification of Award

36.1 The Tenderer whose Tender has been accepted will be notified of the award by the Purchaser before expiration of the Tender validity period in writing, confirmed by a letter or by electronic mail that its Tender has been accepted.

36.2 The notification of award will not constitute the formation of the Contract

36.3 Upon the successful Tenderer's furnishing of performance security pursuant to Clause 37, the Purchaser will promptly notify each unsuccessful Tenderer and will discharge its Tender security, pursuant to Clause 16.

36.4 The contract will incorporate all Agreements between the Purchaser and the successful Tenderer.

37. Signing of Contract

37.1 At the same time as the Purchaser notifies the successful Tenderer that its Tender has been accepted, the Purchaser

will send the Tenderer the Contract Form provided in the Tender Documents, incorporating all agreements between the parties.

37.2 Within fourteen (14) days of receipt of the Notification of Award, the successful Tenderer shall sign and date the Contract Form and return it to the Purchaser.

37.3 The signing of the contract shall be preceded by a discussion or negotiation between the Purchaser and Tenderer of any issue that in the view of the Purchaser, end user or beneficiary entity ought to be fully clarified and the outcome of such discussion or negotiation shall be recorded in the form of minutes and a record of it kept.

37.4 The Agreement shall only be valid upon;

a. signing by both parties
b. authorisation in the form of a Purchase Order (PO) generated from the Ghana Integrated Financial Management Information Systems (GIFMIS) or in a form specified by the Ministry of Finance (MoF) pursuant to the Applicable Law.
c. the fulfilment of conditions precedent such as the submission of performance bond, if any, that may be required on the part of either party under the Agreement or
d. under the Applicable law

38. Performance Security

38.1 Within 14 days of receipt of notification of award from the Security Purchaser, the successful Tenderer shall furnish the performance security in accordance with the Conditions of Contract, in the Performance Security Form provided in the Tender Documents; denominated in the type and proportion of amount as specified in the Notification of award.

38.2 Failure of the successful Tenderer to comply with the requirement of Clause 36 or sub-clause 37.1 shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender security in which event the Purchaser may make the award to the next lowest evaluated Tender or call for new Tenders.

38.3 The Performance Security provided by the successful Tenderer in the form of a Bank Guarantee as specified in Section VII shall be issued by a Bank in Ghana acceptable to the Purchaser.

39. Corrupt or Fraudulent Practices

39.1 The Government of the Republic of Ghana requires that Tenderers under the contracts financed from public funds observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the following terms shall be interpreted as indicated:

a. "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

b. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract, and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the benefits of free and open competition;

c. "Collusion" means an agreement between tenderers designed to influence the outcome of a tender and/or the fix non-competitive prices of a tender.

39.2 a. The Purchaser will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question.

39.3 Furthermore, Tenderer shall be aware of the provision stated in sub-clause 24.1 (c) of the General Conditions of Contact.

Tender Data Sheet (TDS)

The following specific data for the Goods to be procured shall complement, supplement, or amend the provisions in the Instructions to Tenderers. Whenever there is a conflict, the provisions herein shall prevail over those in the Instructions to Tenderers.

A. Introduction	
ITT. 1.1	Name of Purchaser: **Ghana National Petroleum Corporation (GNPC)**
ITT.2.1	The Source of Funds is the **2026 Budgetary Allocation of the GNPC**
ITT.2.2	Name of Contract: **Procurement of Petroleum Laboratory Equipment, Materials and Related Services for the GNPC Research and Technology Centre (RATC)**
ITT.3.1	The following additional requirements shall apply in addition to ITT Clause 3.1 i. Power of Attorney under the current Powers of Attorney Act. ii. The maximum number of members in the joint venture, consortium or association shall be **two (2).**
ITT.6.3	The site visit and pre-Tender meeting will be held at the GNPC **Research and Technology Centre, Plot 83, Spintex Road**, **Accra, Ghana** Date: 1st December 2026 Time: 10:00 am
B. TENDER DOCUMENTS	
ITT.7.2	Tenderers shall submit **one** complete tender.
ITT.8.1	**Tender clarification**: Tender clarification must be sent to GNPC on or before **1:00 hours GMT on 4th December 2026 via:** the Ghana Electronic Procurement System (GHANEPS) portal (https://www.ghaneps.gov.gh). tender@gnpcghana.com; do.manukure@gnpcghana.com
ITT. 9.1	Purchaser can modify the Tender documents before the Deadline for submission of Tenders by issuing Addenda.
ITT.10.1	Language of the Tender: **English**.
ITT.12.1 (i)	The price quoted shall be: DDP and in Ghana Cedis (GHS). The prices shall include all duties, taxes and other levies.

ITT.12.1 please explain (ii)	The Prices for inland transportation: GHS…… The prices for insurance: GHS…… The prices for other local cost: GHS……...
ITT.12.1 (iii)	The price of other incidental services: (a)……. GHS…… (b)……GHS…… (c) ……GHS…… Total DDP to: **GNPC Research and Technology Centre at Plot 83 Spintex Road, Accra, Ghana.**
ITT.12.4	The prices shall be fixed
ITT. 13.1	The prices shall be quoted **in Ghana Cedis (GHS)**
C. PREPARATION OF TENDERS	
ITT. 15.3 (C)	Qualification requirements. (i) The offered goods shall be the latest and in current production for a minimum of 1 year. If the offered model is new, the manufacturer must have experience in producing a similar model for a minimum of 1 year. (ii) Compliance with variation from the departmental requirement of the technical specification shall be duly filled in the offered specification column of the Technical Specification section. (iii) No Tender will be considered if the offered quantity is different from that specified in the Technical Specifications. ***The Tenderer shall submit with its Tender the following additional Documents:*** (iv) Demonstrated ability to locally provide & coordinate after-sales services, Spare part stocking & other technical support to GNPC RATC for the continuous functioning of Petroleum Laboratory Equipment. (v) Must submit copies of the most recent three (3) sequential audited financial reports and each must be signed by a certified auditor and the firms' Directors. (vi) Details of the experience of the Tenderers: provide references & contact person/ recommendation letters for at least 3 (three) contracts for the Supply and Installation of Laboratory Items, minimum total value Three Million Ghana Cedis (GHS 3,000,000.00) which have been satisfactorily completed as Prime Contractor or Subcontractor between 2016 and 2026. (Attach purchase orders/contracts/invoices as proof) (vii) CV's/ Profile of Service Engineers for Related Services
ITT 15.3 (b)	Spare parts required for the lifespan of the equipment. **Not Applicable**

ITT 17.1	Amount of Tender Security: **Two per cent (2%) of Tender Price, from a reputable bank or insurance company and shall be valid for 28 days beyond the validity period of the tender.**
ITT 18.1	Tender Validity Period: **150 days.**
ITT. 19.2(a)	After formal submission via **GHANEPS**, submit one copy of the Tender to the GNPC Supply Chain and Local Content Dev. Department.
ITT.19.2 (b)	IFT title and number: **Procurement of Petroleum Laboratory Equipment, Materials and Related Services. GR/GNPC/PLE/GOODS/2026/15**
ITT.19.2 (c)	The written confirmation of authorisation to sign on behalf of the Tenderer shall consist of a notarised power of attorney signed by legally authorised **signatories of all parties comprising the Tenderer.**
D. SUBMISSION OF TENDERS	
ITT. 20.1	The original and all copies of the Proposal shall be placed in a sealed envelope clearly marked **NOT APPLICABLE**
ITT.21.1	Deadline for Tender submission: Date: **Tuesday, 8th December 2026** Time: **14:00HRS GMT** **Tenders will be submitted electronically via the GHANEPS (**https://www.ghaneps.gov.gh) **platform, following the on-screen instructions for tenderers.** Formal tender submission shall be through Ghaneps portal as indicated above. However, Tenderers are required to submit one (1) original copy of their tender in a sealed envelope to the address below on or before 4:00 p.m. on December 9, 2026. NB: No hard copies will be accepted if the tenderer failed to submit its Tender through the Ghaneps portal by the date stated above (i,e. 14:00 Hrs. GMT on December 8, 2026).
E. TENDER OPENING AND EVALUATION	
ITT.24.1	Tender Opening: Date: **8th December 2026** Time: Immediately After the Close of the Tender Submission The **Tender opening** shall take place **ONLY** on **GHANEPS.** The **electronic Tender opening** procedures shall be: Tender opening will take place online (GHANEPS), and the tender opening records will then be published.
ITT 27.1	The Purchaser will determine whether each Tender:

	a. Meets the eligibility criteria defined in ITT Clause 3; b. has been properly signed; c. is accompanied by the required securities; d. is substantially responsive to the requirements of the Tender documents
ITT. 27.2	**The Purchaser's evaluation shall be based on the Tenderer meeting all the requirements as specified in the ITT clauses 3 & 27** **The Tender shall be evaluated on lot-by-lot basis and awarded by lots. However, for a tenderer to be considered complete and part of the evaluation process, the tenderer should have submitted complete pricing for a minimum of 16 out of the 25 lots.**
ITT. 28.4	Criteria for Tender evaluation shall be based on the following: (i) DDP: GNPC Research and Technology Centre, Plot 83, Spintex Road, Ghana. (ii) Delivery requirement as per Schedule of Requirements, (iii) Specific standard or criteria as per Technical Specification, (iv) Cost of Inland transportation, Insurance, incidental cost and other local cost.
ITT. 28.5(a)	Delivery schedule: Relevant parameters of delivery: Delivery shall be made to **GNPC Head Office, Petroleum House, Harbour Road, Tema, Ghana.** (i) Delivery shall be made within four (4) months after the Award of Contract (ii) Goods delivered shall be inspected at the point of receipt. All damaged goods shall be rejected.
ITT. 28.5(b)	Cost of spare parts: GHS. ……. [in total] **N/A** : GHS. ……. [per unit] **N/A** The list of required items is annexed to the Technical Specification.
ITT.28.5(c)	Specific additional criteria are: Supply and Delivery Requirements as indicated in Section VI – Technical Specification. Specific additional criteria are: The list of required items is annexed to the Technical Specification.
ITT.28 .5 (d)	*[Specify the evaluation factors(s) if alternative provision is added in ITT* Alternative *28.5.]* ***Not Applicable***
ITT.30.1	A margin of preference shall be given up to …….. than the lowest evaluated Tender. ***Not Applicable***
F. CONTRACT AWARD	
ITT 32.2	**To qualify for award of the Contract, Tenderers shall meet the following minimum qualifying criteria:** (i) Average Annual Turnover of at least GHS 8,000,000 in the last three (3) years

	(ii) Submission of audited financial statements for the last three (3) years, financial position, and prospective long-term profitability. a. Average coefficient of Current ratio (Current Assets /Current Liabilities): > 1.2 b. Average coefficient of Debt Ratio (Total Debt/Total Assets) < 0.75 (iii) Evidence of successful execution of a minimum of three (3) contracts involving Supply and Installation of Laboratory Equipment, Materials and Consumables, with a minimum total value Three Million Ghana Cedis (GHS 3,000,000.00) between 2016 and 2026. (iv) Liquid assets and/or credit facilities, net of other contractual commitments and exclusive of any advance payments which may be made under the Contract, of no less than GHS 3,000,000.00. (v) Demonstrated ability to locally provide & coordinate after-sales services, Spare part stocking & other technical support to GNPC RATC for the continuous functioning of Petroleum Laboratory Equipment (Sales Centre with Lab equipment servicing expertise) **The Tender shall be awarded on lot-by-lot basis.**
ITT. 33.1	Percentage for quantity increase or decrease: Twenty per cent (20%)
ITT. 36.1	Notification of Award shall be sent to the successful Tenderer at any time before expiration of Tender Validity.
ITT.38.1	The amount of Performance Security shall be 10% of the contract sum. - a bank guarantee issued by an approved bank in Ghana in an amount to be determined; or - a performance bond from an approved insurance firm in Ghana licensed by the National Insurance Commission in an amount to be determined.

Section III. General Conditions of Contract

1. Definitions

In this contract, the following terms shall be interpreted as indicated:

a. ."The Contract" means the agreement entered into between the Purchaser and the Supplier, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein;

b. "The Contract Price" means the price payable to the Supplier under the contract for the full and proper performance of its contractual obligation;

c. "The Goods" means equipment, machinery, related Accessories, spare-parts and/or other materials which the Supplier is required to supply to the Purchaser under the contract;

d. "The Services" means services ancillary to the supply of the goods such as transportation and insurance and any other incidental services, such as installation, commissioning, the operational and maintenance training of the supplied equipment and other such obligations of the supplier covered under the Contract.

e. "The Purchaser" means the Procurement Entity of the Republic of Ghana purchasing the goods.

f. "The Supplier" means the individual or organization supplying the goods and services under this contract.

g. "The Purchaser's Country" is Ghana.

h. "The Delivery Site" where applicable, means the place or places where supply of goods are to be delivered and performance of services are to be completed.

i. "Day" means calendar day.

j. "Public funds" include:

(i) funds from government budget, Metropolitan Assembly budgets, Municipal Assembly budgets or District Assembly budgets;
(ii) funds from government Foundations;
(iii) funds from government Trust Funds;

(iv) funds from domestic loans and foreign loans taken or guaranteed by government;
(v) funds from state foreign aid;
(vi) revenue received from the economic activity of state or local government agencies or other legal persons in public law financed from the Government budget, Metropolitan Assembly budgets, District Assembly budgets or Government foundations;

2. Application

2.1 These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the contract.

3. Country of Origin

3.1 All goods and services supplied under the contract shall have their origin in Ghana or in eligible countries as specified in Special Condition of Contract.

3.2 For purposes of this clause "origin" means the place where the goods are mined, grown, produced or manufactured, or from which the Services are supplied. Goods are produced when, through manufacturing, processing, or substantial and major assembly of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components.

3.3 The origin of Goods and Services is distinct from the nationality of the Supplier.

4. Standards

4.1 The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and, when no applicable standard is mentioned, to the authoritative standards appropriate to the Goods' country of origin, such standards shall be the latest issued by the concerned institution.

4.2 Wherever reference is made in the Technical Specifications to specific standards and codes to be met by the goods and materials to be furnished or tested, the provisions of the latest current edition or revision of the relevant shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national or relate to a particular country or region, other authoritative standards that ensure substantial equivalence to the standards and codes specified will be acceptable.

5. Contract Documents and Information

5.1 The Supplier shall not, without the Purchaser's prior written Documents and consent, disclose the Contract, or any provision thereof, or any Information specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Supplier in the performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.

5.2 The Supplier shall not, without the Purchaser's prior written consent, make use of any document or information enumerated in sub-clause 5.1 except for purposes of performing the Contract.

5.3 Any document, other than the Contract itself, enumerated in sub-clause 5.1 shall remain the property of the Purchaser and shall be returned (all copies) to the Purchaser on completion of the Supplier's performance under the Contract if so, required by the Purchaser.

6. Rights

6.1 The Supplier shall indemnify the Purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the Goods or any part thereof in the Purchaser's country.

7. Performance Security

7.1 Within fourteen (14) days after the Supplier's receipt of Security notification of award of the contract, the successful Tenderer shall furnish performance security to the Purchaser in the amount specified in the Special Conditions of Contract and in the form specified in Section VII.

7.2 The proceeds of the performance security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.

7.3 The performance security shall be denominated in the currency of the contract or in a freely convertible currency acceptable to the Purchaser and shall be in the form of an unconditional bank guarantee issued by a bank in Ghana acceptable to the Purchaser and in the form provided in the Tender Documents or another form acceptable to the Purchaser.

7.4 The performance security will be discharged by the Purchaser and returned to the Supplier not later than 28 days after the expiry of the one-year warranty period following the date of issue of the certificate of final acceptance of equipment, and after installation and commissioning of the equipment at the final destination.

8. Inspections and Tests

8.1 The Purchaser or its Representative shall, at no extra cost, Tests have the right to inspect and/or to test the goods to confirm their conformity to the Contract. The Special Conditions of Contract and/or the Technical Specifications shall specify what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Supplier in writing of the identity of any representatives retained for these purposes within 21 days after award of the Contract.

8.2 The inspections and tests may be conducted on the premises of the Supplier or its sub-Supplier(s), at point of delivery, and/or at the Goods' final destination. If conducted on the premises of the Supplier or its sub-Suppliers(s), all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Purchaser.

		8.3	Should any inspected or tested Goods fail to conform to the Specifications, the Purchaser may reject the Goods, and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Purchaser.
		8.4	The Purchaser's right to inspect, test and, where necessary, reject the goods after the goods' arrival in the Purchaser's country shall in no way be limited or waived by reason of the goods having previously been inspected, tested and passed by the Purchaser or its Representative prior to the goods' shipment from the country of origin.
		8.5	Nothing in GCC Clause 8 shall in any way release the Supplier from any warranty or other obligations under this Contract.
		8.6	A Certificate of Acceptance shall be issued by the Purchaser after necessary inspection and tests of the Goods supplied as specified in SCC.
9.	**Packing**	9.1	The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all transit points.
		9.2	The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, as specified in the SCC , and in any subsequent instructions issued by the Purchaser.
10.	**Delivery and Transfer of Risk**	10.1	Delivery of the goods shall be made by the Supplier in accordance with the terms specified by the Purchaser in its Schedule of Requirements. The details of shipping and/or other documents to be furnished by the Supplier are specified in the SCC.
		10.2	For purposes of the Contract, "FOB," "C&F," "CIF", "CIP", "EXW" and other trade terms used to describe the obligations of the parties shall have the meanings assigned to them by the current edition of the International Rules for the Interpretation of the Trade Terms (INCOTERMS) published by the International Chamber of Commerce (ICC), Paris.
		10.3	Documents to be submitted by the Supplier are specified in the SCC.
11.	**Insurance**	11.1	The goods supplied under the Contract shall be fully insured in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the Special Conditions of Contract. Such insurance shall be arranged and paid for by the supplier.
		11.2	1Where delivery of the goods is required by the Purchaser on a CIF or CIP basis, the Supplier shall arrange and pay for marine

insurance, naming the Purchaser as the beneficiary. Where delivery is on an FOB or C&F basis, marine insurance shall be the responsibility of the Purchaser.

12. Transportation

12.1 Where the Supplier is required under the Contract to deliver the goods FOB, transport of the goods, up to and including the point of putting the goods on board the vessel at the specified port of loading, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price.

12.2 Where the Supplier is required under the Contract to deliver the goods C&F, CIP, or CIF or to a specified destination within the port of discharge or such other point in the country of destination including insurance and storage, as shall be specified in the Contract shall be arranged and paid for by the Supplier, and the related cost thereof shall be included in the Contract Price.

12.3 Where the Supplier is required to effect delivery under any other terms, the Supplier shall be required to meet all transport and storage expenses until delivery

12.4 In all of the above cases, transportation of the goods after delivery shall be the responsibility of the Purchaser.

12.5 Where the Supplier is required under the Contract to deliver the goods CIF or CIP or C&F, no further restriction shall be placed on the choice of the ocean carrier. Where the Supplier is required under the Contract (i) to deliver the goods FOB, and (ii) to arrange on behalf and at the expense of the Purchaser for ocean transportation on specified conference vessels or on national flag carriers of the Purchaser's country, the Supplier may arrange for such transportation on alternative carriers if the specified conference vessels or national flag carriers are not available to transport the goods within the time period(s) specified in the Contract.

13. Incidental Services

13.1 The Supplier may be required to provide any or all of the following services, including additional services, if any, specified in SCC:

a. performance or supervision of on-site assembly and/or start-up of the supplied Goods;
b. furnishing of tools required for assembly and/or maintenance of the supplied Goods;
c. furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods;
d. performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and
e. training of the Purchaser's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods.

14 Spare Parts

14.1 As specified in the SCC, the Supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:

a. such spare parts as the Purchaser may elect to purchase from the Supplier, provided that this election shall not relieve the Supplier of any warranty obligations under the Contract; and
b. in the event of termination of production of the spare parts:
    i. advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and
    ii. following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings, and specifications of the spare parts, if requested.

15. Warranty

15.1 The Supplier warrants that the Goods supplied under the Contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier further warrants that all Goods supplied under this Contract shall have no defect, arising from design, materials, or workmanship (except when the design and/or materials is required by the Purchaser's specifications) or from any act or omission of the Supplier, that may develop under normal use of the supplied Goods in the conditions prevailing in the country of final destination.

15.2 The warranty shall remain valid for (12) months after the goods, or any portion thereof as the case may be, have been delivered to the final destination indicated in the Contract and installed and commissioned to the satisfaction of the Purchaser

15.3 The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty.

15.4 Upon receipt of such notice, the Supplier shall, within the period as specified in SCC and with all reasonable speed, repair or replace the defective Goods or parts thereof, without costs to the Purchaser other than, where applicable, the cost of inland delivery of the repaired or replaced Goods or parts from EXW or to the final destination.

15.5 If the Supplier, having been notified, fails to take remedial action within forty-two (42) days from date of receipt of notice, the Purchaser may proceed to take such action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.

16. Payment

16.1 The method and conditions of payment to be made to the Supplier under the Contract shall be specified in the SCC.

16.2 The Supplier's request(s) for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as

appropriate, the Goods delivered and Services performed, and by documents submitted pursuant to GCC Clause 10, and upon fulfilment of other obligations stipulated in the Contract.

16.3 Payments shall be made promptly by the Purchaser, but in no case later than twenty-eight (28) days after (i) the acceptance of an Invoice or claim by the Purchaser or (ii) as agreed by the parties.

16.4 The Purchaser shall pay to the Supplier interest on any outstanding amount at the prevailing interbank rate where the Purchaser has received an accepted invoice or certificate from the Supplier but has failed to make payment within the number of days stated in the Data Sheet and where such period is not stated, payment remains outstanding for more than twenty-eight (28) days after the agreed due date.

17. Prices

17.1 Prices charged by the Supplier for goods and services delivered and services performed under the Contract shall not vary from the prices quoted by the Supplier in its Tender, with the exception of any price adjustments authorised in the SCC or in the Purchaser's request for Tender validity extension, as the case may be.

18. Change Orders

18.1 The Purchaser may at any time, by a written order given to the Supplier pursuant to GCC Clause 31, make changes within the general scope of the Contract in any one or more of the following:

a. drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
b. .the method of shipment or packing;
c. .the place of delivery; and/or
d. the Services to be provided by the Supplier.

18.2 If any such change causes an increase or decrease in the cost of, or the time required for the Supplier's performance of any provisions under the Contract, an equitable adjustment may be made in the Contract Price or delivery schedule, or both, and the Contract may accordingly be amended. Any claims by the Supplier for adjustment under this clause must be asserted within twenty-eight (28) days from the date of the Supplier's receipt of the Purchaser's change order.

19. Contract Amendments

19.1 Subject to GCC Clause 18, no variation in or modification of the terms of the Contract shall be made, except by written amendment signed by the parties.

20. Assignment

20.1 The Supplier shall not assign, in whole or in part, its obligations to perform under the Contract, except with the Purchaser's prior written consent.

21 Subcontracts

21.1 The Supplier shall notify the Purchaser in writing of all subcontracts awarded under this Contract if not already specified in the Tender.

Such notification, in the original Tender or later, shall not relieve the Supplier from any liability or obligation under the Contract.

21.2 Subcontracts must comply with the provisions of GCC Clause 3.

22. Delays in the Supplier's Performance

22.1 Delivery of the goods and performance of services shall be made by the Supplier in accordance with the time schedule specified by the Purchaser in the Schedule of Requirements.

22.2 Except as provided under GCC clause 25, an unexcused delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to any or all of the following sanctions: forfeiture of its performance security, imposition of liquidated damages, and/or termination of the Contract for default.

22.3 If at any time during performance of the Contract, the Supplier or its sub-supplier(s) should encounter conditions impeding timely delivery of the goods and performance of Services, the Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice, the Purchaser shall evaluate the situation and may, at its discretion, extend the Supplier's time for performance, with or without liquidated damages, in which case, the extension shall be ratified by the parties by amendment of the Contract.

23. Liquidated Damages

23.1 Subject to GCC Clause 25, if the Supplier fails to deliver any or all of the goods or to perform within the time period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to (0.5%) of the contract price of the delayed goods for each week of delay until actual delivery, up to a maximum deduction of (10%) percent of the delayed goods Contract Price. Once the maximum is reached, the Purchaser may consider termination of the Contract pursuant to GCC Clause 24.

24. Termination for Default

24.1 The Purchaser may, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, terminate the Contract in whole or in part:

a. if the Supplier fails to deliver any or all of the goods within the time period(s) specified in the Contract, or any extension thereof granted by the Purchaser pursuant to GCC Clause 22; or
b. if the Supplier fails to perform any other obligation(s) under the Contract.

24.2 In the event the Purchaser terminates the Contract in whole or in part, pursuant to GCC para. 24.1 and 24.3 below, the Purchaser may procure, upon such terms and in such manner as it deems appropriate, goods or services similar to those undelivered, and the Supplier shall be liable to the Purchaser for any excess costs for such similar goods or services. However, the Supplier shall continue performance of the Contract to the extent not terminated.

24.3 Termination for Corrupt or Fraudulent Practices

The Purchaser may, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, terminate the Contract in whole or in part if the Supplier, in the judgement of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the contract.

For the purpose of this 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; and

"Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract, and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the benefits of free and open competition;

25. Force Majeure

25.1 For purposes of this Contract, "Force Majeure" means an event beyond the control of the parties to the Contract and not involving either party's fault or negligence and not foreseeable.

25.2 If, at any time during the existence of the Contract, either party is unable to perform in whole or part any obligation under this Contract because of such events which include, but are not restricted to, acts of God, acts of Government in its sovereign capacity, war, revolutions, hostility, civil commotions, strikes, fires, floods, epidemics, quarantine restrictions, freight embargoes, explosions, then the date of fulfilment of Contract shall be postponed during the period when such circumstances are operative.

25.3 The party which is unable to perform its obligations under the present Contract shall, within fourteen (14) days of occurrence of the Force Majeure event, inform the other party with suitable documentary evidence. Non-availability of raw materials from regular sources shall not be an excuse for the Supplier for not performing its obligations under this clause.

25.4 Any waiver/extension of time in respect of the delivery/acceptance of any instalment or part of the goods shall not be deemed to be a waiver/extension of time in respect of the remaining deliveries.

25.5 If such inability to perform continues for a period of more than three (3) months, each party shall have the right to be released from further performance of the Contract, in which case, neither party shall have the right to claim damages from the other. All prior performance shall be subject to Contract terms.

25.6 Notwithstanding the provisions of GCC Clauses 22, 23, and 24, the Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default if and to the extent

that its delay in performance or other failure to perform its obligations under the Contract is the result of Force Majeure.

25.7 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

26. Termination for Insolvency

26.1 The Purchaser may at any time terminate the Contract by giving written notice to the Supplier, without compensation to the Supplier, if the Supplier becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Purchaser.

27. Termination for Convenience

27.1 The Purchaser, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.

27.2 The Goods that are complete and ready for shipment within twenty-eight (28) days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect:

a. a.to have any portion completed and delivered at the Contract terms and prices; and/or
b. b.to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and Services and for materials and parts previously procured by the Suppliers.
c.

28. Resolution of Disputes

28.1 The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

28.2 If, after twenty-eight (28) days from the commencement of such informal negotiations, the Purchaser and the Supplier have been unable to resolve amicably a Contract dispute, either party may require that the dispute be referred for resolution to the formal mechanisms specified in the Special Conditions of Contract. These mechanisms may include, but are not restricted to, conciliation mediated by a third party, adjudication in an agreed national or international forum, and/or national and international arbitration.

29. Governing Language

29.1 The Contract shall be written in the language as specified in SCC. Subject to GCC Clause 30, the version of the Contract written in English language shall govern its interpretation. All correspondence

and other documents pertaining to the Contract which are exchanged by the parties shall be written in the English language.

30. Applicable Law

30.1 The Contract shall be interpreted in accordance with the laws of Ghana unless otherwise specified in the Special Conditions of Contract.

31. Notices

31.1 Any notice given by one party to the other pursuant to the Contract shall be sent to the other party in writing or by facsimile and confirmed in writing to the other party's address specified for that purpose in the SCC

31.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

32. Taxes and Duties

32.1 A Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods to the final destination.

Section IV. Special Conditions of Contract

The following Special Conditions of Contract (SCC) shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in General Conditions of Contract. The corresponding clause number in the General Conditions is indicated in parentheses. Where sample provisions are furnished, they are only illustrative of the provisions that the Purchaser should draft specifically for each procurement.

1.	**Definition (GCC Clause 1)**	1.1	a. The Purchaser is: **Ghana National Petroleum Corporation** **Petroleum House, PMB, Meridian Road** **Tema.** b. The Supplier is:……... ……. *[Name and Address of Supplier]* c. The Delivery site is **GNPC Research and Technology Centre, Tema, Ghana**.
2.	**Country of Origin (GCC Clause 3)**	2.1	Any country in the World.
3.	**Performance Security (GCC Clause 7)**	3.1	The Performance Security shall be for an amount equal to ***five per cent (5%)*** *of the Contract Price in the form of a Bank Guarantee or a Performance Bond issued by an insurance company registered by the National Insurance Commission of Ghana and in good standing and acceptable to* the Purchaser. The performance security shall remain valid for 28 days after the delivery and acceptance of all items under the contract.
4.	**Inspection and Tests**	4.1	Inspection and tests prior to shipment of goods at final acceptance are as follows: The time limit for inspection and tests and the issuance of Certificate of acceptance and/or rejection should be no later than Fifty-six (56) days of the completion of inspection and tests.
6.	**Delivery and Transfer of Risks (GCC Clause 10)**	6.1	For goods supplied from abroad: a. Upon shipment, the Supplier shall notify the Purchaser and the Insurance Company by facsimile the full details of the shipment, including contract number, description of Goods, quantity, the vessel, (or the flight number), the bill of lading number and date port of loading, date

of shipment, port of discharge, etc. The Supplier shall mail the following documents to the Purchaser, with a copy to the Insurance Company:

i. Copies of the Supplier's invoice showing Good's description, quantity, unit price and total amount;
ii. Original and [insert number as required] copies of the negotiable, clean on board, bill of lading (Consignment note) marked "freight prepaid" and [insert number as required] copies of non-negotiable bill of lading (Consignment note);
iii. Copies of the packing list identifying contents of each package;
iv. Insurance Certificate;
v. Manufacturer's or Supplier's Warranty Certificate;
vi. Inspection Certificate, issued by the nominated inspection agency, and the supplier's factory inspection report; and
vii. Certificate of origin, certified/verified by the manufacturing company in case of Goods manufactured locally.

6.2 The documents as per clause 6.1 shall be received by the Purchaser at least one week before arrival of Goods at the port or place of arrival and, if not received, the Supplier will be responsible for any consequent expenses.

6.3 For Goods within the country: Upon delivery of the goods to the transporter, the Supplier shall notify the Purchaser and mail the following documents to the Purchaser:

i. Copies of the Supplier's invoice showing Goods' description, quantity, unit price and total amount;
ii. Delivery note, transport receipt, railway receipt;
iii. Manufacturer's or Supplier's Warranty Certificate;
iv. Inspection Certificate issued by the nominated inspection agency, and the Supplier's factory inspection report; and
v. Certificate of origin.

6.4 The documents as per sub-clause 6.3 shall be received by the Purchaser before arrival of the goods and, if not received, the Supplier will be responsible for any consequent expenses.

7. Insurance (GCC Clause 11)

The insurance shall be in an amount equal to 110 per cent (110 %) of the CIP value of the Goods from "Warehouse" to "Warehouse" on "All Risks" basis, including War Risks and Strikes.

8. Spare Parts (GCC Clause 14)

Additional spare parts requirements are: **N/A**

9. Warranty

9.1 In partial modification of the provisions, the warranty period

(GCC Clause 15)

shall be twenty (24) months date of delivery of the goods. The Supplier shall, in addition, comply with the performance and/or consumption guarantees specified under the Contract. If, for reasons attributable to the Supplier, these guarantees are not attained in whole or in part, the Supplier shall, at its discretion, either:

a. Make such changes, modification, and/or additions to the Goods or any part thereof as may be necessary in order to attain the contractual guarantees specified in the contract at its own cost and expense and to carry out further performance tests in accordance with SCC 4.1
or

b. Pay liquidated damages to the Purchaser with respect to the failure to meet the contractual guarantees. The rate of these liquidated damages shall be 0.5% of the contract price of the delayed goods for each week of delay until actual delivery, up to a maximum deduction of 10% of the delayed goods Contract Price.

9.2 The period for correction of defects in the warranty period is: 50% of the delivery schedule time for the particular goods.

9.3 Warranties do NOT apply to product failure resulting from misuse abuse, accident, neglect, mishandling, improper adjustment or maintenance.

10. Payment (GCC Clause 16)

10.1 Payment for Goods and Services supplied shall be made in Ghanaian Cedis, as follows:

i. Advance Payment: After issuance of Purchase Order, an advance payment of 15% of the Contract Price shall be paid after submission of an invoice supported by an Advance payment Security for the same amount.

ii. Delivery to site (GNPC RATC): 55% of the Contract Price shall be paid after full delivery, inspection and acceptance of the goods and upon submission of VAT Invoice and GRA Letter of Exemption from payment of withholding tax (where applicable) within 30 days of receipt of invoice.

iii. Installation, Commissioning and Training: 30% of the Contract Price shall be paid after installation, commissioning and training.

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11. Prices

11.1 Tender Prices may be adjusted only in the case of Tender validity extension requested by the Purchaser. **Price Adjustment Not Applicable**

11.2 Purchaser shall not entertain Contract Price variation due to the effect of any notification of exchange rate variation of any convertible currency.

12.	**Liquidated Damages. (GCC Clause 23)**	12.1 The applicable rate for the Liquidated damages is: 0.5% per day. up to a maximum deduction of (10%) per cent of the delayed goods Contract Price

V. SCHEDULE OF REQUIREMENTS

The delivery schedule expressed as weeks/months stipulates hereafter a delivery date which is the date of delivery to the premises of the Purchaser.

To determine the correct date of delivery hereafter specified, the Purchaser has considered the additional time that will be needed for international or national transit to the Project Site or to another common place.

Item No.	Description	Quantity	*Maximum Schedule for Delivery at Site (Date of Contract Signature)*
Lot 1	**SLABBING, PLUGGING & CUTTING AREA**	List of & quantity of equipment are annexed to the Technical Specifications	Within 4 months from issuance of PO
Lot 2	**CORE RESINATION & WAXING ROOM**	"	"
Lot 3	**ROUTINE CORE ANALYSIS (RCA) LAB**	"	"
Lot 4	**DRYING ROOM**	"	"
Lot 5	**SOXHLET / SOLVENT EXTRACTION ROOM**	"	"
Lot 6	**SAMPLE PREPARATION LAB**	"	"
Lot 7	**THIN SECTION PREPARATION LAB**	"	"
Loy 8	**PETROGRAPHY, PALYNOLOGY & SEDIMENTOLOGY MICROSCOPE LAB**	"	"
Lot 9	**IMAGING ROOM - CORE PHOTOGRAPHY & UV SCREENING & SGR SCANNER**	"	"
Lot 10	**GEOCHEMISTRY & PYROLYSIS LAB**	"	"
Lot 11	**GAS CHROMATOGRAPHY (GC) LAB**	"	"
Lot 12	**DOWNSTREAM FLUID TESTING (FINISHED PRODUCT)- PETROLEUM PRODUCTS ANALYZERS (PETROL,**	"	"

Item No.	Description	Quantity	*Maximum Schedule for Delivery at Site (Date of Contract Signature)*
	DIESEL, RESIDUAL FUEL OIL, CRUDE OIL)		
Lot 13	**GAS CHROMATOGRAPH**	"	"
Lot 14	**ELEMENTAL ANALYSER**	"	"
Lot 15	**LUBRICANTS ANALYZERS**	"	"
Lot 16	**WEIGHING BALANCE**	"	"
Lot 17	**DRYING EQUIPMENT**	"	"
Lot 18	**REFRIGERATED FLUID**	"	"
Lot 19	**LABORATORY SAFETY & HEALTH (HSE)**	"	"
Lot 20	**IT, LIMS & DATA MANAGEMENT**	"	"
Lot 21	**TRAINING, COMMISSIONING & ACCREDITATION**	"	"
Lot 22	**CALIBRATION STANDARDS, REFERENCE MATERIALS & QC**	"	"

Item No.	Description	Quantity	*Maximum Schedule for Delivery at Site (Date of Contract Signature)*
Lot 23	**PERSONAL PROTECTION EQUIPMENT**	"	"
Lot 24	**PETROLEUM LABORATORY GLASSWARE, PLASTICWARE, CHEMICALS AND REAGENTS**	"	"
Lot 25	**LABORATORY CHEMICALS AND REAGENTS**	"	"

VI. TECHNICAL SPECIFICATIONS

The purpose of the Technical Specifications (TS) provided is to define the technical characteristics of the Goods and Related Services required by the Purchaser. These detailed TS have been prepared to take the following into account:

- The TS constitutes the benchmarks against which the Purchaser will verify the technical responsiveness of bids and subsequently evaluate the bids.
- These TS, therefore, require that all goods and materials to be incorporated in the goods be new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided for otherwise in the contract.
- Where brand names and models are indicated, the equivalent shall be applicable.

Offered Specifications

Indicating "Compliance to required TS" is not good enough; Tenderer must provide details on the goods to be offered, and describe all features of model offered including any not specified. Tenderer must also provide product technical data sheets.

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- Where brand names and models are indicated, the equivalent shall be applicable.

EQUIPMENT LIST FOR PROPOSED LABORATORY

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
LOT 1 SLABBING, PLUGGING & CUTTING AREA				
1	**<u>Automated Core Slabbing Saw</u>** A versatile diamond-impregnated radial blade for slabbing core samples in two halves or to trim full diameter rock samples. A variable-rate feed mechanism enables the long section cutting of ultra-high-density core in one pass without fracturing, grooving or chipping, thereby producing regular high-finished surfaces.	1	Saw blade diameter: 500 mm. Maximum cutting depth: 150 mm Maximum core length: 1 m Must include a quick lock/release clamping device for safe operation Lubricants: Water or oil Dimensions (Lx W x H): 3000 x 170 x900 mm Weight: 500 kg Include manufacturer spare parts and accessories for 1-year operations (Recirculating tank for use with both brine and normal water) 2-year warranty Voltage requirements: 220 V, 50/60 Hz, 1 phase, with standard British 3-pin plugs (no adapters or transformers) Electric Motor Power: 2200 W Onsite installation and testing Complete with: Fixed saw blade and motor Motorised carriage holding and worktable Variable rate feeding mechanism Blade guard for saw blade Motor to power the saw Sample holder Coolant feeding system Coolant recovery pan	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Spare Parts for 1 year's normal operation: 10 liters of corrosion-free liquid 1 ea coolant hose 1 ea belt 1 set of maintenance tools 1 ea fuses Diamond Impregnated Saw Blade Brand/Model: Vinci or equivalent.	
2	**Core Trim Saw, 1-bladed** Bench top tool designed to cut preset core sample lengths. The preset sample lengths should be adjustable by rearranging machined spacers to the desired length between the blades. The quality of the saw blade should allow for extreme precision of the end face after trimming of 0.002 inch (5/100 mm). All wetted components should be constructed from stainless steel and anodized aluminum for long-lasting, corrosion-free operation.	1	Saw Blade diameter: 200 mm Saw blade thickness: 2mm Core diameter: up to 2” Core length: 2”, 3” and upon request Lubricants: Water or oil Power supply: 220 V, Motor power: 550 W, 3000 RPM Weight: 30 kg 50/60 Hz, 1 phase Dimensions: 700 x 800 x 600 mm Must have 3 years' warranty Spare parts for 2 years' normal operation Onsite installation and testing Dust suction/extraction point Brand/Model: Vinci or Stratum CTS-S or equivalent	
3	**Core Cutting Saw Machine (Vinci, corelab CSS100)** A heavy-duty cutting saw machine for cutting large-sized cores up to 8 inches in diameter.	1	Equipped with Recirculating Coolant system for use with both brine and normal water. Have a wetting head, ball bearing assembly Equipped with Aluminum blade guard. Use a diamond tooled blade up to 20 inches in diameter Capable of cutting cores of up to 8 inches in diameter.	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Power requirement: 220-240 V, 50/60 Hz, one phase, 3-pin plug Must have 3 years' warranty Spare parts for 2 years' normal operation Onsite installation and testing Spare Parts for 2 years' normal operation: • 1 belt • 5 liters of corrosion-free liquid • 1 hose • 1 set of fuses • 1 set of maintenance tools Diamond Impregnated Rock Saw Blade Diameter: 450 mm (18 inches) Brand/Model: Corelab SC-450 CS-450 Stratum CSS100	
4	**End Face Grinder (corelab)** A precision device for grinding ends of core samples to form a right cylinder, flat, parallel end faces which are critical for subsequent tests such as porosity or permeability.	1	Benchtop, reliable and steady during grinding Precision up to + 0.002 inches Core diameters accommodated: 1.0 and 1.5 inches. Cutting saw and wetting surfaces should be corrosion resistant. Have a V-block sample holder for core of diameters up to 2 inches. Have attachments for recirculating system Dimensions (W X D X H): 28 x 20 x 28 inches, approximately Include spare parts and accessories for 2-year operation. 4x Grinding Wheels 2x Belt Sets Power requirement: 220-240 V, 50/60 Hz	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Must have 3 years' warranty Onsite installation and testing Brand/Model: Corelab or Coretest or equivalent.	
5	**Pneumatic plugging machine** Core plugging machine on stand with heavy base plate, air-driven membrane liquid pump, liquid reservoir, fixing device, foot pedal, plastic box, spring return for stand, splash screen for on-site use.	1	Pneumatic Core Plugging Machine Kit for on-site use. This is needed because it's handy for taking rush plugs Drill core plugs from whole core in 1 meter length with entry holes in both ends of splash cabinet. Pneumatic driven drill mounted on stand with handle for manual up/down movement. Specifications: Air supply: 0-6 bar Core drilling machine Type: Pneumatic 1.5 HP Spindle rev at no load: 0-3000 RPM Spindle rev at rated load: 0-2500 RPM Drill bits available (std.): Ø1.0”, Ø30, 1.5" and Ø40mm x 150mm Min/Max core bit range: Ø12-Ø80mm) Outer dimensions: 800mm x 600mm x 1200mm (L x B x H) Weight: 70 kg Must include a height-adjustable pan/table height with rack and pinion hand crank movement. Power requirement: 220-240 V, 50/60 Hz, two phase, 3-pin plug Provide spare parts for 2 year operations Must have 3 years' warranty Onsite installation and testing	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Brand/Model: Stratum CPM-P or equivalent	
6	**Core plugging machine /Drill Press** Heavy-duty, diamond tool electric driven drill press for plugging core samples for laboratory studies.	1	Equipped with Recirculating Coolant system for use with both brine and Mineral oil. Must include a coolant recovery pan and splash guard system Recovery pan and splash guard system must be corrosion resistant. Standard Drill Core Sizes: diameters of 1.0, 1.5 inch, Length: 5 inches Motor Capability: 1.5 HP motor Motor speed: up to 3800 RPM Max. coring depth: 5 inches Max. tilt of table: 45 deg. Tray capacity: allow cores up to 3 feet long Must include a height-adjustable pan/table height with rack and pinion hand crank movement. Power requirement: 220-240 V, 50/60 Hz, two phase, 3-pin plug Provide spare parts for 2 year operations Must have 3 years' warranty Onsite installation, testing, commissioning and training Spare Parts for 3 years' normal operation Drill Bit 2" for samples up to 5" long Drill Bit 1.5" for samples up to 5" long Drill Bit 1" for samples up to 5" long Brand/Model: Corelab, Stratum CPM-E, Coretest model MDP-405 or equivalent.	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
7	**Core Trim Saw, (2-bladed)** This bench-top trim equipment is used for trimming cylindrical core plug samples for porosity and permeability measurements. It is equipped with 2 saw blades, each 8 inches in diameter that are adjustable to required preset core lengths prior to cutting. The device also includes a port for attaching a wet/dry vacuum system for rock chips and nuisance particulates, as well as a coolant fluid for lubricating the blade to minimise wear.	1	Number of Blades: 2 Cutting Blade Diameter: 8-inches (200 mm) Saw blade thickness: 2mm Core diameter: up to 2” Core length: 2", 3” Blade and Wetted Material: Corrosion resistant, Diamond tooled. Lubricants: Water/ oil Power supply: 220 V, 50/60 Hz, 1 phase Dimensions: 700 x 800 x 600 mm 3-year warranty Spare parts for 2 years' normal operation (see below) Onsite installation, testing, commissioning and training. Spare Parts for 2 years' normal operation: 1 ea coolant hose 5 liters of corrosion-free liquid 1 ea fuses 1 set of maintenance tools Diamond-impregnated saw blade, 200 mm (8”) diameter. The high diamond concentration within the disk yields not only a higher cutting precision but also a longer durability in comparison to standard disks. Coolant recirculation system. It is comprised of a 20-litre capacity coolant tank constructed from high-density polyurethane and a suction pump. The coolant removes cuttings from the unit, thus ensuring a neat	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			cutting operation. The pump is fitted with a corrosion-resistant stem and impeller. Brand/ Model: Stratum CTS-D, Vinci Trim Saw or equivalent	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 2 CORE RESINATION & WAXING ROOM				
1	**<u>Wax Bath with Stand and Cooling Rack</u>** Stainless steel equipment for heating up wax material for preserving core samples. Designed for melting waxes used during core preservation operations. It can heat waxes at a range of temperatures from 50°C to 200°C (122°F to 392°F) to suit all ranges of waxes available in the coring industry. The melters are insulated with rock-wool and fitted with double wall heat-conserving hinged stainless-steel lids and lifting handles. They are also equipped with an adjustable thermostat and a thermal cut-out to match the temperature to the melting point of the wax used. Its robust steel construction makes this product the perfect device for safe and intensive use (draining system).	1	• Temperature: +50°C to +200°C External Dimensions 1030x450x450mm Internal Dimensions 600x300x350mm Volume 60 Litres Weight 80kgs Power supply 220V, 50/60 Hz Dryer support Large For use with above wax bath The weight of the core samples is supported by the shaft with rod during their dipping into the hot wax. After that, the already covered samples are put on the frame to finish their drying. Construction: Stainless steel Geoseal Wax Box of 10 Kg- (Low melting point) Kit for waxing- 1x Roll of cling film, 1x Roll of aluminium film Dipping wire steel (Bag of 50 units) Brand/Model: Geofactory STAB 302 - STAB-223 - PRES-101 – STAB-404 - STAB-228	
2	**<u>Movable Core Tables (stainless steel top)</u>** Strong and sturdy stainless-steel worktable on which to	2	Dimensions 900(H)x1800(W)x600(D)mm Material 430 Stainless Steel Finish - external Polished stainless steel	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	prepare resinated core or plug samples. Tables must be fitted with castors for ease of movement for relocation purposes.		Weight 44.6kg Material thickness: 1.2mm - 18 Gauge Height adjustable galvanised steel undershelf Delivered flat packed for easy self-assembly Maximum load: 500kg Surface area: 1.08m² 4 feet included 1x self-assembly table, including 1 shelf & fixings Complete with 2 braked and 2 unbraked castors for enabling mobile units Brand/Model: Nisbets-Vogue T378 - HC847	
3	**Resinated Core Storage Cabinets (metal, lockable)** A steel storage cabinet to keep resinated core samples in trays.	2	Extra-wide and deep heavy-duty, fully welded 1800H x 1200W x 600D steel cabinet with a double door for easy access and security. This model also has 3 heavy duty shelves. Fully welded steel heavy-duty storage cabinet for industrial use Heavy-duty welded construction - 1.2mm thick sheet steel Reinforced doors add to security and accept heavy use Security key locking - 2 keys supplied 3 Way locking system operated by a sturdy Chrome Handle 2 x 100kg weight capacity height adjustable steel shelves Full-length heavy-duty semi-concealed door hinges Suitable for Industrial and commercial applications	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Body colour: Light Grey - RAL7035 Finished in Premier shield anti-bacterial powder coating Brand/Model: James Bedford or equivalent	
4	**Core Resination Tray Kit (incl. mixing tools & aux. equipment)** A complete kit for setting fragile, friable or unconsolidated core sections in resin, so they can be safely handled, cut, slabbed and stored for the long term. The core is laid in purpose-made, resin-resistant trays and covered with a two-part epoxy or polyester resin. Once cured, the resin forms a solid block that keeps the core's structure, orientation and depth markings intact. The kit includes mixing containers, graduated measuring jugs, stirring paddles and spatulas for accurate resin preparation, plus spreading tools, release agent, sealing tape, end caps and spare tray liners.	1	Grey H Core Tray 4 Rows - Overall Length: 1000mm, Usable Length: 920mm, Width: 390mm. Height: 75mm, Weight: 2.36kg. Pallet of 81 trays A strong, easy-to-handle and conveyor-friendly tray Designed to be the most stable tray when stacked Excellent sealing when trays are stacked to avoid contamination Patent Rigid-based construction, allowing the tray to glide with minimum noise and in any direction on roller racking and directional transfer tables Trays lock tightly together, which also gives superior stacking (with vertical wall-on-wall design) Drainage holes, deeper and wider finger recesses at the end of each row Excellent strength in design for stacking securely onto pallets and enable banding without distortion Wide ribs, giving more space for writing and marking Core is properly cradled in the half-round sections to prevent rolling and damage	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Holders at each end designed to take normal labels or RFID tags Each row holds 920mm of core, with recess for ease of access to remove, smallest footprint for maximum storage of 1000mm x 390mm Supplied with 81 lids (1126-30400-Grey), 324 lid clips (1126-30102), 1 pack of 100 Aluminium ID Plates (1126-30304) and 1 pack of 100 C Tray marker H Imp4 (1124-00000) Supplied with resin equipment including:- resin, hardener, electric drill, mixer paddle, mixing jug 5 litres, pouring jug 0.5 litres Brand/Model: CRT-100, Westernex Impala 4 Tray (1126-30402-Grey) - 1126-30400-Grey - 1126-30102 1126-30304 - 1124-00000 or equivalent	
5	**Low-Viscosity Epoxy Resin - Araldite 2011 (10 kg starter supply)** Two-component, room-temperature-curing epoxy adhesive used in the resination room to encapsulate and consolidate friable or unconsolidated core sections in trays so they can be slabbed, handled and archived without disintegrating	2	Product: Araldite 2011 A/B (AW 106 resin / HV 953U hardener), Huntsman Advanced Materials. Two-component, multi-purpose epoxy; bonds metals, ceramics, wood, rubber, foams and plastics Two-component, multi-purpose epoxy; bonds metals, ceramics, wood, rubber, foams and plastics. Mix ratio: 100:80 by weight or 1:1 by volume Mix ratio: 100:80 by weight or 1:1 by volume Pot life: typically 2 hours at 25°C Specific gravity: 1.17; Viscosity (Part A): 50,000 mPa·s	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Cure range: 20°C to 180°C with no release of volatile constituents; handling strength from 12 h at 20°C to 4 min at 150°C Lap shear strength (aluminium, ISO 4587): up to 30.4 MPa after 150°C cure; roller peel (ISO 4578): 4.9 N/mm Cured adhesive is electrically insulating with resistance to static and dynamic loading Storage: 2°C-40°C in original sealed containers, away from direct sunlight Supply: 10 kg starter supply (resin + hardener) with TDS and SDS	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 3 ROUTINE CORE ANALYSIS (RCA) LAB				
1	**Helium Porosimeter** A benchtop porosimeter that utilizes helium gas expansion to determine porosity of core samples of 1 inch and 1 ½ inch diameters. Also has capability for determining grain and pore volumes of core samples using the appropriate core holders.	1	Interchangeable sample core holders/matrix cups for 1 inch, 1 ½ inch and 4-inch diameter cores Stainless steel calibration check plugs Core lengths: up to 12" with appropriate core holder. Porosity Range: up to 40 % Charge Pressure in reference volume: 200 psi Pressure sensor accuracy: ±0.11% of full scale Gas: Nitrogen, Helium up to 500 psi, Dry air (100 psi) Electrical Power Requirements: 220 VAC, 50 Hz and 1 phase Dimension (L x D x H) mm: 1000 x 1000 x 800 Dual Core high-end computer workstation and accessories, software on a Windows-based platform. Generated output files transferable to other databases and spreadsheets for report generation 3 years' warranty Spare Parts for 2 years' normal operation Certificates of origin, test and calibration Onsite installation, commissioning, training Complete with: Sample chamber, matrix cup (Grain volume cell) for 1", 1.5" and 4"	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			diameter, 5 calibrated discs for system calibration Matrix Cup for 4" diameter sample associated software Spare Parts for 2 years' normal operation Brand/ Model: Corelab: UltraPore-300 - Maxtrix Cup - UltraPore-300-SP, Stratum DHP-100-A or equivalent	
2	**Gas Permeameter (Automated)** A benchtop system for measuring core sample permeability to gas using the steady-state method. The unit can also measure the Klinkenberg permeability and is connected to a computer for automated data acquisition using built-in control software.	1	System supplied with quick release Hassler-type core holder mounted on console. Computer-controlled data acquisition system and software. Measuring Klinkenberg slip factor (b), and non-reactive liquid permeability (Klinkenberg Permeability) Core diameter: 1.5" Core length: up to 4" Permeability measurements range: from 0.01mD to 10 Darcies Maximum flow pressure: 100 psi Maximum flow rate: 0-50 and 600 cc/min Flow meter accuracy: 1% F.S. Power: 220 V, 50/60 Hz, 1 phase, standard 3-pin electrical plug. Technical manuals and software documents 3 years' warranty Spare Parts for 2 years' normal operation: 2 meters ¼" tubing 1 leak snoop 5 fittings 10 sets of O-ringO-rings	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			5 sleeves 1.5” diameter Gas permeameter console: The console controls and displays the flow rate and temperature of the injected gas as well as the upstream and differential pressures along the core sample. It consists of an upstream flow pressure regulator, a precision response mass flow meter with a dual flow range, an upstream pressure transducer, a downstream pressure transducer with an integrated temperature sensor and a precision metering valve for back-pressure control to enable a better Klinkenberg interpolation. The console is also equipped with a pressure gauge and control valve to set the confining pressure Data acquisition control station: The computer workstation uses the latest state-of-the-art personal computer operating with the latest Microsoft Windows version and a specific Vinci supervision package. Brand/Model: Vinci SSGPS, Corelab or Stratum DGP-300-B-A	
3	**Porosity-Permeability Check Plugs** Calibrated porosity-permeability check plugs to be used to check and monitor the calibration of any steady-state gas permeameter or helium porosimeter for 1” and 1.5” diameter cores.	1	2 sets of check plugs, one set of 1" plugs and one set of 1.5" plugs Each set contained in a protective box with certified data sheet for checking accuracy. Check plugs 1" and 1.5" diameter. Permeability to air range: see below for individual plug ranges Permeability range: 0.05 to 1000md (see below)	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Plugs made of stainless steel and protected by a metal ring. 2 years' warranty. Comprising: **1.5" PERMEABILITY CHECK PLUG, CALIBRATED, SET OF 5 WITH CASE** Permeability range: 0.05-0.15 md, 0.7-2md, 8-15 md, 40-70md, 150-220 md Diameter: 1.5 inch Length: 1.0 inch **1" PERMEABILITY CHECK PLUG, CALIBRATED, SET OF 5 WITH CASE** Permeability range: 0.05-0.15 md, 0.7-2md, 8-15 md,40-70md, 150-220 md Diameter: 1.0 inch Length: 1.0 inch **1.5" ULTRAPERM CHECKPLUG** 1000md plug Permeability range: between 900 md and 1,100 md **1" ULTRAPERM CHECKPLUG** 1000md plug Permeability range: between 900 md and 1,100 md Diameter: 1.0 inch Length: 1.0 inch Brand/Model: Vinci PCP - 1.5" - PCP - 1", or equivalent	
4	**Analytical Sieve Shaker for grain size analysis** For sieving dry sand samples by horizontal circular motion	1	Should meet ASTM E-11 or equivalent international standard	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	that ensures proper separation of fine and coarse-grained products		Capable of accommodating up to 8 test sieves (2 inches in height and 8 inches in diameter) Consists of stainless-steel test sieves, steel wire mesh and a collecting pan. Required ASTM E 11-87 mesh sizes = 5, 10, 18, 35, 60, 120, 230 and 500. Suitable for both dry and wet sieving 1-99 minute digital timer with efficient digital control and display. High repeatability and accuracy of results Has a serial port (RS 232) to interface with a computer with Windows-based sieve analysis software. Measuring Range: 20 µm - 25 mm Power: 220-240 V, 50 Hz, Single phase. Certificate of compliance to ASTM E-11 or equivalent standard. Accessories for 3 years' normal operation 2 years' warranty Onsite commissioning and testing Universal wet sieving clamping device “comfort” for test sieves 100mm / 150mm / 200mm / 203mm (8”) diameter Test sieve of stainless steel with woven wire mesh, 8" diameter x 2" height frame, 4.00mm (5 Mesh) aperture, manufactured according to ASTM E 11, with O-ring of Viton A and compliance certificate Test sieve of stainless steel with woven wire mesh, 8" diameter x 2" height	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			frame, 2.00mm (10 Mesh) aperture, manufactured according to ASTM E 11, with O-ring of Viton A and compliance certificate Test sieve of stainless steel with woven wire mesh, 8" diameter x 2" height frame, 1.00mm (18 Mesh) aperture, manufactured according to ASTM E 11, with O-ring of Viton A and compliance certificate Test sieve of stainless steel with woven wire mesh, 8" diameter x 2" height frame, 500 microns (35 Mesh) aperture, manufactured according to ASTM E 11, with O-ring of Viton A and compliance certificate Test sieve of stainless steel with woven wire mesh, 8" diameter x 2" height frame, 250 microns (60 Mesh) aperture, manufactured according to ASTM E 11, with O-ring of Viton A and compliance certificate Test sieve of stainless steel with woven wire mesh, 8" diameter x 2" height frame, 125 microns (120 Mesh) aperture, manufactured according to ASTM E 11, with O-ring of Viton A and compliance certificate Test sieve of stainless steel with woven wire mesh, 8" diameter x 2" height frame, 63 microns (230 Mesh) aperture, manufactured according to ASTM E 11, with O-ring of Viton A and compliance certificate	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Test sieve of stainless steel with woven wire mesh, 8" diameter x 2" height frame, 25 microns (500 Mesh) aperture, manufactured according to ASTM E 11, with O-ring of Viton A and compliance certificate Collecting pan of stainless steel, 8" (203mm) diameter, height 2"(50mm) Collecting pan of stainless steel with outlet, 8" (203mm) diameter, height 2" (50mm) Venting ring of stainless steel for wet sieving 8" (203mm) diameter, height 1" (25mm) Software EasySieve USB stick for Windows single-user-licence, English/German including RS232-USB adapter Computer for above item Intel® Core i7-10700 (8 Core, 16M cache, base 2.9GHz, up to 4.8GHz) 16GB (4x4GB) DDR4 UDIMM non-ECC Memory 1TB 5400rpm SATA 2.5" HDD Nvidia GeForce GT 730, 2GB, 2DP Windows 11 Pro Microsoft Office Home and Business Monitor P2222H - 54.6cm (21.5") Wired Keyboard-KB216 - UK (QWERTY) - Black Wired Mouse Black Brand/Model: Verder Scientific AS 200 - 32.662.0006 - 60.150.004000 - 60.150.002000 - 60.150.001000 - 60.150.000500 -	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			60.150.000250 - 60.150.000125 - 60.150.000063 - 60.150.000025 - 69.720.3050 - 69.420.3050 - 69.221.3025 - 32.645.0031 - PC	
5	**Hassler-Type Core Holders** Required for routine gas and liquid permeability and other core flooding experiments.	1	Core Holder has a quick release and quarter-end plugs with easy assembly and disassembly from one end. Low dead volume (small volume of ports and flow lines for accurate flow data). Corrosion-resistant wetted materials: Stainless steel, Viton. Body material: Stainless steel Sleeve material: SS, Viton Working Pressure: 10,000 psi. Test Pressure: 10,000 psi Total Body Length: 6 inches Operating Temperature: 150°C Fluid inlet: Inlet distribution plug with one port, a spare with two ports and another spare with 3 ports, 1/8 in NPT. Fluid outlet: Outlet distribution plug with one port, a spare with two ports and another spare with 3 ports,1/8 inch NPT. Core diameter = 1.5 inches. Core length = 6" Stainless steel spacers accommodate short cores. Ceramic disk inserts for relative permeability, wettability and capillary pressure studies. Spare Parts for 3 years' normal operation 3-year warranty	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Onsite installation, training and commissioning Optional Ti Wetted Materials Optional Quick-Release 'tri-lock' Porous Plate 1.5" 15 bar (ceramic disc) Spare Viton Sleeve Seal Kit (O-Rings) Brand/Model: Corelab RCH - RCH-Wetted - RCH-Release - RCH-Viton - RCH-O-Ring - RCH-Plate or equivalent	
6	**Pressure Tapped Core Holder** A Hassler-type titanium core holder used for core flooding experiments at simulated reservoir pressure and temperature.	1	Core Holder has a quick release and quarter end plugs with easy assembly and disassembly from one end Low dead volume (small volume of ports and flow lines for accurate flow data). Corrosion-Resistant Wetted materials = Stainless Steel, Viton Body material = Stainless Steel Total Body Length = 12 inches Sleeve material = Viton Operating pressure = 10,000 psi. Operating Temperature = 350°F Fluid inlet = Inlet distribution plug with one port, a spare with two ports and another spare with 3 ports, 1/8 in NPT Fluid outlet = Outlet distribution plug with one port, a spare with two ports and another spare with 3 ports,1/8 inch NPT. Core diameter = 1.5 inches. Core length = up to one foot (composite core plugs)	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Spare Parts for 3 years' normal operation 3-year warranty Onsite installation and commissioning Optional Hastelloy C Wetted Materials Spare 1.5" Viton Sleeve, pressure tapped Seal Kit (O-Rings) Brand/Model: Corelab DCH - DCH-Wetted - DCH-Viton - DCH-O-Ring. or equivalent	
7	**Bulk Volume apparatus (Caliper, Archimedes)** Determines the bulk volume of core plugs geometrically (digital calliper dimensions) or by Archimedes immersion/buoyancy; bulk volume is combined with grain volume from the helium porosimeter to calculate porosity in routine core analysis.	1	Geometric bulk volume meter (Vinci GBV or equivalent) for plug-sized and full-diameter cores Digital 150 mm calliper for plug cores and digital 300 mm calliper for full-diameter cores Software to log calliper data and calculate geometric bulk volume, shape factor, effective flow area and calliper bulk factor Immersed bulk volume meter (Vinci IBV or equivalent): sample immersed and buoyant force measured with a high-precision balance; bulk volume calculated by the Archimedes principle Immersion fluid: mercury-free option preferred (brine, refined oil or toluene with samples pre-saturated in the same liquid) Electrical: 220 V, 50 Hz Bulk volume procedures in accordance with API RP 40 (Recommended Practices for Core Analysis) Brand/Model: Vinci Technologies or equivalent	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
8	**Rock strength (Bi-axial core holder - Ø1,5" or Ø1.0" x 7 cm samples** **WP 700 bar with gauges with rubber sleeves 25pcs)** Rock Strength Apparatus required for accurate and reliable measurement of uniaxial and triaxial compressive strength of cylindrical rock samples under ambient conditions and high confining pressures. Tests performed allow the user to determine strength and elastic properties of the rock samples. Measurements conform to the ASTM D7012, D7070 standard methods	1	Supplied with all components and accessories required for the measurements of rock samples. Bi-axial Core Holder with Pressure Sleeves for 1" and 1.5" diameter cores Core holder material: Stainless Steel Axial Load: up to 1000 kN Maximum Axial load: 500 kN Maximum confining pressure: 70 MPa (Approx. 10,000 psi) Pressure gauges: up to 10,000 psi Working Temperature: Ambient Core Sample Diameters: 1.0" and 1.5" Core Sample Length: 125 mm Traceable Calibration Certificate for Load measurement accuracy Spare Parts for 2 years' normal operation (see below) 3-year warranty Power: 220 VAC, 50/60 Hz On-site Installation, testing and training Brand/ model: Stratum, Floxlab or equivalent	
9	**Helium Gas (99.999% UHP, 50L cylinder) & Nitrogen cylinder** High-purity compressed gases for the RCA lab: helium is the expansion gas for Boyle's-law grain volume/porosity measurement, and nitrogen is used for gas permeability, confining pressure and instrument purging.	2	Helium CP grade N5.0: 99.999% minimum purity Helium impurities: oxygen ≤2 ppm, nitrogen ≤5 ppm, moisture ≤2 ppm, hydrogen ≤1 ppm, carbon dioxide ≤0.5 ppm, total hydrocarbons ≤0.5 ppm Nitrogen N5.0: ≥99.999% N_2, typical O_2 ≤ ~3 ppm and H_2O ≤ ~5 ppm Supplied in 50 L water-capacity cylinders with certificate of analysis	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Include two-stage stainless-steel regulators compatible with cylinder valve outlets Cylinders to be secured with wall brackets/chains in accordance with supplier safety guidance	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	Lot 4 DRYING ROOM			
1	**<u>Humidity Controlled Drying Oven - Memmert HCP 108 or equiv.</u>** The humidity drying oven for fast and efficient desiccation under constant relative humidity conditions for preserving the integrity of core samples containing trapped water in their mineral structures.	1	Comprises automatic water and wastewater management, Binder software, touchscreen control, time-segment and real-time programming, stainless steel rack (qty: 1), temperature safety device Capacity: 240 litres Humidity range: 10% to 98% Temperature: -10°C to +100°C Humidity stability: ≤2 ± % RH Temperature stability depending on setpoint: 0.1...0.3 ±K, Temperature variation depending on setpoint: 0.1...1±K Internal dimensions: 785 x 485 x 650 mm Weight: 189kg Water consumption: 1-10 bar when connecting to a water pipe Have 3 years' warranty Spare Parts for 2 years of normal operation Power requirements: 230 V, 50 Hz, 2500 W, single phase Onsite installation, testing and commissioning Freshwater and Wastewater connection Water Supply Set - Detachable on the rear side of the chamber Fresh- and Wastewater Containers (20 Liters Each) Cabling	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Pump - External, for hanging from the back of the device Brand/Model: Binder KMF240-230V - 8012-0643, Vinci or Memmert UFE 800 or equivalent.	
2	**Vacuum Oven with Cold Trap** For routine laboratory drying, conditioning and vacuum evacuation of core samples prior to saturation.	1	Benchtop mounted with moderate footprint. Full view with durable glass feature Chamber to be constructed of stainless steel for durability Designed with vent valve control Have built-in overtemperature protection Control Panel for temperature control, vacuum adjustment, vent valves, and vacuum gauges. Capacity: 0.6 cu ft (16 liters) Shelving: Three stainless steel shelves Interior Dimension (W x D x H): 22.8 x 30.4 x 22.8cm Exterior Dimension (W x D x H): 44.4 x 58.4 x 60.2cm Temperature Range: 10°C above ambient to 220°C Temperature Stability: 0.1 @ 150°C Heating Rates: 40 minutes to 80°C Power Requirements: 220 -240V, 50/60 Hz 2-year warranty. Onsite installation and testing Brand/Model: Sheldon Manufacturing SVAC1E-2, Shel Lab Model 1407-1, Binder VD53 or equivalent	
3	**Air-Forced Convection Oven** For fast and efficient drying of core samples after cleaning and	1	Heating oven with forced convection Benchtop mount Capacity: 115 Litres	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	prior to core analysis, employing an air-forced convection air bath.		Temperature: +10°C above ambient up to 300°C Internal dimensions: 550 x 550 x 385mm (WxHxD) Power supply: 230V, 50/60Hz, 1pH, 1.3kW Weight: 57kg Includes 2 chrome-plated racks 3-year warranty On-site installation, training and commissioning Brand/Model: Binder FD115-230V, Vinci 108-litre Model or equivalent	
4	**Laboratory Fume Hood** Fume hood must be capable of efficient containment of contaminants, including acids, solvents and bases, and proper prevention of their escape into the laboratory space.	1	Must consist of base cabinets, Fumehood, duct and remote blower Equipped with Vertical Sash with heavy-duty safety glass Must be made of 1.2mm thick epoxy powder-coated steel plate Liner to be made of Epoxy resin. Dimensions (W x D x H) = 1800 x 900 x 2500 mm Worktop made of 19 mm thick Epoxy Resin or Corian material, with anti-spill rim Include heavy-duty Centrifugal fan of approx. 1500 CMH, ON/OFF Switch, including Visual and Audible Alarms for over temp. Include 2 electrical sockets for 220-240 V, 50/60 Hz Fluorescent signal lights for Ventilation and Illumination Air Flow approx. 800 m3/hr., Pressure Drop = 94 Pa	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Internal surface fully covered with 8 mm thick phenolic resin Built-in service points for Water, Compressed air, Polypropylene Cup Sink Include Acid/Base cabinet with removable shelves Brand/Model: Labconco, (Waldner/Erlab) or equivalent	
5	**Vacuum Heated Desiccator** For drying multiple core samples in a vacuum at temperatures up to 80°C. This will enable the total removal of humidity inside core samples before the study. This compact, bench-top desiccator heats, dries and vacuums multiple samples simultaneously in preparation for porosity and gas permeability measurements. The main components include a stainless-steel heating plate and a glass bell that can withstand pressure differences during vacuum operations. The sealing is secured by a Viton O-ring between the heating plate and the bell.	2	Equipment visualizes the samples while drying Temperature up to 80°C Vacuum pressure: 10-3 mbar Pumping speed up to 2.5 m^3/h Quantity of samples up to 30 Stainless steel material up to 316L Electrical: 220V, 50Hz Brand/Model: Vinci VHD or equivalent.	
6	**High-Precision Digital Balance** For high-accuracy weight measurement of plug-sized core samples.	1	Weighing range: 1 - 600g Weighing accuracy: 0.001g Power supply: 220V, 50/60 Hz Brand/Model: Vinci HPEB, Mettler ME204 or equivalent.	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 5 SOXHLET / SOLVENT EXTRACTION ROOM				
1	**Soxhlet Extraction Assembly: Sox-5 or equivalent-(30 plugs per unit)** A heavy-duty solvent extraction assembly capable of simultaneously cleaning cores by rapidly removing oil, brine, and precipitates from pore systems in up to 60 plug-size sensitive reservoir core material using organic solvents.	4	GIANT SOXHLET EXTRACTOR ASSEMBLY (30-60 MULTIPLE PLUG-SIZE) Working Pressure(s): Ambient Working principle: Hot solvent condensing cleaning of multiple core samples Capacity: 5 liter extractor, approx. 30 samples Ø1.5" x L3" and 60 samples Ø1.0" x L1" Temperature range: ambient - 150 deg.C Condensing method: Water cooling Typical fluids used: Methanol, Toluene Time range: Manually controlled Wetted parts: Glass Power Requirements: 230VAC single phase Power Consumption: 500 W Total weight one setup: 8 KG Supplied with: 150 thimbles for 1" and 1.5" plugs Equipment includes Boiling Flask 55/50 (5 Litres, 10" bowl diameter), Extractor body 145/60 (approx. 14" high, 150mm outer dia, 143mm inner dia), Adapter 145/50 to 45/50 to connect body with condenser, Bushing adapter 45/50 to 24/40 to be used with adapter when using any other condenser (with 24/40 bottom), Allihn (Bulb) condenser (45/50 for warm cleaning), Heating mantle and temperature controller	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Each set includes a boiling flask, Extractor with siphon and Condenser, all made of heavy-duty glass material Soxhlet Extractor Capacity: 5 liters Boiling Flask Capacity: 5 liters Flask Heating Mantle equipped with thermostatic control Heating Temperature: 150 -200 ^{o}C Soxhlet Extractor Capacity: 30 cores of 1.5-inch diameter or 50 cores of 1.0-inch diameter Unichiller for recirculating cooling water through Condenser (Unichiller offered under Section 1C, Item 4) Flexible plastic tubings for connections to Condenser Utility support rack with clamps Organic Cleaning Solvents: Methanol, Toluene and Xylene (NOT INCLUDED but offered in Section 5) Power: 220 V, 50/60Hz, 1 Phase 2 sets of spare glassware, including Boiling Flasks, Extractors and Condensers 2 years' warranty Onsite installation and testing IMPORTANT NOTE: Unichiller is not included with this item. Please see Section 1C, Item 4 for Unichiller offered. Spare glassware set including boiling flasks, extractors and condensers Spare Parts for 2 years' normal operation	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			1x stand, 1x holder, 1x tubing, 2 prong, 1x wire mesh, 100 mesh size, 48x tubing 7/16", 1x glass beads, 1x marbles 600 grams Brand/Model: Corelab SOXG - SOXG-GL - SOXG-SP, Stratum SOX-5 or equivalent	
2	**Dean Stark Distillation Unit (plug size)** For extraction of water and oil by distillation from plug-size core samples. Water is recovered and measured accurately in graduated receiving tubes while the oil content is determined by weight loss using a precision balance.	12	Installed in a room fitted with an appropriate fume extractor alongside a Uni-Chiller for cooling recirculation. Uni-Chiller offered separately Six complete sets of Dean Stark Distillation units (220 V): 1 Temperature Controller, Aluminium support, Joint Clips, Angle Clamp and Polyvinyl Tubing. Dean Stark Glassware consisting of Extractor Body 145/60 (145mm Outer Diameter, approximately 18" high), Adapter, 135/60 to 34/45, Dean Stark receiver 100ml, Condenser for warm solvents, Dean Stark Drying Tube Supplied with: 10 ml Receiving tube (Quantity =6) 15 ml Receiving tubes (Quantity=6) Thimble Rack (Quantity=2) Extraction Thimbles, Whatman, 43x123 mm (Qty=25) Extraction Thimbles, Whatman, 33x80 mm (Qty=25) Glass Extraction Thimble 40mm ID (Qty = 1) Power: 220-240V, 50/60 Hz, 1 phase.	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			On-site installation and commissioning IMPORTANT NOTE: Unichiller is not included with this item. Please see Section E, Item 3 for Unichiller offered. An appropriate fume extractor will be needed on location to complete installation. 4ml Receiving tubing 10ml Receiving tubing 15ml Receiving tubing Thimble Rack Glass Extraction Thimble 40mm ID 25 Extraction Thimbles 43x123mm 25 Extraction Thimbles 33x80mm Brand/Model: Corelab DSP6, Stratum DS-05 or equivalent	
3	**LABORATORY UNI-CHILLER (Recirculating Chiller)** Required for constant cooling of recirculated water at lower temperature compared to traditional tap water cooling. Chillers also reduce water consumption drastically during continuous operation.	2	Chiller with air-cooled refrigerating unit and circulation pump. Evaporator (cooler), tank and housing of stainless steel. Digital temperature adjustment and display Operating Temperature range: -20 to 40 ° C Cooling power at 15°C= 600W; at 0°C= 500W; at -10°C =350W; at -20°C = 150W Overall dimensions WxDxH: 280x490x424mm Net weight: 37Kg Power Requirement: 208-240V, 50/6Hz, 1~/2~, Max current: 4A Complete with: Hose connector Sleeve nuts thread	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Blank plug Cover expansion vessel Metal hose MT-200 M16x1 Length: 100cm Temperature range: -50...200°C Connection: M16x1 Nominal width: 12 mm Insulation: Special insulation with additional smooth silicone hose, ends covered with silicone caps Heat transfer fluid M20.195/235.20 Can: 5L Temperature range for: open/closed systems: -20°C...195°C; Unistats (only closed): -20°C...235°C Material: silicone oil Colour: colourless, clear Viscosity at 25°C: 20 mm^2/s Brand/Model: Huber 3066.0002.98 - 9608 - 6161 or equivalent	
4	**Fume Hood - ducted 2.0 m (dedicated solvent extraction hood)** The fume hood must be capable of efficiently containing contaminants, including acids, solvents, and bases, and properly preventing their escape into the laboratory space.	1	Must consist of base cabinets, fume hood, duct and remote blower Equipped with Vertical Sash with heavy-duty safety glass Must be made of 1.2mm thick epoxy powder coated steel plate Liner to be made of Epoxy resin. Dimensions (W x D x H) = 1800 x 900 x 2500 mm Worktop made of 19 mm thick Epoxy Resin or Corian material, with anti-spill rim Include heavy-duty Centrifugal fan of approx. 1500 CMH,	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			ON/OFF Switch, including Visual and Audible Alarms for over temp. Include 2 electrical sockets for 220-240 V, 50/60 Hz Fluorescence Signal Lights for Ventilation and Illumination Air Flow approx. 800 m3/hr., Pressure Drop = 94 Pa Internal surface fully covered with 8 mm thick phenolic resin, Built-in service points for Water, Compressed air, Polypropylene Cup Sink Include Acid/Base cabinet with removable shelves Brand/Model: Labconco or equivalent	
5	**Electronic Balance - 4 kg/0.01g (Ohaus Ranger XT)** Benchtop, portable type balance for accurate weight measurements of lab cores and samples.	2	Capability: 1210g Readability: 0.001g Repeatability Low Load (typical): 0.4 mg Operating Temperature: ambient to 40°C. Display: 7" capacitive coloured TFT touchscreen Weighing pan size (DxW) or Diameter: 127mm x 127mm Balance housing: ABS plastic, Stainless steel platform Power: 9.5 V 50 Hz, 10VA. British standard 3-year warranty On-site installation and tests. Brand/Model: Mettler Toledo XPR1203S or equivalent	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
6	**Toluene - Reagent Grade 99.8% (20L drum) - year-1 stock** Aromatic hydrocarbon solvent used in the Soxhlet/Dean-Stark extraction room to dissolve and remove residual crude oil from core plugs and, in Dean-Stark distillation, to co-distil pore water for fluid-saturation determination.	4	Grade: ACS reagent, assay ≥99.5% (GC) (Sigma-Aldrich 179418 or equivalent) CAS No.: 108-88-3; EC No.: 203-625-9; Formula: $C_6H_5CH_3$; Mol. wt.: 92.14 Density: 0.865 g/mL at 25°C Colour (APHA): ≤10; Evaporation residue: ≤0.001% Sulphur compounds (as S): ≤0.003%; Water: ≤0.03% Packaging: 20 L steel drum Supplied with Certificate of Analysis and SDS (GHS: Flam. Liq. 2, Asp. Tox. 1, Repr. 2, STOT RE 2)	
7	**Chloroform (CHCl3) - Lab Grade 99.5% (5L)** Chlorinated solvent used in the extraction room, alone or in a chloroform-methanol mixture, to remove heavy hydrocarbons, asphaltenes and bitumen from core plugs that toluene does not fully clean.	4	Grade: ACS reagent, assay ≥99.8%, stabilised with 0.5-1.0% ethanol (Sigma-Aldrich 319988 or equivalent) CAS No.: 67-66-3; EC No.: 200-663-8; Formula: $CHCl_3$ Boiling point: 60.5-61.5°C; Density: 1.492 g/mL at 25°C; Refractive index n20/D: 1.445 Passes ACS tests for acetone/aldehyde, acid/chloride and free chlorine Packaging: 5 L (glass or PVC-coated bottles) Supplied with Certificate of Analysis and SDS (GHS: Acute Tox. 3 inhalation, Carc. 2, Repr. 2, STOT RE 1); use only in ducted fume hood	
8	**Vernier callipers (Digital and Waterproof)** For accurate external measurements of core plugs to	1	High protective level IP67(CEI 60529) Resistant to coolant, water, dust or oil. Absolute encoding measuring system. (avoid the loss of the	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	determine the bulk volume of samples.		measurement origin when the slider is fast moved or interfered). Measuring Range: 0-200mm Resolution 0.01mm Limit Error ±0.03mm. Two-button design, menu prompt, simple, convenient and easy to operate. Manual / automatic power switch. Automatic shutdown after 5 minutes without being used Low-voltage alarm, high and low temperature, and other error alarms. Infinite response speed, no speed error. Brand/Model MRC laboratory instrument MT-111282 or equivalent	
9	**Methanol** Polar solvent used in the extraction room after hydrocarbon removal to leach residual salts from the pore space of core plugs (salt removal), and as a component of chloroform-methanol cleaning mixtures.	4	Grade: ACS reagent, assay ≥99.8% (Sigma-Aldrich 179337 or equivalent) CAS No.: 67-56-1; EC No.: 200-659-6; Formula: CH_3OH; Mol. wt.: 32.04 Boiling point: 64.7°C; Vapour pressure: 97.68 mmHg at 20°C Packaging: 5 L glass bottles (or 18 L carboy) Supplied with Certificate of Analysis and SDS (flammable, toxic)	
10	**Acetone - Lab Grade 99.5% (5L) - rinsing & cleanup** Fast-evaporating solvent used in the extraction room to rinse glassware, Soxhlet/Dean-Stark apparatus, and tools, and to clean surfaces after solvent extraction.	4	Grade: ACS reagent, assay ≥99.5% (Sigma-Aldrich 179124 or equivalent) CAS No.: 67-64-1; Formula: CH_3COCH_3; Mol. wt.: 58.08 Impurities: water ≤0.5%, methanol ≤0.05%, isopropanol ≤0.05%,	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			aldehyde (as HCHO) ≤0.002%, evaporation residue ≤0.001% Colour (APHA): ≤10; Boiling point: 56°C; Density: 0.791 g/mL at 25°C Flash point: −17°C (closed cup); recommended retest period: 2 years Packaging: 5 L Supplied with Certificate of Analysis and SDS	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 6 SAMPLE PREPARATION LAB				
1	**Analytical Balance** Benchtop, portable type balance for accurate weight measurements of samples.	1	Capability: from 52g to 320g Readability: 0.1mg Repeatability: 0.1mg Operating Temperature: ambient to 40°C Display: 4.5" Color capacitive touchscreen, glove-compatible Balance housing: Glass panels with QuickLock release for easy cleaning, Metal bottom housing Weighing pan dimension: 90mm Power: Battery Operation 3 years' warranty Brand/Model: Mettler Toledo ML304T, Ohaus Model# EX225M/AD or equivalent.	
2	**Compact Drying Oven** A portable gravity convection oven for maintaining uniform sample temperature up to 240 °C.	1	Ability to alter drying, curing or baking time using microprocessor control Temperature range: ambient +20°C to 306°C (3.5°C uniformity, mid-range, 0.3°C stability, mid-range) Interior Material: stainless steel Overall dimensions: 577x596x800mm (WxDxH) Weight: 57.4kg Power supply: 220V, 50/60Hz Supplied with parts for normal operation 3-year warranty Brand/Model: Sheldon Manufacturing SG01 - SLG122-EA , Memmert UF30 or Fisher Isotemp or equivalent	
3	**Vortex Mixer**	1	Benchtop mount	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	A compact mixer capable of accepting tubes and vessels of different sizes, with a circular horizontal orbital mixing motion.		Speed: 3000rpm. Touch-mode operation at full fixed speed. Dimensions: 15 x 13 x 16cm Orbit: 4.5mm 2-year warranty Brand/Model: Cole Parmer 86579-01, Fisherbrand, IKA MS3 Digital or equivalent	
4	**Magnetic Stirrer/Hotplate** A magnetic stirrer with a digital display for easy setting and monitoring	1	Hotplate Temperature: 20 - 300 °C Weight: 2.9 kg Rotation speed range 100 - 1,400 rpm Max. stirring capacity (H2O) 20 liters Dimensions approx. (w/d/h) 173 x 277 x 94 mm Speed accuracy ±2 % Heating power 800 W Hotplate temperature 20 - 300 °C Medium temperature, max. 250 °C Accuracy temperature setting ±1°C Max. Load 25 kg Power consumption 820 W Plate diameter ø 145 mm Power: 220V 50/60 Hz Brand/Model: Heidolph 505-30000-00, CD162 or equivalent	
5	**Water Purification Unit - Type 1 (ELGA PureLab Flex 2 or Milli-Q)** A pure water purification system that uses reverse osmosis and ion-exchange deionisation technology to produce ultra-pure water for making lab solutions.	1	Pure water storage tank: internal tank 20 liters. Includes pre-treatment, reverse osmosis, and De-ionization cartridges. Pure Water Production Rate: up to 48 liters/hour (type 2 water) Total Organic Content (TOC) of treated water: Less than 50 ppb Bacterial rejection of treated water: 99% pH of treated water: Neutral	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Water Feed Pressures: Minimum inlet pressure: 30psi (2.1bar) Maximum inlet pressure: 90psi (6.2 bar) 2-year warranty Consumable Pack for 2 years' normal operation Power requirements: 240 V, 50/60 Hz, single phase, 3-pin plug Onsite installation, testing and commissioning Annual Consumable pack Purite Fusion WiFi 40/80/160: 2 x PP8, 2 x NCP8, 4 x 10" 5µm carbon filter element, 1 x UV lamp 185/254nm, 1 x internal UF membrane, 2 x disinfection packs + test strips Brand/Model: Suez Purite Fusion 320 - M996108, Purite Type L300450 or equivalent	
6	**Ultrasonic Cleaner** An efficient cleaning system equipped with thermostatically controlled heating for optimum cleaning temperature.	1	Tank Volume 20.6 liters Internal Tank Dimension (WxDxH): 500x298x200mm Internal and external tanks made of stainless steel Mesh basket of high-quality stainless steel Nominal/Peak Power: 300/1200 Watts Ultrasonic Frequency: 37kHz Heating Power: 1200W Dry-run heating protection and automatic switch-off after 12 hours of operation Internal basket dimensions (mm): 443 x 238 x 120	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			External dimensions (mm): 570 x 330 x 320 Ultrasonic Cleaning Fluids (used at 15% dilution at 50-60°C) Type 'A' Cleaning Fluid, 5Litres - Used at 15% dilution at 50-60°C Power 230V 50 Hz, 1 phase Brand/Model: Kemet 30P - 30P-FLUID, WUC-D22H- Daihan Brand : 6L Elmasonic P60H or Branson 2800) or equivalent.	
7	**Degassing apparatus** **HCl - 37% Reagent Grade (2.5L bottle × 6)** Concentrated mineral acid used in the sample preparation lab to dissolve carbonate minerals, determine acid-soluble (carbonate) content and remove carbonates from rock samples prior to further analysis	6	Grade: ACS reagent, 37% (assay 36.5-38.0% ACS specification) (Sigma-Aldrich 320331 or equivalent) CAS No.: 7647-01-0; EC No.: 231-595-7; Mol. wt.: 36.46 Density: 1.19 g/cm³; Free chlorine: ≤1 ppm; Colour (APHA): ≤10 Packaging: case of 6 × 2.5 L PVC-coated bottles (320331-6X2.5L) UN 1789; supplied with Certificate of Analysis and SDS; store in corrosives cabinet	
8	**Hydrofluoric Acid 40% - Technical Grade (500 mL × 2)** Highly corrosive acid used in the sample preparation lab to dissolve silicate minerals, e.g. to isolate kerogen and palynomorphs and to digest siliciclastic rock for analysis; must be handled with strict HF safety controls.	2	Hydrofluoric acid 40% (mass fraction 0.40), technical grade (ITW Reagents 213070 or equivalent; Merck 100338 EMSURE® for analytical use) CAS No.: 7664-39-3; Formula: HF; Mol. wt.: 20.01 Packaging: 500 mL HF-resistant plastic bottles (HF attacks glass) GHS: Acute Tox. 1 (dermal), Acute Tox. 2 (inhalation, oral), Skin Corr. 1A, Eye Dam. 1	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Supplied with Certificate of Analysis and SDS; Supply with calcium gluconate antidote gel.	
9	**Blue-Dyed Low-Viscosity Epoxy - Epo-Tek/Hilquist (1 kg kit)** Very low-viscosity epoxy, tinted with blue dye, used to vacuum-impregnate rock samples so that pore space appears blue in thin section, allowing porosity and pore types to be identified and quantified.	4	Product: EPO-TEK® 301 (Epoxy Technology) or equivalent petrographic impregnation epoxy Two-component; mix ratio by weight 20:5 Viscosity (23°C, 100 rpm): 100-200 cPs; colour before cure: clear/colourless (blue dye added for pore visualisation) Pot life: 1-2 hours; recommended cure: 65°C / 2 hours (minimum alternative 23°C / 24 hours) Glass transition temperature: ≥65°C; Shore D hardness: 85; Refractive index: 1.519 at 589 nm Specific gravity: Part A 1.15, Part B 0.87; shelf life: one year at room temperature Compatible epoxy-soluble blue dye to be supplied with kit	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 7 THIN SECTION PREPARATION LAB				
1	**Thin Section Cutting & Grinding Machine** Thin section machine performs a combined cutting and grinding of minerals in a precise manner. Cutting Module can hold a specimen of approx. 0.5mm and a Grinding Module has a built-in digital micrometer that ensures high precision. Specimen holder uses Vacuum for standard specimen.	1	Diamond Cutting wheel diameter = 250 mm Grinding Wheel diameter =175 mm Both Cutting Wheel and Grinding Stone Variable Speed between: 500 - 2000 rpm. Includes 40 Liter Recirculation Tank (GR1383-00), double 24V recirculating pump and connection hoses Equipped with Digital Micrometer, 2 microns accuracy Glass slides dimensions (mm): 46x26; 76x26; 76x51 pack of 100 slides of each size Vacuum Chucks (GR1868, GR1871, GR1881) and stand (GR1868) to hold requested 46x26; 76x26; 76x51 slides Equipped with 7" HMI touch screen with software that allows simple and professional operation with repeatable results. Power requirements: 230-240 V, 50/60 Hz. Single phase. Motor Power (HP)= 550 W Dimensions (WXDXH (mm)) : 840x780x450 Spare Parts for 2 years' normal operation including: pack GR 1998 and accessories for normal operation of grinding chamber-vacuum chucks as well as 3x19-252 diamond cut off	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			wheels 250mm diameter, 3x19-155 diamond cup grinding wheel 175mm. Includes complete set of technical manuals 3-year warranty Onsite installation, training and commissioning Brand/Model: Metkon Geoform 102 - GR1866 - GR1383-00 - GR1868 - GR1871 - GR1881 - 19-252x3 - 19-155x3 - OCON-150 - OCON-153 - OCON-152 - GR1998, Logitech, Buehler, or equivalent	
2	**Geological Lapping Machine** A Lapping machine that can accurately lap and polish thin sections mounted on glass slides down to 20 microns	2	Capacity of up to 3 vacuum jigs (1 included as standard, 2 offered as additional items) Integrated abrasive tank with a stirrer Variable speed up to 70 rpm Water trap and filter Stand-alone vacuum pump Dimensions (mm) (H X W X D) 400 x 800 x 650 Net Weight: 90 kg Power Requirement: 230V, 50 Hz, 1 Phase Consumables including SiC Grit 600 powder, Diamond Suspensions and Polishing pads 3-year warranty Onsite installation, training and commissioning Serrated Cast Iron Plate (for lapping) 380mmO.D.x90mm I.D. (15”O.D.x3.5” I.D.) Aluminium Lift off Disc for polishing	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Three cast iron serrated conditioning rings 178mm O.D. x 140mm I.D. (7" O.D. x 5.5" I.D. (wear life 20mm (0.8") Three cast iron pressure weights complete with eyebolts Additional Vacuum Jigs Should come with the full accessories, including an external vacuum pump Brand/Model: Logitech LP 70, LP 50, Kemet Kemtech III - ADD JIG or equivalent	
3	**Vacuum Impregnation Machine /vacuum embedding unit** This compact bench-top device is required for bonding fragile and porous rock specimens by impregnating their porous matrix with resin bonding material that fills the pores and cracks to prevent fracturing. The entire arrangement is done under vacuum and can process up to 10 samples sequentially without disrupting the vacuum process.	1	Vacuum Impregnation Machines supplied with Vacuum chamber with transparent lid, Rotating plate, Silent electrical vacuum pump, Vacuum gauge, Vacuum regulating valve, Resin dispenser, Lamp, Heating rotating plate. With spare rubber seal and 3x disposable plastic tubes Integral Vacuum Pump Turntable Plate Diameter: 200 mm Number of Standard Molds: 10 Sample Impregnation Isothermal Temperature: up to 80°C Dimensions: 440 x 300 x 450 mm Chamber Dimensions: 200 mm Diameter by 150 mm (Height) Weight: 20 kg Power: 220 V, 50/60 Hz, 1 phase Resin impregnation kit (P/N: K300) 500g Special epoxy resin A and hardener B 100 wooden spatulas for resin preparation	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			1 metallic spatula for resin preparation 100 plastic beakers for resin preparation 28g of liquid resin blue dye 650ml Silicone oil spray for mould releaser Colourless varnish (2 kg) Rectangular moulds of 25x35x20 mm (20 units) Cylindrical moulds of 1 inch (25mm) diameter (20 units) Cylindrical moulds of 1.5 inch (38.1mm) diameter (20 units) Brand/Model: Vinci VEU - VEU - K300, Logitech / Struers CitoVac or equivalent	
4	**Hot Plate** For heating fluid and geological samples.	1	Maximum Temperature: 500°C This microprocessor-controlled hot plate features an over-temperature safety circuit fixed at 550°C Top Plate made of ceramic material Top Plate Size (L x W x H): 10 x 10 x10 inches Set temperature exactly using LED display Temperature accuracy: ±5.0°C Automatic over temperature protection Dimensions (W x D x H): 336 x 298 x 101 (mm) Power: 230V 50/60 Hz Max Volume: 15L Heat output: 1500W Model/Brand: Cole Parmer 04671-70, Fisherbrand Isotemp Cat# HP88850200 or equivalent.	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
5	**Vacuum Pump - Atlas Copco GVD8 (rotary vane, oil-free)** A 2-stage oil-sealed rotary vane pump for efficient evacuation.	1	A laboratory benchtop vacuum pump Displacement 9.7 m3 h-1 / 5.7 cfm Speed (Pneurop 6602) 8.5 m3 h-1 / 5.0 cfm when operating at 50Hz Low noise level up to 48 dBa at 50 Hz Motor Power: 450 W (50Hz) Dimensions (W x D x H): 180 x470 x 65 (mm) Power: 230V 50 Hz, 1 phase Brand/Model: Atlas Copco GVD 8 or equivalent.	
6	**Mounting Fixtures/Jigs - stainless steel** The fixture is required for mounting rock specimens to glass slides for thin sectioning steps such as grinding, lapping and polishing. Its spring-activated loading system provides a uniform thickness of bonding material (such as epoxy resin) between the specimen and the glass slide. Controlled temperature is used to ensure proper bonding.	2	Jigs are complete with bonding kit and glass slides kit Glass Slide Thickness Range: 1.2-1.5 mm Operating Temperature Range: 20 - 130°C, ±2°C Maximum Sample Number: up to 12 Dimensions: 217x124x708 mm Approximate Weight: 10 kg Power: 220V 50/60 Hz, 1 Phase 2-year warranty Bonding kit (P/N: K400) 500g Special epoxy resin A and hardener B 100 wooden spatulas for resin preparation 100 plastic beakers for resin preparation 1 metallic spatula for resin preparation 1 roll of Alumina paper Set of 50 razor blades 1 Loctite 406 instant adhesive Glass slides kit 30x45 mm (P/N: K510) - 10 boxes of Glass slides 30x45 mm - 100 units per box	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Glass slides kit 60x45 mm (P/N: K520) - 10 boxes of Glass slides 60x45 mm - 100 units per box Glass slides kit 26x38 mm (1"x 1.5") (P/N: K530) - 10 boxes of Glass slides 26x38 mm - 100 units per box Glass slides kit 26x48 mm (1"x 2") (P/N: K540) - 10 boxes of Glass slides 26x48 mm - 100 units per box Glass slides kit 26x76 mm (1"x 3") (P/N: K550) - 10 boxes of Glass slides 26x76 mm - 100 units per box Cover glass slides kit of 24x40 mm to cover slides of 30x45 mm and 26x48mm (1"x 2") (P/N: K511) - 1 box of Cover glasses 24x40 mm - 100 units per box Cover glass slides kit of 24x32 mm to cover slides of 26x38 mm (1"x 1.5") (P/N: K531) - 1 box of Cover glasses 24x32 mm - 100 units per box Cover glass slides kit of 24x60 mm to cover slides of 60x45mm and 26x76 mm (1"x 3") (P/N: K551) - 1 box of Cover glasses 24x60 mm- 100 units per box Brand/Model: Vinci BJ 12 - K400 - K510 - K520 - K530 - K540 - K550 - K511 - K531 - K551, Logitech, Kemtech	
7	**Electronic Balance - 220g/0.0001g** A precision weighing balance for rock sections with	1	Maximum weight: 220g Readability: 0.01mg Display: Full-color 5.7 in VGA, touch screen	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	exceptional accuracy and durability.		Dimensions (W x D x H): 393 x 230 x 350 (mm) Power: 220V 50/60 Hz Weight: 12.6kg Platform dia: 80mm Units of Measurement: Ounce Troy; Pennyweight; Momme; Gram; Kilogram; Grain; Tola; Tical; Mesghal; Carat; Ounce; Custom Brand/ Model: Ohaus Model# EX225M/AD or equivalent.	
8	**Desiccator - 300mm acrylic polycarbonate** The compact, bench-top desiccator heats, dries and vacuums multiple samples simultaneously in preparation for porosity and gas permeability measurements. The main components include a stainless-steel heating plate and a glass bell that can withstand pressure differences during vacuum operations. The sealing is secured by a Viton O-ring between the heating plate and the bell.	1	Desiccator complete with vacuum pump Samples Clearly Visible in Glass Bell Sealing Mechanism: High-quality silicone O-ring and specially designed locking ring allow outstanding vacuum capability with virtually no leakage Vacuum Pressure Range: 10-3 mbar Transparent polycarbonate construction is durable, easy-to-clean, chemical-resistant, and allows quick visualisation of the desiccator contents Locking ring secures top and bottom halves when vacuum not in use; provides additional convenience and safety when moving the unit 10 litre capacity Must include desiccant tray and desiccants	
9	**Halogen Lamp with holder** Halogen Lamp provides precise, adjustable illumination essential for thin section	1	Variable, High Intensity 12v 20w Halogen illumination Lightly frosted bulb filter for ideal light diffusion	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	bonding. Its bulb delivers consistent, high-intensity light, while the variable intensity control ensures optimal curing conditions.		Variable intensity control Flexible gooseneck for unlimited positioning options Reagent-resistant finish Metal alloy housing for impact resistance and durability Supplied with 10 bulbs 220V-240V power rating Brand/Model: Omano 23" Flexible Gooseneck Lamp or equivalent	
10	**Ultrasonic Cleaner** An efficient cleaning system equipped with thermostatically controlled heating for optimum cleaning temperature.	1	Tank Volume 20.6 liters Internal Tank Dimension (WxDxH): 500x298x200mm Internal and external tanks made of stainless steel Mesh basket of high quality stainless steel Nominal/Peak Power: 300/1200 Watts Ultrasonic Frequency: 37kHz Heating Power: 1200W Dry-run heating protection and automatic switch-off after 12 hours of operation Internal basket dimensions (mm): 443 x 238 x 120 External dimensions (mm): 570 x 330 x 320 Ultrasonic Cleaning Fluids (used at 15% dilution at 50-60°C) Type 'A' Cleaning Fluid, 5Litres - Used at 15% dilution at 50-60°C Power 230V 50 Hz, 1 phase Brand/Model: Kemet Model 30P or equivalent.	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
11	**POLARISING MICROSCOPE** Benchtop mounted microscope for visualising geological specimens during geological thin section preparation with lights transmitted top and bottom, with both illuminated.		Mode of Transmission: Binocular Transmission Benchtop mounted Widefield WF10X/18mm secured eyepieces Includes 4x, 10X, S40X and S100X Semi Plan Objectives Coaxial coarse and fine adjustments with 200 graduations. Precision 2 microns per graduation, 0.4mm per rotation. Total travel range is approximately 23mm. 129mm circular stage 360º rotatable, and two object clamps. Brand/Model: Euromex BB.4260-P-HLED	
12	**Grinding/Lapping Powders - Al_2O_3 9µm/3µm/1µm Logitech grade** Graded aluminium oxide abrasive powders mixed with water to form a lapping slurry; used on the lapping machine to grind thin sections down to the standard 30 µm thickness and to produce a fine, scratch-free finish.	2	Calcined aluminium oxide lapping powders (or equivalent), grades 9 µm, 3 µm and 1 µm Particles graded closely in size and shape for consistent lapping time and improved surface finish Chemically inert, fast-cutting abrasive suitable for a wide variety of lapping/polishing plate types Used in suspension, slurry or paste form by mixing with water/antifreeze Suitable for petrographic thin rock section production and final polishing of hard materials Supplied with Technical Data Sheet and SDS; compatible with Logitech lapping machines Brand/ Model: Logitech or equivalent	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
13	**Glass Cover Slips 22×50mm (box of 100) - annual stock**	10	Size: 22 × 50 mm rectangular Material: white borosilicate glass of the first hydrolytic class (e.g. Schott D 263® M), non-corroding, no disturbing fluorescence under UV Thickness: No. 1.5 (0.16-0.19 mm) recommended for high-NA petrographic objectives; No. 1 (0.13-0.17 mm) acceptable for routine work Pack: box of 100, in re-closable plastic dispenser Annual stock: 10 boxes	
14	**Petrographic Microscope Slides (frosted 27×46mm, box of 144)**	8	Size: 27 × 46 mm (European/ISO petrographic format) Thickness: 1.2 mm; optically homogeneous, non-corrosive white glass Edges bevelled, precision ground and polished One end frosted for pencil/pen labelling Suitable for transmitted/reflected light microscopy, SEM/EDS, EPMA and cathodoluminescence Pack: box of 144 (1 gross)	
15	**Alizarin Red S (100g) (thermofisher)**	1	Product: Alizarin Red S, pure, certified (Thermo Scientific Chemicals) or equivalent CAS No.: 130-22-3; EC No.: 204-981-8; C.I. 58005 (Mordant Red 3) Formula: $C_{14}H_7NaO_7S$; Mol. wt.: 342.25 g/mol Appearance: yellow-orange powder; soluble in water and ethanol Pack size: 100 g	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Used with potassium ferricyanide for combined carbonate staining (Dickson, 1965 method) Supplied with Certificate of Analysis and SDS	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 8 PETROGRAPHY, PALYNOLOGY & SEDIMENTOLOGY MICROSCOPE LAB				
1	**Petrographic Microscope - Leica DM750P (transmitted + reflected light)** An optical microscope that uses polarized light microscopy to enable detailed identification and description of rock textures and mineral properties in a thin section.	1	Eyepiece Field of View: 20mm Illumination: High Power LED Mechanical Stage: Fixed 360° rotatable polarization stage with verniers and brake. Condenser: Manual condenser operation with color-coded diaphragm assistant (CDA). Focus: 17-mm stage stroke Dimensions: 220 x 396 x 456 mm Weight: 12Kgs LED stand with 4 Position centerable nosepiece. Koehler Illumination Polarizer for transmitted light Add-on lens for Condensers Universal Power Supply plus USB Power with integrated connector Circular rotating stage with graduations and adjustable brake, LED illumination Built-in handle and cord wrap, objective centering tools, 2 Object Clamps Dust Cover 30-degree Binocular POL Tube 10X/20 Pol eyepiece with eyeguard, Crosshair reticle, and key for orientation 10X/20 focusing eyepiece w/eyeguard Objective Plan Pol 4X/0.10 NA - Free working distance: 26.2mm - For use with and without Cover Glass	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Objective Plan Pol 10X/0.22 NA - Free working distance: 7.8mm - For use with and without Cover Glass Objective Plan 40X/0.65 NA - Free working distance: 0.31mm - For use with 0.17mm Cover Glass (DIN, ISO) Analyzer/Bertrand Lens Module Pol Abbe Condenser 0.85 530nm Lambda Nosepiece Compensator U.K. power cord Brand: Leica Model: DM750 P - 13613621 - 13613630 - 13613532 - 13613640 - 13613641 - 13613642 - 13613660 - 13613650 - 13613664 - 13613902 or equivalent.	
2	**Stereo Binocular Microscope - Leica S9i (chip/cuttings description)** A high-precision accessory for 3D visualization of core samples, integrated with a non-heating light.	1	Field of view from 35 mm to 4.2 mm. Working distance 110 mm Pair wide field eyepieces HWF10x/23mm without eyecups Binocular head with 45° inclined tubes Diopter adjustment ± 5° on two tubes. Interpupillary distance adjustable between 54 and 75 mm 0.65x to 5.5x zoom objective, magnification from 6.5x to 55x Ergonomic pillar stand. Maximum object height 148 mm Supplied with opaque stage plate, white/black stage plate and 2 object clamps Incident and transmitted 3W LED illumination with internal power supply	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Both illumination intensities can be adjusted separately Supplied with power cord, dust cover and user manual in Styrofoam case Power supply: 220 VAC 50Hz 3-year warranty Brand/Model: Euromex NZ.1702-P	
3	**Digital Camera for Microscope - Leica MC120 HD (5MP)** C-mount digital camera fitted to the petrographic/stereo microscope to capture still images and Full-HD video of thin sections and cuttings for reporting, archiving and image analysis.	1	Model: Leica MC120 HD; resolution 2.5 megapixels (note: Leica MC170 HD provides 5 megapixels if 5 MP is required) Live image at up to 30 frames per second; Full-HD MP4 movie clip recording Stand-alone operation via HDMI to an HD monitor with infrared remote control, or PC operation via USB Images and movies stored on SD card C-mount interface; compatible with Leica stereo, macro and compound light microscopes Fully compatible with Leica Application Suite (LAS) for image analysis, annotation and measurements Include C-mount adapter matched to Leica DM750P and S9i trinocular ports	
4	**Point Counter System - Swift F-series or PELCON automatic** Motorised stage and keypad system mounted on the petrographic microscope that steps the thin section across a grid so each point's mineral or	1	Automatic point counter with moving slide holder (PELCON or Swift F-series equivalent) for mounting on light microscopes Stage accepts thin sections up to 66 × 90 mm; analysis area up to 66 × 50 mm 61-species keypad for component classification	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	pore type can be logged, giving quantitative modal composition and porosity.		Supplied with USB-2 connection cable to PC, keypad, software and power supply Compatible with Leica DM750P petrographic microscope	
5	**UV Fluorescence Attachment for Petrographic Microscope** Incident-light (epi-) fluorescence module fitted to the petrographic microscope; used to reveal micro-porosity in dye-impregnated thin sections and to identify hydrocarbon fluorescence and organic matter.	1	Incident-light fluorescence attachment compatible with Leica DM750 P stand LED fluorescence illuminator (no warm-up/cool-down, no bulb changes); single, dual or three wavelength options Filter sets for UV excitation (hydrocarbon/oil fluorescence) and blue excitation (fluorescent-dye/rhodamine B epoxy for micro-porosity) Epifluorescence method as described for micropore imaging with polarising microscopes (SPE Formation Evaluation) Include installation, alignment and training	
6	**Image Analysis Software - JMicroVision or equivalent (perpetual licence)** Image analysis software for high-definition thin section images; used to quantify porosity and pore types, perform digital point counting and measure grain size and shape.	1	Software: JMicroVision (specially developed for analysis of high-definition images of rock thin sections) or equivalent Reads TIFF, BMP, FlashPiX, GIF, JPEG, PNG and PNM images; supports very large images Quantification of objects or background; object analysis (size, shape, orientation, texture) and classification	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Image processing: binary and morphology operations, filtering, segmentation; geometric rectification by control points Digital point counting; 1D/2D data collection; granulometry/density profiles Multi-view combining polarised light and fluorescence images; all data saved in a single project file or equivalent	
7	**Reference Thin Section Collection (sandstone + carbonate, 100 slides)** Curated set of standard thin sections of known sandstone and carbonate lithologies used as a reference library for training petrographers and calibrating visual descriptions of reservoir rocks.	1	100 slides covering sandstone (quartz arenite, arkose, lithic arenite, wacke) and carbonate (limestone, dolomite, grainstone to mudstone) textures Section thickness: 30 µm standard (quartz used as thickness gauge) Slide size: 27 × 46 mm (European/ISO petrographic format) with cover slip Blue-dye epoxy impregnated where porous, to display pore types Each slide labelled with lithology and supplied with protective sleeve/slide box.	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 9 IMAGING ROOM - CORE PHOTOGRAPHY & UV SCREENING & SGR SCANNER				
1	**Digital Core Photography System - flatbed/corimag-360/DMT Core Scan/equivalent** Automated Core Photo Scanner for whole - and slabbed core in both UV and White light. Takes continuous 1 meter long Digital Core Photos in both White and U.V. light for display with depth in the supplied display software. Computer controlled scanner table with X-axis and Y-axis (2 rolls). High-performance PC. Motorized positioning system for camera and illumination with linear beam for z-movement. Camera chosen to determine maximum resolution.	1	Capacity: 1 meter (3.3 feet) of core recorded in one run. Recording: Sliced core or complete 360-degree option. Illumination: Records UV and White light at a resolution of 10000/20000 pixels per meter core. File output: TIFF uncompressed 24 bit RGB at resolution of approx. 250/500 DPI. Other file format (JPG, BMP) outputs possible using the included conversion software. Operation: PC-operated automated digital recording software for recording digital core images. Data storage: On local hard disk and transferred to network or CD/DVD records. Imaging software: Images can be viewed after each recording (each run) for QA. Dimensions: 1500mm x 400mm x 1200mm (L x B x H) Weight: 55 KG. Provide 2 years of Spare Parts and Accessories Power supply: 230 VAC 50/60 Hz 1 phase Include all accessories and software Onsite installation, commissioning and training	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Brand/Model Stratum Corimag 360 PN1005, DMT core scan, Vinci DCP or equivalent	
2	**Spectral Core Gamma Ray Scanner (incl. 5 calibration tubes)** Required for measuring the natural gamma radiation emitted from recovered reservoir core samples. Natural radioactivity measured includes Potassium (K), Uranium (U) and Thorium (Th) concentrations. Device also measures total gamma ray in API units.	1	Includes PC controlled core conveyor and electronics system with capability for digital system processing and spectral analysis. PC Based Computer with system control and report software. Belt length: 4 meters Core Diameter: up to 5.5" Shielding area: 6.5" diameter virgin lead shield around the detector and tunnel Sodium Iodide detector: dual 4" detectors Variable logging speed: up to 2.75 feet/min for 4" diameter core and 0.55 feet/min for 2" diameter core Comes with 4 Standard Spectral Gamma Calibration-200 API units, inactive Thorium, Potassium and Uranium Spare Parts for 2 years' normal operation Power: 230 VAC 50/60 Hz 1 phase Accessories and software for data analysis Onsite installation, commissioning and training Complete with: Detector system (sodium iodide) PC controlled core conveyor and electronics system with integrated amplifier, digital system processing and spectral analysis capability	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Windows PC, Intel Processor, including monitor, with installed Core Lab software Computer controlled conveyor system, detector module, low level Cesium source for bulk density determination, control and data acquisition module Software operates all verifier and measurement modes of the system. The report software provides core gamma logs with both vertical and horizontal scaling options, for compatibility with a variety of downhole logs. Data are logged to hard disk. The conveyor, with all mechanical components, is integrated into a compact, rugged, utilitarian system. Digital Signal Processing (DSP) technology allows improved signal to noise ratio, enhanced resolution and superior data accuracy in the combined DSP/Amplifier Board Set of 4 standards for spectral gamma calibration - 200 API unit, inactive, Thorium, Potassium and Uranium" Spare Parts for 2 years' normal operation Gamma Logger Belt, 1x Bearing, Take-up for Spectral Gamma x2 Ball Bearing Mounting Unit, Spectral Gamma x2 Bearing, 3/4x1 x 3/4x9/16 for Spectral	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Gamma x4 Brand/Model: Corelab SGL - SGL-Standards - SGL-SP, Vinci NGR 200, Stratum SCGL, or equivalent	
3	**Core Viewing Tables** A sturdy stainless-steel table on which core samples in trays can be screened and studied, with the aid of white light or UV light.	3	Dimensions 900(H) x 1200(W) x 700(D)mm Material 430 Stainless Steel Finish - external Polished stainless steel Weight 28.1kg Extra-deep 700 mm tabletop extra space 1.2mm thick stainless-steel tabletop Delivered flat-packed for easy self-assembly Max loading weight: 300kg Surface area: 0.84m² 4 feet included Material thickness: 1.2mm - 18 Gauge 1x self-assembly table, including 1 shelf & fixings. Tables are used to display 1 meter long core section in boxes or reference cut mounted on plywood or plastic trays. Table top has a glued-on seamless protective vinyl foil that is robust towards wear and tear and is easy to clean. We also make more advanced automated core tables (XYZZ) that measure probe permeability and record digital core images of core in both U.V. light and white light OR Table frame: ITEM aluminium profiles with aluminium support bars for maximum stability.	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Table top: 20mm plywood with protective cover. Sizes: 110cm x 100-600cm long x 74cm height loading weight: ≥ 200kg Adjustments: All legs have adjustable foot to ensure full stability in case of uneven floor. Options: Can be supplied with wheels instead of adjustable foot. Brand/Model: Stratum CVT-L, Nisbets GJ502,	
4	**UV Light Box - long-wave 365nm + short-wave 254nm (benchtop)** A high-efficiency chamber for observing core and cuttings samples under both White and UV light, devoid of external light.	1	UV and White Fluorescent light Power supply: 220 V, 50 Hz Two extra UV and White fluorescent bulbs 3 years' warranty Brand/Model: Vinci UVB or equivalent	
5	**UV Lighting System** An overhead, ceiling-mounted, high-performance UV LED Fluorescent inspection lamp, designed to hang over a viewing table for studying core samples. Supplied with hanging chains to secure the equipment over the viewing table. The equipment is of modular design for easy repair	24	Object distance: up to 1000 mm Coverage: 1190x1130mm Maximum intensity: 1024 µW/cm Peak UV wavelength: 365 - 370 nm Visible Light (in dark room): ≤10Lux Dimensions: 550 x 280 x 60mm Weight: 9.0 Kg Power supply: 220-240 VAC 50/60 Hz, 66 W, 1 phase Provide a 2-year warranty Brand/Model: Shanghai Findt Testing Equipment LW365V	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 10 GEOCHEMISTRY & PYROLYSIS LAB				
1	**Rock-Eval 7S Analyser - Vinci Technologies (incl. autosampler + GEOWORKS SW)** A fully automated instrument for screening of source rocks and reservoirs through geochemical analysis of kerogen-containing rock samples, using high-temperature pyrolysis and subsequent oxidation. Should be able to determine Total Organic Carbon content (TOC), kerogen type, in addition to facilitating well log correlations and petroleum generation modelling	1	Pyrolysis oven temperature: 40°C to 850°C Oxidation oven temperature: 200°C to 850°C Oven temperature rates: adjustable from 1 up to 50°C/mn, with 1°C step Auto sampler capacity: 48 samples Detector: FID for hydrocarbons and IR for CO/CO2 Gas carrier: Nitrogen (pyrolysis) and air (oxidation) Power: 220V, 50Hz, 1 Phase, 1500W Rock EVAL 7 is supplied with parts and accessories for normal operation 3-year warranty Onsite installation, training and commissioning Consumables: 2 Drierite TM desiccant (450g); 1 Teflon wool (50g); 2 IFP calibration sample 160000 (10g); 1 Tubing 1/8od analytical (2m); 1 Magnesium perchlorate; 1 Quartz wool kit; 2 Glow plugs (set of 2); 2 Piston O-ringO-rings; 2 packs of Alumina crucibles (set of 28); 1 IFP multi-point calibration kit; 1 FID O-ringO-ring; 2 Flat gasket diameter 5; 1 Ferrule 1/4od (set of 10) Hydrogen Generator: Hydrogen is produced on demand from deionized water and electricity, at low pressure and with minimal stored volume. The	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			model operates at 160 ml/min flow rate with >99.999% purity. High Precision Electronic Balance: To weigh the samples before analysis. The model has a 100g/220g dual weighing range with 0.01/ 0.1 mg accuracy. Electronic Gas Leak Detector Brand/Model: Vinci ROCK EVAL 7 ANALYSER - SP - 8-012132 GEOWORKS-COREMOD - GEOWORKS-MGTMOD - GEOWORKS-QKKINMOD - GEOWORKS-MLTKINMOD - GEOWORKS-CLNSIMMOD - GEOWORKS-QKMDLMOD - GEOWORKS-HTMLMOD - GEOWORKS-ACAP - GEOWORKS-AD - GEOWORKS-AG - GEOWORKS-NG - GEOWORKS-HG - GEOWORKS-EB - GEOWORKS-ELD or equivalent	
2	**LECO SC632 Carbon-Sulphur Analyser (TOC on cuttings/chips)** A high-efficiency benchtop carbon analyzer for determination of Total Organic Carbon (TOC) from dried and acidified sediments of crushed core samples.	1	Touch-screen interface for ease of operation Ability to load multiple samples (up to 100 samples) Temperature up to 1450°C Power supply: 220V / 50Hz, 1 Phase Supplied with complete set of software, accessories and consumables 3-year warranty On-site installation, training and commissioning Includes external PC with Cornerstone software Analysis time: 60s to 120s nominal	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Sample mass: 350mg (nominal, coal) Detection method: Non-Dispersive Infrared Absorption (NDIR) Chemical reagents: Magnesium Perchlorate (Anhydrone) Instrument range: Carbon - 0.0175mg to 200mg (Lower range is calculated as 2 instrument blank deviation. Method range may differ due to factors such as sample type and method parameters.) Precision: 0.0088mg or 1%RSD, whichever is greater Consumables and spares included: Anhydrone 1bl./btl.; Kit Balance 4 Plc Entris Ii 124 120g; Glass Wool, 1 lb. Box; Pack Consumable 5k 832 Intl; Boat Crucible Zir 250/pk; Stop ceramic (stepped); Filter In-line 0.1 Micron Disposable; Kit Maint Parts 832 Series Autoloader; Tube Combustion Outer; Tube Combustion Inner; Tube Lance Furn 3-1 11.50; Pack O-ring Spare Sc/c/s832; Tube Boros Reagent 1.38od 7.0; Tube Purge Sc A/l; Seal Radial 108 Light .437X.25X.141/.151 SST; Heating Element Assy w/Clamp; Kit Pump Rebuild dia 626-001-362 Brand/Model: Leco C832-MLC - 501-171-HAZ - 751-060-110 - 501-081 - 502-771-INT - 528-203-250 - 606-308 - 619-591-699 - 104-186 - 625-601-554 - 625-601-555 - 625-602-	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			187 - 626-001-750 - 626-001-871 - 626-002-467 - 625-602-742 - 626-001-377 - 626-002-251 or equivalent	
3	**Vacuum Oven** A portable conventional vacuum drying oven for drying multiple core samples in a vacuum at temperatures up to 80°C. This will enable the total removal of humidity inside core samples before the study.	1	Permits visualization of the samples while drying Vacuum range: 10-3 mm Hg (0.13 Pa) Temperature range: 30°C to 170°C (precision 0.3%) Material: stainless steel 316L Overall dimensions: 340 x 320 x 270 mm Weight: 13 kg (Net) Inside diameter of bell: 230 mm Inside height of bell: 130 mm Glass bell volume: 5 litres Power: 220V /50 Hz Includes stainless steel heating plate and glass bell 3-year warranty Vacuum Pump - Based on a double-stage rotary vane pump for vacuum generation. It features a nominal flow rate of 2.5 m3/h and an asymptotic pressure of 10-3 mbar. Brand/Model: Vinci: DR3003 - DR3003 - VACPUMP, Vinci DR3003, Binder VD23 or equivalent.	
4	**Rock-Eval Reference Standard Set (IFP S55000 + 4 ancillary standards)** Certified rock reference standards run on the Rock-Eval 7S to calibrate and check the pyrolysis and oxidation ovens, ensuring S1, S2, Tmax and	1	IFP 160000 Rock-Eval® reference standard (current certified standard for Rock-Eval 7/7S incl. sulfur): average S1 0.12 mg HC/g, S2 12.4 mg HC/g, Tmax 416°C, HI 383 mg HC/g TOC, OI 24 mg CO_2/g TOC, TOC 3.3 wt.%, MinC 3.2 wt.%, total S 0.30 wt.%	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	TOC results are accurate and comparable with other laboratories.		Certified values supplied with confidence intervals (e.g. S2 ±0.4 mg HC/g, Tmax ±3°C, TOC ±0.1 wt.%) IFP 55000 legacy calibration standard: run at 100 ±1 mg; acceptance Tmax 419 ±2°C Set to include 4 ancillary standards covering low and high organic/mineral carbon ranges as recommended by IFP/Vinci Supplied by IFP Energies nouvelles/Vinci Technologies with certificate of reference values	
5	**Agate Mortar & Pestle Set - 3 sizes (hand-grinding rock chips)** Hard, non-porous agate grinding sets used in the geochemistry lab to hand-grind rock chips and cuttings into fine homogeneous powder for Rock-Eval pyrolysis and LECO TOC analysis without contaminating the sample.	3	Material: natural (Brazilian) agate, >99.9% SiO_2 Mohs hardness: approx. 7.0-7.2; high density, non-porous surface minimises sample loss and cross-contamination Highly polished grinding surfaces; resistant to solvents and acids except aqua regia and HF Thermal endurance limited to 350°C; clean with alcohol, not heat Set of 3 sizes, e.g. 50 mm, 100 mm and 150 mm O.D. mortars, each with matching pestle	
6	**LECO Consumables Starter Kit (crucibles, iron chips, CRM standards)** Start-up stock of LECO consumables and calibration standards for the SC632 carbon-sulphur analyser, used for combustion, moisture	1	Consumables per LECO SC632-Series Consumables & Spare Parts Reference Card (Form 203-104-045) Combustion boats, ceramic: 529-203 (100/package) or 528-203-250 (250/package); nickel boat liners 502-343	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	scrubbing and calibration during TOC determination of cuttings and core.		Anhydrone (magnesium perchlorate) 501-171-HAZ, 454 g COM-CAT combustion accelerator 502-321, 250 g; ComAid™ for Solids 501-426, 454 g Ceramic boat stop 606-308 and spare combustion/lance tubes Iron chip accelerator (for induction-furnace applications) where required LECO carbon/sulphur calibration standards (certified reference materials) covering the TOC range of analysis Note: part numbers and standard values may change; confirm latest with LECO	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 11 GAS CHROMATOGRAPHY (GC) LAB				
1	**Gas Chromatograph - Agilent 8890 GC** Gas Chromatographic instrument for profiling hydrocarbon compounds	1	• Built-in oven light illuminates the internal GC oven, brightness is adjustable to fit user's needs • Optional Rapid Cooling Fan decreases oven temperature maximum to minimum in under 3 minutes, reducing time between injections • Retention Time Locking (RTL) precisely matches the retention times after maintenance or between Agilent GC systems • Local User Interface (LUI) features on-board maintenance videos to assist with routine procedures • Microchannel-based EPC provides reliability and longevity against gas contaminants such as particulates, water, and oils, extending system uptime • Capillary Flow Technology (CFT) modules, oven mountable low thermal mass, provide unique carrier gas flow connections for advanced chromatographic separations • Single-filament thermal conductivity detector (TCD) does not require a	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			separate reference gas or manual potentiometer adjustment • Auto-ranging flame ionization detector (FID) provides the ability to detect and quantitate from percent levels to parts per billion (ppb) in a single GC injection • Sulfur or nitrogen chemiluminescence detectors provide low ppb detection, equimolar response, and quantitation for sulfur or nitrogen contaminants without matrix quenching • Helium conservation module, Gas Saver, and alternative carrier gas solutions can dramatically reduce the amount of helium used • Hydrogen Sensor Module Series 2 continuously monitors for leaks in the GC oven and is fully integrated with GC Assist • Independently audited for environmental impact throughout the product lifecycle and received My Green Lab's ACT (Accountability, Consistency, Transparency) label. Capillary Flow Technology (CFT): Yes (all CFT) Depth: 51 cm	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Detectors: 4 Dimensions (WxDxH): 58 cm x 51 cm x 49 cm Dual Simultaneous Injection: Yes GC Detector MDL: Premium GC Diagnostics - Leak Check: Autonomous, hands-free GC/MS Compatibility: Q-TOF, Single quadrupole, Single quadrupole (stainless steel source), Triple quadrupole. Height: 49 cm Inlets: 2 Maximum Temperature Ramp Rate: 135 °C/min • Operating Temperature Range: +4 above ambient to 450 °C, • -80 to 450 °C (with LN2 cryogenic cooling), • -40 to 450 °C (with CO2 cryogenic cooling) Oven Cool Down: 2.0 minutes with rapid cooling fan, single channel from 450 to 50 °C Peak Area Repeatability: <0.5% RSD Retention Time Repeatability: <0.008% Typical Pressure Control: 0.001 psi Valves: 10 Width: 58 cm Full Option with **autosampler** and extra columns Should come with all accessories and calibration sets Onsite installation, testing and training	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Brand/Model: Agilent 8890B	
2	**GC Column Kit - DB-1, DB-5, Rt-Alumina BOND (60m×0.25mm×0.25µm)** Capillary and PLOT GC columns that separate gas and liquid hydrocarbon components in the Agilent GC: DB-1/DB-5 for C1-C40 oil and extract fingerprinting, and Rt-Alumina BOND for light C1-C5 gas analysis.	3	Agilent J&W DB-1, 60 m × 0.25 mm × 0.25 µm (P/N 122-1062): 100% dimethylpolysiloxane, non-polar, low bleed, high temperature limit Agilent J&W DB-5, 60 m × 0.25 mm × 0.25 µm (P/N 122-5062): (5%-phenyl)-methylpolysiloxane, low bleed Restek Rt-Alumina BOND/Na_2SO_4 PLOT, 30 m × 0.25 mm × 4 µm (Cat. 19775): highly selective for C1-C5 saturated and unsaturated hydrocarbon isomers; temperature range −60 to 200°C PLOT column can be regenerated by conditioning at maximum temperature if water is adsorbed Supplied with column test certificates (CofA)	
3	**Helium Carrier Gas - 99.9999% UHP (50L cylinders, 6-pack)** Ultra-high-purity helium used as the carrier gas in the GC lab, transporting the vaporised sample through the column to the FID/TCD detectors without adding baseline noise.	1	Helium N6.0 grade, 99.9999% minimum Impurities: O_2 ≤1 ppm, N_2 ≤1 ppm, CO_2 ≤0.5 ppm, total hydrocarbons ≤0.5 ppm, moisture ≤1 ppm, H_2 ≤1 ppm; total impurities ≤1 ppm Cylinder: L size (approx. 50 L water capacity), 9.05 m^3 contents at 200 bar, approx. 1.54 × 0.23 m, gross weight approx. 72 kg Supplied as 6-pack with Certificate of Conformity; BS341 No. 3 outlet (or local equivalent)	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Include two-stage stainless-steel high-purity regulator and changeover manifold	
4	**Hydrogen Generator - PEAK Scientific H2 PEM 100cc/min** PEM electrolysis generator that produces hydrogen on demand from deionised water to supply FID fuel gas in the GC lab, removing the need for high-pressure hydrogen cylinders.	1	PEAK Scientific Precision Hydrogen 100 / Precision Hydrogen SL100 (P/N 63-0100) or equivalent Flow: up to 100 cc/min; Purity: 99.9995% Output pressure: up to 100 psi (6.9 bar); outlet 1 × 1/8" Swagelok compression fitting Stores less than 150 mL of gas; automatic fail-safe shutdown in the event of a leak Water requirement: ASTM Type II deionised water (<1 µS/cm / >1 MΩ·cm) Electrical: 110-230 V, 50/60 Hz; CE certified Warranty: 2 years standard (SL line)	
5	**GC Calibration Gas Mixture - C1-C10 + CO2 + H2S certified (2 cylinders)** Certified multi-component gas mixture used in the GC lab to calibrate detector response and retention times for hydrocarbon, CO_2 and H_2S analysis of natural gas and headspace samples.	2	Components: C1-C10 hydrocarbons (vaporised), CO_2 and H_2S in suitable balance gas; composition to match laboratory application Prepared gravimetrically in accordance with ISO 6142-1 (Class I mixtures) and verified analytically per ISO 6143 Supplied as ISO 17034 certified reference material (CRM) from an ISO 17025 accredited producer Certificate content per ISO 6141: assigned composition, expanded	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			uncertainty (k = 2), cylinder ID, stability/expiry date and traceability Physical properties (calorific value, relative density, Wobbe index) calculable per ISO 6976 / GPA 2172 Quantity: 2 cylinders with compatible stainless-steel regulators	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 12 DOWNSTREAM FLUID TESTING (FINISHED PRODUCT)- PETROLEUM PRODUCTS ANALYZERS (PETROL, DIESEL, RESIDUAL FUEL OIL, CRUDE OIL)				
1	**PENSKY–MARTENS CLOSED-CUP FLASH POINT TESTER** Determines the lowest temperature at which flammable vapor above a liquid ignites in a closed cup, crucial for fuel classification, storage, transport safety.	1	• Temperature range: room temp to ~350–400 °C • Heating: controlled ramp (≈1–2 °C/min) • Stirring: variable (≈125–250 rpm) • Flash detection: electric or gas ignition • Compliant with ASTM D93, ISO 2719, IP 34, and related standards • Dimensions (Lx W x H) : 400 mm x 300 mm x 400 mm • Weight: 25 kg • Accessories • Test cup with lid and shutter mechanism • Ignition sources: gas flame and electrical igniter (both often included). • Thermometers (ASTM-approved, e.g., ASTM 11C or ASTM 17C) or Pt100 RTD sensor • Stirring motor • Barometric pressure correction charts/software • Sample cup stand • Gas regulator (if using gas ignition) • RS232/USB interface for data export (automatic models) • Calibration certificates	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			• Operation and maintenance manual • Include manufacturer spares parts and accessories for 1 year operations • Must have 3 years warranty • Voltage requirements: 220 V, 50/60 Hz, 1 phase., with standard British 3-pin plugs (no adapters or transformers) • Motor Power: For automatic models: 25–50 W (for stirrer and actuators) • Onsite installation and testing	
2	**KARL FISCHER TITRATOR** Precisely measures trace-to-high water content in a wide range of samples using coulometric (ppm-level) or volumetric (up to 100%) titration. Measures water content in crude oil, fuels, lubricants, solvents, gases, vital for quality control, meeting ASTM/ISO standards like ASTM D6304, D7995	1	• Coulometric: 1 ppm–1 % water, high sensitivity (0.1 µg H_2O) • Volumetric: 0.05 %–100 % water • Display: LCD/touchscreen, built in printing • Automation: autosampler, oven accessory for volatile/solid • Dimensions (Lx W x H) : ~350 x 300 x 250mm • Weight: ~8–15 kg • Accessories: • Titration cell (anode and cathode compartments) • Electrode (double platinum or generator electrode) • Magnetic stirrer • Reagent bottles (Karl Fischer reagent and solvents) • Drying tube • Injection syringes or autosampler (optional) • Software and USB/RS232 interface	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			• Standards: ASTM D6304, ISO 12937 • Include manufacturers, spares parts and accessories for 1 year operation • 2 years warranty • Voltage requirements: 220 V, 50/60 Hz, 1 phase, with standard British 3-pin plugs (no adapters or transformers) • Electric Motor Power: ~10–20 W (for burette/syringe motor and stirring) • Onsite installation and testing	
3	**KINEMATIC VISCOMETER** Measure of fluid resistance (Newtonian) via capillary flow; used in quality control of fuels, lubricants.	1	• Range: 0.15–25,000 mm²/s @ 40 °C • Temp: ambient–200 °C • Stability: ±0.01 °C (amb), ±0.03 °C. • Sample Vol.: 8–16 mL; • Built-in bath with PID temperature control • Dimensions (Lx W x H) : ~400 x 350 x 550 mm • Weight: ~20–45 kg • Accessories • Capillary tubes (Pinkevitch, Ubbelohde, Cannon-Fenske), viscometer bath, timing/detection (optical), bath oil, Transparent thermostatic bath calibration oils/standards, cleaning kits/drying setups. • Standards: ASTM D445, ISO 3104, IP 71 • Power requirement: 220-240 V, 50/60 Hz. 220 V, 50/60 Hz, 1 phase, with standard British 3-pin plugs (no adapters or transformers)	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			• Provide spare parts for 2 year operations • Must have 3 years warranty • Onsite installation and testing	
4	**CLOUD & POUR POINT APPARATUS (AUTOMATIC TYPE)** To determine the lowest temperatures at which petroleum products can be used without flow problems due to wax formation. Cloud Point: The temperature at which wax crystals first appear in the oil when cooled. Pour Point: The lowest temperature at which the oil remains pourable (flows by gravity).	1	• Temp Range: as low as −95 °C to +50 °C; • Accuracy: ±0.1 °C; • multi-chamber options • builds per ASTM D2500, D5853, D97, D5950, ISO & IP standards • Power supply: 220 V, • Motor power: ~30–60 W (for stirrer and cooling system) • Weight: ~20–50 kg • Dimensions: ~500 x 400 x 500 mm • Power Requirement: 220–240 V AC, 50/60 Hz, ~500–800 W (depending on cooling system) • Accessories: • Test jars and jackets • Cooling bath (integrated or external) • Thermometers or temperature sensors (Pt100) • Calibration standards • Software and printer (optional) • Drying rack for test tubes • Standards: ASTM D97 (Pour Point), ASTM D2500 (Cloud Point), ISO 3015/3016 • Must have 3 years warranty • Spare parts for 2 years normal operation • Onsite installation and testing	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
5	**COPPER STRIP CORROSION ANALYZER** Evaluates corrosiveness of petroleum products by exposing copper strips to the sample at high temperature, then assessing tarnish/deposit according to ASTM D130. Detects acidic/sulfuric contaminants in fuels, lubricants, essential for refinery QC, material compatibility checks.	1	• Temp: typically, 100 °C or 121 °C • Timer-controlled immersion (up to 3 hrs) • Oil bath • Visual color grading according to ASTM D130 • Power supply: 220 V, 50/60 Hz, 1 phase • Weight: ~10–35 kg • Dimensions: ~400 x 300 x 450 mm • Accessories • Copper test strips (standardized, polished) • Glass test tubes or bombs • Water/oil bath with temperature control • Thermometer or Pt100 sensor • Copper strip corrosion rating chart (color comparison) • Forceps and polishing materials • Sample holder for immersion • Standards: ASTM D130, ISO 2160 • Must have 3 years warranty • Spare parts for 2 years normal operation • Onsite installation and testing	
6	**PLATINUM CRUCIBLES** Used for high-temperature sample ashing to determine ash content, trace metals, or for fusion prior to XRF/ICP.	1	• Material: Pt or Pt–10%Rh • Capacity: 5–100 mL (commonly 25 or 50 mL) • Thickness: 0.2–0.5 mm • Max. temp: ~1 400–1 600 °C	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	Measures residue (ash), ensures compliance (ASTM D482/D4766), prepares bead for XRF analysis		• Weight: 10–100 g depending on capacity and wall thickness • Dimensions: Typically, 20–50 mm diameter × 20–40 mm height • Accessories • Platinum tongs • Lids (Pt or Pt-Au alloy),silica fiber pads • Support rings or holders • Transport/storage boxes • Furnace or muffle compatible with Pt crucibles • Standards: ASTM D130, ISO 2160 • Material Composition: ≥99.95% pure Pt, sometimes alloyed with 10% Rh for strength • Must have 3 years warranty • Spare parts for 2 years normal operation • Onsite installation and testing	
7	**AUTOMATIC ATMOSPHERIC DISTILLATION UNIT (2 UNITS)** Simulates atmospheric distillation to determine boiling range distribution; essential for fuel spec (e.g., gasoline, diesel, jet fuel). Determines fractions by-volume at defined cut points (e.g. IBP, 10% D, 50%, etc.) vital for product classification,	1	• Compliant with ASTM D86, D2160 • Temp range: up to ~400 °C • Automatic sample introduction and temperature ramp • Fraction collection system • Accessories • Distillation flasks, condensers, thermometers (alcohol, thermocouples) • Distillation flasks and receivers • Autosampler (for one or both units) • Condenser system (built-in) • Automatic volume sensor	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	blending, regulatory compliance.		• Integrated cooling bath • Heater control with temperature sensors • Printer/USB for data output • PC Monitor • Safety shutoff systems • Data logging, printer, reflux divider • Standards: ASTM D86, ISO 3405 • Weight: ~40–60 kg per unit • Dimensions: ~600 × 500 × 700 mm per unit • Power requirement: 220-240 V, 50/60 Hz. one phase. 3 pin plug • Motor Power: ~50–100 W (for bath circulation, autosampler, etc.) • Must have 3 years warranty • Spare parts for 2 years normal operation • Onsite installation and testing	
8	**REID VAPOR PRESSURE (RVP) APPARATUS** Measures vapor pressure of crude/fuel at 37.8 °C (100°F)—critical for volatility, emissions, safety data. Determines vapor pressure; helps assess volatility, storage safety, regulatory compliance	1	• Complies with ASTM D323 • Shake frequency control, water bath temp ±0.1 °C • Pressure cell with piston and gauge • Have attachments for recirculating system • Dimensions:~700 × 600 × 800 mm, approximately • Weight: ~10–20 kg • Accessories • Reid vapor pressure bombs (chambers)	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			• Connecting pressure gauge (analog/digital) • Water bath (to maintain 37.8°C or 100°F) • Thermometers or temperature sensors • Sample introduction funnel and valves • Standards: ASTM D323 • Include spare parts and accessories for 2-year operation. • Power requirement: 220-240 V, 50/60 Hz. one phase. 3 pin plug • Must have 3 years warranty • Onsite installation and testing	
9	**DIGITAL DENSITY METER** Measures density, specific gravity, API gravity of petroleum and chemicals using an oscillating U-tube method compliant with ASTM D4052 and portable models to D7777. Convert volume to mass; essential for custody transfer, quality control, blending, and product specifications.	1	• Accuracy: ±0.0001–0.001 g/cm³, • Temp accuracy ±0.03–0.2 °C • Temp range: 0 °C–200 °C (benchtop) or 0–40 °C (portable) • Pressure capability up to ~10 bar • Viscosity correction and bubble detection • Power requirement: 220-240 V, 50/60 Hz. one phase. 3 pin plug • Motor power: ~10–20 W (for internal pump or oscillation drive) • Weight: 250kg • Dimensions: ~400 × 300 × 250 mm • Accessories: • U-tube oscillating sensor • Syringes or autosampler (optional) • Built-in Peltier thermostat for temp. control	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			• Calibration standards (air, water, oils) • Software and data export interface (USB/LAN) • Standards: ASTM D4052, ISO 12185 • Have 2 years manufacturer recommended spare parts and accessories for normal operation. • Have a 3-year warranty • Onsite installation, training and commissioning	
10	**BS&W ANALYZER (BASIC SEDIMENT & WATER) CENTRIFUGE** A high-performance benchtop centrifuge for separating components of a specimen. Measures sediment and water content in crude/condensate to ensure quality and compliance. Evaluates emulsion stability and separation efficiency; refining/load compatibilities	1	Specifications: 700x800x600 mm • Compliant with ASTM D4007, D1796 • Max capacity: 6 x 250mL • Max speed: 15,200 rpm • Max RCF: 25,830 g • Up to 100 grograms via touch screen • Dimensions: 362 x 566 x 690 mm • Weight: 86kg • Display: Full Color Touch Screen • Power requirements: 220-240 V, 50/60 Hz. Single phase • Have 2 years manufacturer recommended spare parts and accessories for normal operation • Standards: ASTM D4007, API MPMS 10.4, ISO 3734 • Accessories: • Centrifuge tubes (conical or pear-shaped) • Graduated oil measuring tubes	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			• Solvents (e.g., toluene or xylene for sample dilution) • Calibration oils • Must have 3 years warranty • Spare parts for 2 years normal operation • Onsite installation and testing	
11	**HYDROMETER – GLASS 3 SETS (PETROLEUM TYPE)** Basic density measurement via float displacement. Suitable for QC labs as backup or where digital meters are unavailable; compliance with ASTM D1298	3	Dimensions: ~300 mm long (each) Motor Power: None (manual instrument) Weight: ~0.1 kg each Power Requirement: None Accessories: • Matching hydrometer cylinder (glass or plastic) • Thermometer for temperature correction • Cleaning solution and storage case Ranges: • 0.850–0.900 • 0.900–0.950 • 0.950–1.000 Standards: ASTM E100, ASTM D1298 • Provide spares for 3 years operation • Warranty: up to 3 years • Onsite installation, testing, commissioning and training	
12	**MULTI COLOUR AUTOMATIC COLORIMETER** Spectrophotometric measurement of liquid color using multiple scales (Saybolt,	1	• Rapid (<25 s) readings with built in spectral data. • Dimensions: ~350 × 250 × 250 mm • Motor Power: Minimal (~10–20 W for motorized sample tray) • Weight: ~8–15 kg	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	ASTM, Pt Co/Hazen/APHA, Gardner). Used to measure the color of petroleum products and chemicals based on standard color scales. Objective color classification in fuels, oils, waxes; more accurate and faster than visual discs.		• Power Requirement: 100–240 V AC, 50/60 Hz, ~40–60 W • Accessories: • Sample cuvettes or test tubes • Standard color filters (ASTM, Saybolt, Lovibond) • Calibration standards • Integrated printer or USB interface • Touchscreen or PC-controlled interface • Standards: ASTM D1500, ASTM D6045, ISO 2049 • Voltage Rating: 230 V • Provide spares for 2 years operation • Warranty: up to 3 years • Installation, testing, commissioning and training	
13	**CALORIFIC(HEAT) VALUE COMBUSTION TESTER (BOMB CALORIMETER)** Measures the energy content (higher/lower heating value) of petroleum products by burning a weighed sample in an oxygen-filled bomb and tracking temperature rise of water bath—per ASTM D240.Used to determine the calorific value (gross and net heating value) of fuels. Determines gross and net calorific values of diesel,	1	• Bomb pressure: typically 2.8–3.0 MPa of O_2; max hydrostatic rating ~20 MPa • Calorimetric heat capacity range: ~14 000–18 000 J/K • Temp range: 10–35 °C, resolution ~0.001 °C, accuracy ≤0.2% • Dimensions: ~500 × 400 × 500 mm • Motor Power: ~20–50 W (stirring or internal mechanism) • Weight: ~25–40 kg • Power Requirement: 220–240 V AC, 50/60 Hz, ~500 W 1 phase, 3 pin plug • Accessories:	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	gasoline, jet fuel, heavy oils—crucial for energy assessment, engine design, environmental analysis.		• Oxygen bomb vessel (stainless steel or alloy) • Firing unit and ignition wires • Calorimeter bucket and water jacket • Oxygen cylinder with pressure regulator • Thermometer or temperature sensor (Pt100 or thermocouple) • Calibration standards (e.g., benzoic acid) • Cooling system (automatic models) • Standards: ASTM D240, ASTM D5865, ISO 1928	
14	**SALT IN CRUDE OIL ANALYZER** Measures chloride and sodium to assess corrosion potential and suitability for desalting units. Accesses crude suitability for refining; prevents corrosion, fouling, catalyst poisoning	1	• Salt-in-oil range: 1–100 mg/kg (ppm) • Sample size: 1–5 g; automatic titration/detection • Dimensions: ~400 × 300 × 400 mm • Motor Power: ~20–40 W (stirring or autosample movement) • Weight: ~15–25 kg • Power Requirement: 220–240 V AC, 50/60 Hz, ~200–300 W • Accessories: • Sample cells or test flasks • Conductivity meter or potentiometric titrator • Extraction solvents (xylene or toluene) • Calibration standards (NaCl in oil)	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			• Built-in or external heater (optional) • Digital display unit • Standards: ASTM D3230, ASTM D6470, ISO 6295	
15	**FURNACE / ASHING (MUFFLE FURNACE)** Ashes samples to determine inorganic content/residue and prepare for XRF/ICP analysis.	1	• Temp range: up to 1,200–1,300 °C; control ±1–2 °C • Volume: 3–30 L models; programmable ramp/cool cycles • Dimensions: ~500 × 600 × 600 mm (varies by chamber size: 5–30 liters) • Motor Power: ~500–2000 W (heating element only) • Weight: ~40–100 kg • Power Requirement: 220–240 V AC, 50/60 Hz, ~1–3.5 kW • Accessories: • Crucibles (platinum) • Temperature controller (digital or PID) • Exhaust port or fume hood connection • Tongs and gloves for sample handling • Timer and safety interlock • Standards: ASTM D482, D874, D3174	
16	**GUM TESTER FOR GASOLINE (EXISTENCE OF GUM)** Assesses gum-forming compounds like oxidized or polymeric residues in gasoline via baking and filtration.	1	• Compliant with ASTM D381, D3279; reflux heater ~85 °C • Programmable heat/rinse cycles; filtration stage • Dimensions: ~600 × 400 × 450 mm • Motor Power: Minimal (~20–40 W for fan/igniter)	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	Accesses fuel stability, effectiveness and compliance.		• Weight: ~20–30 kg • Power Requirement: 220–240 V AC, 50/60 Hz, ~500–800 W • Accessories: • Evaporation bath with aluminum wells • Sample beakers (100 mL) • Air supply with flow controller • Temperature control unit (maintains ~160°C) • Residue weighing balance • Standards: ASTM D381	
17	**TAN/TBN AUTOMATIC TITRATOR** Measures Total Acid Number (TAN) and Total Base Number (TBN) via potentiometric titration to evaluate oil degradation and additives.	1	• Compliant with ASTM D381, D3279; reflux heater ~85 °C • Programmable heat/rinse cycles; filtration stage • Dimensions: ~600 × 400 × 450 mm • Motor Power: Minimal (~20–40 W for fan/igniter) • Weight: ~20–30 kg • Power Requirement: 220–240 V AC, 50/60 Hz, ~500–800 W • Accessories: • Evaporation bath with aluminium wells • Sample beakers (100 mL) • Air supply with flow controller • Temperature control unit (maintains ~160°C) • Residue weighing balance • Standards: ASTM D381	
18	**DEAN AND STARK APPARATUS**	1	• Dimensions: ~500 × 300 × 600 mm (assembled)	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	Used to determine the water content in petroleum products, bitumen, and oily materials by distillation. Water is separated from the sample using a solvent and collected in a graduated receiver.		• Power: None (uses external heat source) • Weight: ~5–10 kg • Power Requirement: None (unless electric heating mantle is used, ~500–1000 W) • Accessories: • Distillation flask • Condenser (reflux type) • Graduated receiver (trap) • Solvent (e.g., toluene or xylene) • Heating mantle or oil bath • Standards: ASTM D95, ISO 3733, IP 74, ASTM D244.	
19	**AUTOMATIC REID VAPOR PRESSURE APPARATUS** Measures vapor pressure of volatile petroleum products using a sealed chamber at 37.8°C (100°F), following standardized test methods. Used to measure the vapor pressure of petroleum products (e.g., gasoline, crude oil, naphtha, LPG) under controlled conditions. Vapor pressure is a key indicator of volatility and is important for fuel handling, storage, and environmental compliance.	1	• Dimensions: ~500 × 400 × 500 mm • Weight: ~25–35 kg • Motor Power: ~50–100 W (pump, shaker) • Heater Power: ~300–400 W • Power Requirement: 220–240 V AC, 50/60 Hz, ~600 W • Measuring Range: 0 to 200 kPa (extended models: 0–1,000 kPa) • Repeatability: ±0.3 kPa • Reproducibility: ±0.7 kPa • Temperature Control: Fixed at 37.8°C ± 0.1°C • Sample Volume: ~10–20 mL (depending on method) • Operation: Fully automatic with built-in pressurization and agitation • Accessories: • Sample syringes or vials • Sealed test chamber	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			• Integrated agitation system • Temperature-controlled block or mini bath • RS232/USB for PC data transfer • Built-in pressure sensor and safety valve • Standards: ASTM D323, ASTM D5191, ISO 3007, EN 13016-1	
20	**GASOLINE ANALYZER** A Gasoline Analyzer is used to determine key chemical and physical properties of gasoline, including octane number, vapor pressure, aromatic and olefin content, oxygenates, and sulfur content. It helps ensure the fuel meets specifications for performance, safety, and environmental compliance. The type of Analysis: Hydrocarbon composition (paraffins, olefins, aromatics), Sulfur content, Benzene and oxygenates (e.g., ethanol, MTBE), Octane rating (research and motor), RVP (Reid Vapor Pressure), Simulated distillation (boiling range). ASTM D4814, D2699, D2700, D86, D5453, D6730, D5798.	1	• Measurement Range: Depending on technology, can cover 0–100% for major components • Detection Limits: Down to ppm level for sulfur and oxygenates • Temperature Range: Ambient to 100°C • Repeatability: ±0.1 RON or MON for octane • Analysis Time: ~3–15 minutes depending on configuration • Automation: Fully automated with autosampler and software integration • Output: Digital data with multi-component report generation. • Power Requirement: 230 V AC, 50/60 Hz, 1000–2000 W depending on configuration. • Dimensions: Typically around 60 cm × 50 cm × 45 cm • Weight: 30–70 kg depending on modules (e.g., oven, autosampler) • Provide spare parts for 2-year operations • Must have 6 years warranty • Key Accessories:	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			• Autosampler or manual injection ports • Reference standards (octane, sulfur, benzene) • Carrier gases (for GC: hydrogen/helium, nitrogen) • Capillary or packed columns (GC) • Software for fuel blending and results trending • Calibration kits and internal standard solutions	
21	**KINEMATIC VISCOMETER** A compact benchtop instrument for measuring whole kinematic viscosity range with a wide temperature range with efficient heating and cooling performances. Contains cells for simultaneous measurement of density and viscosity values.	1	Provide all operational components and accessories for complete viscosity measurements. • Measuring range o Dynamic Viscosity Range: 0.2 to 10 000 mPa.s o Kinematic Viscosity Range: 0.2 to 10 000 mm2/s o Density Range: 0.65 to 2 g/cm3 • Temperature range o Maximum Temperature: +100 °C / 212 °F o Minimum Temperature: 20 °C / 36 °F below ambient • Reproducibility o Viscosity: 0.35% of measured value o Density: 0.0005 g/cm3 • Required sample volume o Viscosity and Density Measuring Cells: 3 ml o Sample Measurement Speed: up to 20 samples per hour	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			• Power Requirement: 230 VAC, 50/60 Hz, 50W • Have 3 years spare parts for normal operation. • Have 3-year warranty Onsite installation, training and commissioning	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 13 GAS CHROMATOGRAPH				
1	**NATURAL GAS & FIXED GAS COMPOSITIONAL ANALYZER** A Gas Chromatography system designed for use in Extended Natural Gas and Fixed Gas analysis by Gas Chromatography. The system is often based on a standard GC system, configured for a comprehensive analysis of natural gas.	1	• Should include a Flame Ionization Detectors (FID) • Should include a Thermal Conductivity Detector (TCD) • Capable of performing analysis as per ASTM method D1945-14 and GPA-2261-13, GPA 2268-14, GPA 2177-13, GPA 2186-14 • Capable of identifying hydrocarbons from C1 through C12 • Capable of detecting Isobutane, n-butane, Isopentane, n-pentane, Carbon Dioxide, Ethane, Propane, Oxygen, Nitrogen. • Dimensions (L x W x H): 680 x 510 x 500 mm • Weight: 50 kgs • Power requirement: 240 V, 50/60 Hz, 1-phase • Must be supplied with Data System, Printer and Software • Provide spare parts for 2-year operations • Must have 3 years warranty • Onsite installation and testing	
2	**LIQUID & EXTENDED GAS COMPOSITIONAL ANALYZER** A Gas Chromatography system designed for use in Simulated Distillation and Compositional Boiling Point Distribution of	1	• Should include dual Flame Ionization Detectors (FID) • Capable of performing analysis as per ASTM method D2887 • Capable of identifying hydrocarbons up to C55 or greater • Dimensions (L x W x H): 680 x 510 x 500 mm	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	petroleum fractions by Gas Chromatography. The system is often based on a standard GC system, configured specifically for hydrocarbon liquids.		• Weight: 50 kgs • Power requirement: 240 V, 50/60 Hz, 1-phase • Must be supplied with Data System, Printer and Software • Provide spare parts for 2-year operations • Must have 3 years warranty • Onsite installation and testing	
3	**HYDROCARBON COMPOSITIONAL ANALYZER** A very fast and efficient multi-component natural gas compositional analyzer. Capable of measuring methane, ethane, propane, iso-butane, iso-pentane and a combined measurement for (n-butane, n-pentane and n-hexane), as well as % level CO2 and H2S.	1	• Dimensions: 610 x 460 x 305 mm • Weight: 61 kg • Power requirement: 220 V, 50/60 Hz,1-phase • Must be supplied with Data System, Printer and Software • Must be supplied with required accessories • Provide spare parts for 2-year operations • Must have 3 years warranty • Onsite installation and testing	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 14 ELEMENTAL ANALYSER				
1	**INDUCTIVELY COUPLED PLASMA – OPTICAL EMISSION SPECTROSCOPY (ICP-OES))** ICP-OES measures concentrations of multiple metallic and non-metallic elements in oil-based and water-based samples. It excites atoms in high-temperature plasma and measures the emitted light at characteristic wavelengths. Quantitative measurement of total sulphur and nitrogen in crude/fuel oils via combustion. Multi-elemental quantification (V, Ni, Ca, Na, Zn, Mg, Pb, Fe, Cu, etc.) Used in ASTM D5185 for lube and fuel oils, and ISO 14596 for heavy metals in crude. Additive element detection (e.g., Zn, Ca, P). Routine and trace analysis (ppm to ppb).	1	• Detection Range: 0.01 ppm to 10,000 ppm • Wavelength Range: 160–900 nm • Resolution: ~0.007 nm • Sample Volume: ~5–10 mL (digested or diluted sample) • Plasma Gas: Argon (~15–20 L/min) • Method Compliance: ASTM D5185, ISO 11885, EPA 6010D • Key Accessories • Autosampler: For high-throughput testing • Argon Gas Supply System • Chiller or Recirculator: For plasma torch cooling • Sample Preparation Tools: Microwave digestion system, fume hood • PC Software: For calibration, control, and data reporting • Calibration Standards and Quality Control Solutions • Typical Dimensions: 1000 mm (W) × 700 mm (D) × 600 mm (H) • Weight: 100–150 kg • Power Requirement: 220–240 V AC, 50/60 Hz, ~2 kW. Single phase, Standard 3 pin plug. • Must have 10 years warranty • Onsite installation and testing	
2	**INDUCTIVELY COUPLED PLASMA – MASS**	1	• Detection Range: Sub-ppb to % levels • Mass Range: 6–240 amu	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	SPECTROMETRY (ICP-MS) ICP-MS is used for ultra-trace elemental analysis, with higher sensitivity than ICP-OES. It ionizes the sample and separates ions by mass-to-charge ratio. Detection of metals and metalloids down to parts-per-trillion (ppt) levels. Highly sensitive analysis of V, Ni, Hg, Pb, Cd, As, etc. Excellent for detecting trace contaminants in petroleum samples and additives. Used in research, forensics, and advanced QC.		• Plasma Gas: Argon (15–20 L/min) • Interference Removal: Collision/reaction cell • Compliance Methods: ASTM D8110, EPA 6020B • Typical Dimensions: ~1200 mm (W) × 700 mm (D) × 700 mm (H) • Weight: 120–180 kg • Power Requirement: 230 V AC, 50/60 Hz, ~2.5–3 kW. Single phase, Standard 3 pin plug. • Autosampler • External Chiller • High-purity Argon Gas • Microwave Digestion System • Interface cones and lenses • Certified Reference Standards • Noise-reducing vacuum pump system • Must have 10 years warranty • Onsite installation and testing	
3	**X-RAY FLUORESCENCE (XRF) SULFUR ANALYZER** The XRF Sulfur Analyzer uses X-ray fluorescence technology to quantitatively determine the sulfur content in petroleum products. It is widely used because it is non-destructive, requires minimal sample preparation, and provides fast results. The kind of analysis for total sulfur content in: Crude	1	• Principle Energy Dispersive X-ray Fluorescence (EDXRF) • Sulfur Detection Range Typically 2 ppm – 5 wt% (varies by model) • Repeatability ±1–2 ppm (for low-range analysis) • Sample Volume ~3–5 mL in sample cup • Measurement Time ~1–5 minutes • Calibration Factory + user-defined multi-point	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	oil, Diesel fuel, Jet fuel, Gasoline, Fuel oil, Lubricants and bunker fuels. Analysis Range: From <1 ppm to >5 wt% sulfur, depending on model. Compliant Test Methods: ASTM D4294, ISO 8754, IP 336 – Sulfur in petroleum products by energy-dispersive X-ray fluorescence (EDXRF)		• Interface Touchscreen or PC software • Sample State Liquid petroleum samples25) • Dimensions (L×W×H) ~450 mm × 400 mm × 350 mm • Weight ~25–35 kg • Power Requirement 100–240 V AC, 50/60 Hz, ~150–300 W 1 phase. • Cooling Air-cooled (no external chiller required) • Accessories • Sample cups with Mylar/XRF film • Calibration and check standards (low sulfur diesel, high sulfur oil, etc.) • PC software for data management and reporting • Printer (optional) • Touchscreen interface (some models) • Heated sample tray (optional for high-viscosity samples) • Must have 10 years warranty • Onsite installation and testing	
4	**COMBUSTION-BASED SULFUR AND NITROGEN ANALYZER** This instrument determines total sulfur and total nitrogen in liquid and gaseous hydrocarbons through high-	1	• Detection Principle UV Fluorescence (S) / Chemiluminescence (N) • Sulfur Detection Range 0.2 ppm – 10,000 ppm • Nitrogen Detection Range 0.2 ppm – 10,000 ppm	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	temperature combustion followed by UV fluorescence detection (for sulfur) and chemiluminescence (for nitrogen). ind of analysis for total Sulfur content in crude oil, diesel, gasoline, LPG, fuel oils, lubricants, Total Nitrogen content (indicator of amines, corrosion potential, fuel stability.		• Combustion Temp ≥ 1000°C (typical 1050–1100°C) • Sample Volume 10–100 µL (depending on matrix) • Repeatability ±1–3% of reading • Compliance Methods ASTM D5453 (S), ASTM D4629 / D5762 (N), ISO 20846 (S), ISO 20884 (N) • Gases Required Oxygen (99.999%), Argon or Helium (optional as carrier) • Dimensions (L×W×H) 600 × 500 × 500 mm (varies by model) • Weight 35–60 kg • Power Requirement 230 V AC, 50/60 Hz, 600–1000 W, single Phase 3 pin plug. • Motor Power N/A (uses furnace and detectors, not motorized systems) • Cooling Built-in air cooling, no external chiller required • Must have 10 years warranty • Onsite installation and testing	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 15 LUBRICANTS ANALYZERS				
1	**CLEVELAND OPEN CUP FLASH POINT TESTER** The Cleveland Open Cup (COC) Flash Point Tester is a laboratory instrument used to determine the flash point of petroleum products such as lubricants, fuel oils, and other high-viscosity samples under open cup conditions. This test helps classify materials based on fire hazard risk and is essential for safe handling and transportation. Typical models feature a temperature range extending up to 400°C, with heating controlled manually or automatically according to ASTM D92 standards.	1	• Temperature Range Ambient to 400°C • Heating Rate Adjustable per ASTM D92 • Ignition Electric or gas • Display Digital or analog temperature readout • Dimensions: ~ 400 × 300 × 350 mm • Weight: ~ 8–30 kg • Power Requirement: 230 V AC, 50/60 Hz, ~500 W single phase 3 pin plug, • Accessories: Open cups, thermometers/thermocouples, ignition sources (gas or electric flame), Stirrer motor (automated versions), splash shield, recorder/module • Have 3 years warranty • Have 2 years spare parts and accessories • Power requirements: 230 V, 50 Hz, 2500 W, • Onsite installation, testing and commissioning	
2	**ROTARY PRESSURE VESSEL OXIDATION TESTER (RPVOT)** Measures the oxidation stability (resistance to degradation) of lubricating oils,	1	• Temp. Range Up to 200°C • Pressure Up to 500 psi • Rotation Speed 100 ± 10 rpm	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	turbine oils, and greases by determining how long the oil resists oxidation under accelerated conditions. It's a critical test for evaluating the oil's service life and antioxidant effectiveness. Predicts oil service life and degradation resistance. ASTM D2272.Used in turbine oil testing, hydraulic oils		• Capacity 1 or 2 test positions • Vessel purified and pressurized to ~90 psi (620 kPa) oxygen • Temp: 150–160 °C; rotation at 100 rpm, tilt ~30° • Pressure drop of 25 psi (~175 kPa) marks end point • Dimensions: ~ 600 × 500 × 450 mm • Weight: ~ 35–60 kg • Oxygen charging system • Copper catalyst coils • Pressure transducers • Sample vials • Power: 230 V AC, 50/60 Hz, 1000–1500 W • Be supplied with parts and accessories for normal operation • Must have 2 years warranty. • Onsite installation and testing	
3	**PENETROMETER** A penetrometer is used to determine the consistency and hardness of semi-solid petroleum substances such as lubricating grease, waxes, and bitumen. The instrument measures the distance a standard needle or cone penetrates into the material under specific time, weight, and temperature conditions. Measures penetration depth of	1	• Penetration Time Standard 5 s • Load 100 g standard weight • Resolution 0.1 mm or 1/10 mm units • Type Automatic (motorized plunger) • Dimensions: ~ 250 × 300 × 450 mm • Weight: ~ 10–30 kg • Power: ~50–100 W (for automatic models) • Accessories	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	needle into bitumen or grease to determine consistency (hardness/softness). ASTM D217 (grease), D1321 (waxes), D5 (bitumen).		• Standard cone or needle • Sample cups • Timer and depth gauge • Water bath (optional for temp control) • Be supplied with parts and accessories for normal operation. • Have a 3-year warranty • Onsite installation, training and commissioning	
4	**FOUR BALL WEAR TESTER** The Four Ball Wear Tester evaluates the anti-wear and extreme pressure (EP) characteristics of lubricating oils and greases. It works by rotating a steel ball under a specific load against three stationary balls submerged in the lubricant. The diameter of the wear scar created on the stationary balls is measured to determine the lubricant's protective properties. Determines extreme pressure and anti-wear properties of lubricants by measuring wear scar under load and speed.	1	• Load Range 10 – 800 kg (variable) • Speed ~ 1200 rpm • Test Temp Ambient to 150°C or higher • Timer Programmable (10–60 mins) • Scar Measurement Micrometer/optical • Dimensions: ~ 600 × 500 × 500 mm • Weight: ~ 50–70 kg • Power Requirement: 230 V AC, 50/60 Hz, ~1000 W • Accessories: • Steel test balls • Lubricant cup and holders • Load lever and calibration weights • Scar measuring microscope • Be supplied with parts and accessories for normal operation. • Have a 3-year warranty • Onsite installation, training and commissioning	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 16 WEIGHING BALANCE				
1	**ANALYTICAL BALANCE** Benchtop, portable type balance for accurate weight measurements of samples.	1	• Capability: 320 grams maximum • Readability: 0.1 g • Operating Temperature: ambient to 40 oC. • Display: 4.5” Color LCD Touchscreen • Balance housing: ABS plastic, Stainless steel platform • Dimensions: 290 x 331 x 193 mm • Power: 9.5 V 50/60 Hz, 10VA. British standard 3 pin plug with electrical adapters/transformers • 3 years warranty.	
2	**ELECTRONIC BALANCE** Benchtop, portable type g balance for accurate weight measurements of lab samples.	1	• Capability: 1200 grams maximum • Readability: 0.001 g • Operating Temperature: ambient to 40 oC. • Display: 3*6 digits LCD digital display, 20 mm digits • Balance housing: ABS plastic, Stainless steel platform • Power: 9.5 V 50/60 Hz, 10VA. British standard 3 pin plug with electrical adapters/transformers • 3 years warranty • 3 years spare parts • Onsite installation and tests.	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	Lot 17 **DRYING EQUIPMENT**			
1	**OVEN** Benchtop Oven requires quick, efficient drying and sterilizing material while maintaining constant sample temperatures. Oven maintains uniform air fan circulation with uniform temperature conditions.	1	• Must be provided with all operational components and accessories • Have very tight closure with very low heat dissipation • Be highly automated with microprocessor control • Volumetric Capacity: 53 litres • Operating Temperature Range: 5-300 oC • Digital Temperature Setting Accuracy: + 1.0 oC • Exterior Housing Dimensions (W x H x D): 635 x 620 x 575 mm • Inner Chamber: Stainless Steel Material • Integrated Timer Control: 0-99.95 hours • Have 2 years warranty • Power requirements: 240 V, 50/60 Hz, single phase	
2	**DESICCATOR (VACUUM HEATED)** The compact, bench-top Desiccator heats, dries and vacuums multiple samples simultaneously in preparedness for porosity and gas permeability measurements. The main components include a stainless-steel heating plate and a glass bell that can withstand pressures difference	1	• Include all operational components and accessories • Operating Temperature: up to 80 °C • Samples Clearly Visible in Glass Bell • Sealing Mechanism: Viton O-ring between plate and bell • Vacuum Pressure Range: 10-3 mbar • Maximum Pumping Speed: 2.5 m3/h • Quantity of Sample: up to 30	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	during vacuum operations. The sealing is secured by a Viton O-ring between the heating plate and the bell.		• Material: stainless steel 316L • Power Requirements: 220V 50/60 H, 1 phase	
3	**MAGNETIC STIRRERS WITH HOT PLATE** For laboratory preparation of solutions by mixing of various solute-solvent components	1	• Reliable with digital display of speed and temperature. • Heating temperature range: ambient to 450 oC • Ceramic Top plate material, chemical and corrosion resistant • Stirring speed range : 0-1300 rpm • Top Plate Dimensions: 160 x 160 mm • Have LCD display of stirring and heating parameters • Have PID temperature control system • Include a temperature probe with holder and support • Power requirement: 220-240 V, 50 Hz. Single phase, Standard 3 pin plug (no electrical adapters/transformers). • Must have 3 years warranty • Onsite installation and testing	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 18 REFRIGERATED FLUID				
1	**LABORATORY REFRIGERATOR** A laboratory refrigerator, with a glass door for storing chemical samples and reagents. Should have a permanent, proactive monitoring of the performance data and alerts in the case of deviations or when there is a power outage – so that action can be taken in good time before a fault threatens chilled samples or chemicals.	1	• Capacity: 700 lit • Temperature setting: (approx.): 2 to +15 °C • Exterior dimensions: 770 x 980 x 1955 mm • Weight: 174 kg • Graphical display of the temperature curve and min/max temperature • Automatic defrosting and melt water evaporation • Micro-processor-controlled temperature and thawing regulation to maximize temperature stability • Safety device to prevent freezing • Optical and acoustical alarm • 5 shelves, height-adjustable • Shelves should have load-bearing capacity: 40 kg • Should have stainless steel shelves • Should be supplied with castors for ease of movement • Lockable door • Power supply: 220-240 VAC 50/60 Hz, 250 W, 1 phase • Provide 2 years warranty	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 19 LABORATORY SAFETY & HEALTH (HSE)				
1	**Emergency Eyewash & Safety Shower Station - wall-mounted (3 units)** Plumbed combination drench shower and eyewash that provides immediate hands-free flushing of the eyes and body after chemical splashes (acids, HF, solvents) in the extraction, sample preparation and geochemistry areas.	3	Wall-mounted combination emergency shower and eye/face wash compliant with ANSI/ISEA Z358.1-2014 (or EN 15154 equivalent) Shower flow: ≥75.7 L/min (20 gpm) at 30 psi for a minimum of 15 minutes; shower head 208.3-243.8 cm (82-96 in) above floor Eyewash flow: ≥1.5 L/min (0.4 gpm) for 15 minutes; eye/face wash ≥11.4 L/min (3.0 gpm) Tepid flushing fluid 16-38°C (60-100°F) via thermostatic mixing valve Stay-open valve activating in 1 second or less; nozzles protected by dust covers Located within 10 seconds (approx. 55 ft / 15 m) of hazard on the same level; weekly activation and annual inspection Quantity: 3 units, supplied with installation and signage	
2	**Flammable Storage Cabinet - 30-gal (Justrite FM-approved)** Fire-resistant, double-walled steel cabinet for storing flammable solvents (toluene, methanol, acetone) used in the extraction and sample preparation labs, limiting fire risk and meeting fire-code storage limits.	2	Model: Justrite Sure-Grip® EX 893000 (manual close) or 893020 (self-close), 30 gal (114 L) Exterior: 44 in H × 43 in W × 18 in D (1118 × 1092 × 457 mm); interior 39.5 in W × 39.625 in H × 14.562 in D Construction: 18-gauge (1 mm) double-wall welded steel with 1-1/2 in (38 mm) insulating air space Three-point stainless-steel bullet latching; U-Loc™ lockable handle;	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			self-close option with 165°F (74°C) fusible link 2 in (51 mm) leakproof sump; dual vents with flame arresters; grounding connector; 1 adjustable SpillSlope® shelf FM Approved; complies with OSHA 29 CFR 1910.106, NFPA 30 and NFPA 1 (self-close also IFC) 10-year warranty	
3	**Chemical Safety Cabinet - corrosives (30-gal acid, Justrite)** Corrosion-resistant safety cabinet for segregated storage of acids (HCl, HF) and other corrosives used in the sample preparation lab, preventing contact with incompatible chemicals.	1	Model: Justrite Sure-Grip® EX 893022 (self-close, blue) or ChemCor® lined 8930022, 30 gal (114 L) Exterior: 43 in W × 44 in H × 18 in D; interior 39.5 in W × 39.625 in H × 14.562 in D Double-wall 18-gauge (1 mm) welded steel; epoxy baked-on powder-coat finish inside and out Polyethylene trays on galvanized shelves and removable polyethylene sump liner (ChemCor® seamless thermoplastic liner option) 2 in (51 mm) liquid-tight sump, dual vents, three-point self-latching doors, levelling feet FM Approved; manual-close meets OSHA and NFPA 30; self-close also NFPA 1 and IFC 10-year warranty	
4	**PPE Starter Stock (nitrile gloves S/M/L, face shields, lab coats)** Initial stock of personal protective equipment for all	1	Nitrile gloves (S/M/L), powder-free, conforming to ASTM D6319; chemical-protective gloves conforming to EN ISO 374-1 for solvent/acid handling	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	laboratory sections, protecting staff hands, face and body from solvents, acids and hot or flying particles during routine work.		Face shields and safety goggles conforming to ANSI/ISEA Z87.1 (or EN 166) Laboratory coats, flame-resistant, knee length (sizes S-XXL) HF-resistant neoprene/butyl gloves and acid aprons for HF handling Supplied with manufacturer declarations of conformity	
5	**First Aid Kits - ANSI Class B 75-person (wall mount)** Wall-mounted first aid stations for treating injuries in the laboratory areas; Class B kits are specified for workplaces with higher risk of serious injury such as cutting, chemical and thermal hazards.	4	Compliant with ANSI/ISEA Z308.1-2021, Class B, Type I (wall-mounted, stationary indoor) Class B minimum fill includes all Class A items in greater quantities plus splint and windlass/ratchet tourniquet Examples of minimum quantities (Class B): adhesive bandages 50, antiseptic applications 50, antibiotic applications 25, burn treatment 25, burn dressing (gel soaked) 2, hand sanitiser 20, foil blanket 1 Sized for approx. 75 persons; metal wall-mount cabinet with refill packs	
6	**Multi-Gas Detector - 4-gas O_2/LEL/CO/H_2S (BW Gas Alert Micro5)** Portable multi-gas monitor that continuously detects oxygen deficiency, flammable gas and toxic CO/H_2S, used when handling cores, gas cylinders and solvents and during confined-space or sample-receipt activities.	2	Model: Honeywell BW GasAlertMicro 5 (e.g. M5-XW0Y-R-D-D-Y-N-00), 4-gas %LEL/O_2/H_2S/CO Sensor ranges: H_2S 0-500 ppm, CO 0-1000 ppm, O_2 0-30% vol, LEL 0-100% LEL Approvals: ATEX II 1 G Ex ia IIC T4, IECEx, Class I Div 1 Groups A-D Dimensions: 14.5 × 7.4 × 3.8 cm Battery life approx. 20 h (standard toxic model); rechargeable option	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Compatible with MicroDock II automatic bump test and calibration station; data logging option Include calibration gas and regulator	
7	**Spill Response Kit - universal chemical absorbent 10-gal (3 units)** Universal absorbent spill kit for rapid containment and clean-up of solvent, oil, water and non-aggressive chemical spills in the laboratory and chemical store.	3	Universal/general purpose sorbents suitable for oil, water and non-aggressive chemical spills Absorbency: 10 gal (approx. 38 L) per kit Contents: absorbent socks, pads and pillows; disposal bags and labels; nitrile gloves and safety goggles Supplied in sealed, high-visibility polyethylene container with twist-on lid	
8	**HF Antidote Gel - Calcium Gluconate 2.5% (6 tubes)** Topical 2.5% calcium gluconate gel applied immediately to skin exposed to hydrofluoric acid; it binds the fluoride ion to limit tissue and bone damage and is mandatory wherever HF is used in the sample preparation lab.	6	Product: Calgonate® 2.5% calcium gluconate gel (or equivalent) Composition: Calcium Gluconate USP 2.5% w/w in clear, colourless, odourless water-miscible gel Pack: 25 g tube; quantity 6 tubes Use: flush with water, then apply and massage into affected area; reapply every 15 minutes until medical help arrives Not for use in eyes (1% calcium gluconate solution recommended for eye exposure) Store at HF work area and in first aid kits	
9	**Chemical Register + SDS Management Software (1-year licence)** Cloud-based chemical register and SDS management system	1	Software: VelocityEHS Chemical Management (MSDSonline) or equivalent; 1-year subscription	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	for the laboratory, providing staff with instant access to safety data sheets and tracking chemical inventory, locations and hazard labelling.		Access to large SDS library with approx. 20,000 new/updated SDSs added weekly Chemical inventory and container tracking by location; QR/barcode labels and mobile app (offline access) GHS-compliant secondary container label printing Ingredient indexing against regulatory lists; supports OSHA HazCom, WHMIS and GHS compliance No local software installation required (cloud based)	
10	**Automated External Defribulator (AED)**	2	Wall Mounted on Corridors, High dust and water resistance. Preferred Brand/Model: Zoll AED Plus or equivalent	
11	**Powder Fire Extinguishers**	6	9 kg, Ultrafire, Extinguishing Rate:43A, 223B, C and Electric. Product Code: UFSP9 or equivalent.	
12	**CO2 Fire Extinguishers**	6	2 kg, Ultrafire, Extinguishing Rate:34B and Electric. Preferred Product Code: UFSCO2 or equivalent	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 20 IT, LIMS & DATA MANAGEMENT				
1	**LIMS Software - (5-user annual licence)** Laboratory Information Management System that registers samples, tracks chain of custody, captures instrument results and generates reports across all core analysis and geochemistry sections, supporting ISO/IEC 17025 data integrity.	1	LIMS: 5-user annual licence Sample lifecycle management with full chain-of-custody from receipt to reporting Instrument integration for automatic capture of results Audit trails, electronic signatures and role-based access controls (supports 21 CFR Part 11 / EU Annex 11 where applicable) Supports ISO/IEC 17025:2017 requirements: controlled documents, traceable technical records, competence and calibration records Configurable workflows and reporting; cloud (SaaS) or on-premises deployment Note: the laboratory must validate the configured system; software alone does not confer compliance Brand/ Model:Corelab REES / EXPEL or equivalent ((e.g. LabWare LIMS)	
2	**Laboratory Workstation PC - Dell Precision (i9, 64GB RAM, 2TB SSD)** High-performance workstations for running instrument control and data processing software (porosimeter, permeameter, GC, Rock-Eval, image analysis) and for handling large core image and log datasets.	4	Dell Precision 3680 Tower (Intel Core i9-14900, 24 cores, up to 5.8 GHz) or successor Dell Pro Max Tower T2 (Intel Core Ultra 9 285, 24 cores, up to 5.6 GHz, DDR5, PCIe 5.0) Memory: 64 GB DDR5 Storage: 2 TB NVMe PCIe SSD Professional graphics card (NVIDIA RTX-class) for image analysis	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Windows 11 Pro; 24 in monitor, keyboard and mouse Dell ProSupport (next business day onsite) warranty	
3	**Network-Attached Storage - QNAP 8-bay NAS (core image + SGR archive)** Central network storage for archiving core photographs, UV images, spectral gamma-ray data and instrument output, providing RAID-protected, backed-up storage accessible to all laboratory workstations.	1	Model: QNAP TS-873A-8G (8-bay desktop NAS) or equivalent CPU: AMD Ryzen™ Embedded V1500B, 4-core/8-thread, 2.2 GHz Memory: 8 GB DDR4 (2 × SO-DIMM, max. 64 GB, ECC supported) 2 × M.2 NVMe PCIe Gen3 SSD slots for caching/Qtier Network: 2 × 2.5GbE RJ45; 2 × PCIe Gen3 x4 slots for 10GbE expansion USB 3.2 Gen 2 ports; QTS or ZFS-based QuTS hero operating system Expandable with TL-D800S JBOD or TR-004 enclosures	
4	**UPS Power Backup - APC Smart-UPS 3000VA (3 units for instruments)** Line-interactive uninterruptible power supplies that protect sensitive laboratory instruments and PCs from power outages, surges and voltage fluctuations and allow safe shutdown.	3	Model: APC Smart-UPS SMT3000I / SMT3000IC (3000 VA LCD 230 V) or equivalent Output: 2700 W / 3000 VA; nominal 230 V (configurable 220/230/240 V); 50/60 Hz ±3 Hz Topology: line interactive; sine-wave output; distortion <5% Outlets: 8 × IEC 320 C13 and 1 × IEC 320 C19 Battery: sealed lead-acid, replacement RBC55; typical recharge 3 h; expected life 3-5 years; extendable runtime Interfaces: SmartSlot, USB; LCD status console; PowerChute management software; AVR boost/trim	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
5	**Laboratory Printer - HP DesignJet T210 (A3 colour, for core logs)** Compact large-format colour printer for producing core description logs, composite plots, maps and reports from the laboratory data.	1	Model: HP DesignJet T210 24-in (8AG32A) or current equivalent Maximum print width 24 in (610 mm); prints A4/A up to A1/D (A3/B and A1/D multi-size with optional sheet feeder) Print resolution: up to 2400 × 1200 optimised dpi (colour) Speed: A1/D plot in approx. 45 s; 59 A1 prints per hour Ink drop: 5.5 pl (C, M, Y); 12 pl (K); 500 MB memory Connectivity: wireless and network; HP Click one-click printing (PDF, JPEG, TIFF, DWF, HP-GL/2) Note: HP lists the T210 as discontinued in some regions; confirm current model with supplier	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 21 TRAINING, COMMISSIONING & ACCREDITATION				
1	**FAT & On-Site Installation - Corelab/Vinci engineer (key instruments)** Factory acceptance testing at the manufacturer's works and on-site installation and commissioning by Corelab/Vinci engineers to confirm that key instruments meet the purchase specification before handover.	1	Factory Acceptance Test (FAT) of key instruments (porosimeter, permeameter, Rock-Eval 7S, slabbing/plugging equipment) against approved test procedures, following IEC 62381 FAT/SAT principles FAT witness by laboratory representatives; signed FAT report and punch list On-site installation, Site Acceptance Test (SAT) and commissioning by OEM-certified engineers Verification using calibrated check plugs/reference standards supplied with each instrument Handover documentation: as-built configuration, calibration certificates, operation and maintenance manuals OEM after-sales support and training package from the manufacturer	
2	**Corelab RCA Training Programme - lab staff, 1 week, STS certified** Structured training for laboratory staff on routine core analysis methods and equipment so that porosity, permeability, saturation and core handling are performed to industry practice.	4	1-week programme for **4 staff** delivered by Core Laboratories Petroleum Services or equivalent accredited provider Content: core acquisition and sampling, core handling, CT scanning, cleaning, fluid saturations, porosity and permeability measurement, QA/QC Methods in accordance with API RP 40 (Recommended Practices for Core Analysis)	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Hands-on sessions on the laboratory's own instruments Certificate of completion and competence records for each trainee (supports ISO/IEC 17025 clause 6.2)	
3	**Petrographic Interpretation Training - external provider, 2 geoscientists, 1 week** External course for two geoscientists on thin section petrography of sandstone and carbonate reservoirs, covering mineral identification, porosity typing and diagenesis for reservoir quality interpretation.	2	1-week course for 2 geoscientists (e.g. PetroKnowledge/GLOMACS 'Reservoir Quality Analysis of Sandstone & Carbonate Rock-Types', PetroSkills or equivalent) Petrographic analyses (thin section, SEM, CL), XRD and integration of reservoir quality results Porosity classification and evolution, authigenic components and diagenetic phases Practical sessions at the polarising microscope on core samples and cuttings; visual porosity estimation vs. core analysis data Certificate of attendance for each participant	
4	**GC Method Development & Training - Agilent** Manufacturer training by Agilent University on operation, maintenance and method development for the laboratory GC, ensuring staff can run and troubleshoot hydrocarbon gas and oil analyses.	1	Agilent University courses for the 8890 GC, e.g. 'Agilent 8890 GC Operation with OpenLab CDS' (GC-8890-2101c, 4 days) and 'Agilent 7890/8890 GC Maintenance and Troubleshooting' (GC-8890-2204c, 4 days) Coverage: GC theory, inlet/column/detector operation, method development, preventive maintenance and first-level repair Hands-on hardware and software exercises; on-site delivery option	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Certificate of completion for each trainee	
5	**ISO 17025 Gap Analysis & Accreditation Consultancy** Consultancy to assess the laboratory's management and technical systems against ISO/IEC 17025:2017 and guide it to accreditation, so that test results are internationally recognised.	5	Gap analysis against all clauses (4-8) of ISO/IEC 17025:2017: general, structural, resource, process and management system requirements Review of quality manual, SOPs and records; evaluation of equipment calibration, staff competence, environmental controls and measurement uncertainty Prioritised roadmap/action plan to close identified gaps Support with documentation, internal audit and management review; preparation for accreditation body assessment Consultant to be independent of the accreditation body (impartiality)	
6	**SOP Library Development - set of 30 written procedures** Preparation of a controlled library of written standard operating procedures covering sample receipt, preparation, core analysis, geochemistry, GC and HSE activities, as required for consistent operation and ISO/IEC 17025 accreditation.	1	Set of 30 SOPs covering all laboratory sections (core handling, slabbing/plugging, cleaning and drying, porosity/permeability, thin section preparation, petrography, Rock-Eval/TOC, GC, HSE) Technical methods aligned with API RP 40 and relevant ASTM/ISO test methods Document control in accordance with ISO/IEC 17025:2017 (controlled documents, versioning, review and approval) Each SOP to include scope, safety, equipment, calibration/QC, procedure, calculations, measurement uncertainty and records	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
			Delivered in editable electronic format and integrated with LIMS document management	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 22 **CALIBRATION STANDARDS, REFERENCE MATERIALS & QC**				
1	**Certified Porosity-Permeability Standards - Berea + Fontainebleau (10-pack)** Natural sandstone core plugs of known porosity and permeability used as check standards to verify the accuracy of the helium porosimeter and gas permeameter and to monitor instrument drift.	1	Pack of 10 plugs: Berea sandstone (typical porosity ~18-20%, permeability ~100-200 mD) and Fontainebleau sandstone (>99% quartz; porosity range ~3-30%) Plug diameters matched to core holders (1 in and 1.5 in) Each plug supplied with certified porosity, grain volume and permeability values and measurement uncertainty Values determined per API RP 40 methods; traceable calibration certificate Compatible with Vinci calibrated permeability check plug programme or equivalent	
2	**NIST Powder Reference Standards - SRM 640e Si (2 units)** NIST certified silicon powder standard used to calibrate X-ray powder diffractometer line position and instrument profile for mineralogical (XRD) analysis of rock samples.	2	NIST Standard Reference Material SRM 640 series silicon powder (SRM 640e specified; current generation is SRM 640f) SRM 640f: approx. 7.5 g silicon powder prepared to minimise line broadening Certified lattice parameter (SRM 640f) at 22.5°C: a = 0.5431144 ± 0.000008 nm (k = 2) Used for calibrating line position and determining the Instrument Profile Function (IPF) Certification valid indefinitely when stored per certificate instructions Quantity: 2 units	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
3	**Geochemical CRM Standards - IFP RE7 certified set (5 standards)** Certified geochemical reference rocks used to calibrate and quality-control the Rock-Eval 7 pyrolysis analyser for source-rock parameters (S1, S2, Tmax, TOC, MinC and sulphur).	2	IFP Energies nouvelles certified Rock-Eval® reference standards (IFP 160000 for Rock-Eval 7/7S) - set of 5 IFP 160000 average values: S1 0.12, S2 12.4 mg HC/g rock; Tmax 416°C; HI 383; OI 24; TOC 3.3 wt.%; MinC 3.2 wt.%; total S 0.30 wt.% Each standard supplied with reference values and confidence intervals Recommended calibration over a wide mineral and organic carbon range (Behar et al., 2001) Quantity: 2 sets	
4	**GC Certified Reference Gas (multi-component C1-C10, 3 cylinders)** Certified multi-component hydrocarbon reference gas used as an independent QC check of GC calibration for C1-C10 hydrocarbon analysis.	3	Multi-component C1-C10 hydrocarbon mixture in suitable balance gas; composition to suit laboratory application Prepared gravimetrically per ISO 6142-1 and verified per ISO 6143 ISO 17034 certified reference material from ISO 17025 accredited producer Certificate per ISO 6141 with composition, expanded uncertainty (k = 2), stability period and traceability Quantity: 3 cylinders with compatible regulators	
5	**Thin Section Visual Estimation Reference Charts + Certified Standards (set of 15)** Visual comparison charts and certified reference thin sections	1	Comparison charts for visual percentage estimation after Terry & Chilingar (1955) and Folk (1951); low-abundance comparison charts (0.1-1.0 volume %) after American Mineralogist chart series	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
	used by petrographers to estimate mineral and porosity percentages consistently and to calibrate visual estimates against point-count data.		Low-abundance comparison charts (0.1-1.0 volume %) after American Mineralogist chart series Set of 15 items: laminated charts plus certified reference thin sections (27 × 46 mm, 30 µm) with point-counted compositions Suitable for use with transmitted-light petrographic microscope and point counter.	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 23 PERSONAL PROTECTION EQUIPMENT				
1	Laboratory Coats (Size: Medium)	20 pcs	Laboratory Coats. 100 % Cotton. White Color, Medium Size	
2	Laboratory Coats (Size: Large)	20 pcs	Laboratory Coats. 100 % Cotton. White Color, Size: Large	
3	Laboratory Coats (Size: X-Large)	10 pcs	Laboratory Coats. 100 % Cotton. White Color. Size: X-Large	
4	Safety Glasses	20 boxes	Safety Glasses. Protective Eye Glasses	
5	Disposal Hand Gloves (Medium Size)	10 boxes	Disposal Hand Gloves, Latex textured material, powder-free, non-sterile. (1 box = 100 pieces). Medium Size	
6	Disposal Hand Gloves (Large Size)	10 boxes	Disposal Hand Gloves. Latex textured material, powder-free, non-sterile. (1 box = 100 pieces). Large Size	
7	Disposal Hand Gloves (Extra Large Size)	5 boxes	Disposal Hand Gloves. Latex textured material, powder-free, non-sterile. (1 box = 100 pieces). Extra Large Size	
8	Gas Masks.	6 pcs	Gas Masks. Professional personal protective mask, with appropriate filters, against toxic fumes and dust particles.	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 24 PETROLEUM LABORATORY GLASSWARE, PLASTICWARE, CHEMICALS AND REAGENTS				
A	**GLASSWARE**			
1	Graduated Glass Cylinder, 10 ml, Fisherbrand Cat# S63455	12 pcs	Graduated Glass Cylinder, 10 ml, Fisherbrand Cat# S63455	
2	Graduated Glass Cylinder, 25 ml, Fisherbrand Cat# S63456	12 pcs	Graduated Glass Cylinder, 25 ml, Fisherbrand Cat# S63456	
3	Graduated Glass Cylinder, 100 ml Fisherbrand Cat# S63458	12 pcs	Graduated Glass Cylinder, 100 ml Fisherbrand Cat# S63458	
4	Graduated Glass Cylinder, 250 ml, Fisherbrand Cat# S63459.	1 case	Graduated Glass Cylinder, 250 ml, Fisherbrand Cat# S63459. (1 Case = 12 cylinders)	
5	Graduated Glass Cylinder, 500 ml, Fisherbrand Cat# S63460.	1 case	Graduated Glass Cylinder, 500 ml, Fisherbrand Cat# S63460. (1 Case = 8 cylinders)	
6	Graduated Glass Cylinder,1000 ml. Fisherbrand Cat# S63461.	1case	Graduated Glass Cylinder,1000 ml. Fisherbrand Cat# S63461 (1 Case = 4 cylinders)	
7	Glass Beaker, Heavy-Duty, 250 ml, Fisherbrand Cat# FB101250	1 pack	Glass Beaker, Heavy-Duty, 250 ml, Fisherbrand Cat# FB101250 (1 pack = 12 pieces)	
8	Glass Beaker, Heavy-Duty, 400 ml, Fisherbrand Cat# FB101400	1 pack	Glass Beaker, Heavy-Duty, 400 ml, Fisherbrand Cat# FB101400 (1 pack = 12 pieces)	
9	Glass Beaker, Heavy-Duty, 600 ml, Fisherbrand Cat# FB101600	1 pack	Glass Beaker, Heavy-Duty, 600 ml, Fisherbrand Cat# FB101600 (1 pack = 6 pieces)	
10	Conical Glass Flask (Erlenmeyer), Heavy-Duty, 100ml Fisherbrand	10 pcs	Conical Glass Flask (Erlenmeyer), Heavy-Duty, 100ml Fisherbrand	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
11	Conical Glass Flask (Erlenmeyer), Heavy-Duty, 250 ml, Fisherbrand Cat# FB501250	2 packs	Conical Glass Flask (Erlenmeyer), Heavy-Duty, 250 ml, Fisherbrand Cat# FB501250 (1 Pack = 12)	
12	Conical Glass Flask (Erlenmeyer), Heavy-Duty, 1000 ml, Fisherbrand Cat# FB5011000	2 packs	Conical Glass Flask (Erlenmeyer), Heavy-Duty, 1000 ml, Fisherbrand Cat# FB5011000 (1 Pack = 6)	
13	Graduated Glass Burette, 50 ml, Catalog #: 50-154-2823	1 case	Graduated Glass Burette, 50 ml, Catalog #: 50-154-2823 (Case = 5 burettes)	
14	Graduated Glass Burette, 100 ml, Catalog #: 50-172-0514	1 case	Graduated Glass Burette, 100 ml, Catalog #: 50-172-0514 (Case = 5 burettes)	
15	Reusable Glass Class A Volumetric Flasks with Standard Taper Stoppers (pack comprising of 10ml, 25mL, 50ml, 100ml, 200ml, 250ml, 500ml and 1000 mL)	1 pack	Reusable Glass Class A Volumetric Flasks with Standard Taper Stoppers (pack comprising of 10ml, 25mL, 50ml, 100ml, 200ml, 250ml, 500ml and 1000 mL)	
16	Glass Vacuum Filter Flask with Side Arm, 2,000 ml, Brand: Pyrex 1170/10 D #12089897	3 pcs	Glass Vacuum Filter Flask with Side Arm, 2,000 ml, Brand: Pyrex 1170/10 D #12089897	
17	Specific Gravity Bottle, Pycnometer, 10 ml, Cat #: 02-990-300	12 pcs	Specific Gravity Bottle, Pycnometer, 10 ml, Cat #: 02-990-300	
18	Specific Gravity Bottle, Pycnometer, 25 ml, Cat #: 02-990-400	12 pcs	Specific Gravity Bottle, Pycnometer, 25 ml, Cat #: 02-990-400	
19	Glass Funnel, Reusable, Short Stem, 90 ml, Cat #: FB6015875	6 pcs	Glass Funnel, Reusable, Short Stem, 90 ml, Cat #: FB6015875	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
B	**PLASTICWARE**			
1	Graduated Plastic Beaker with Handle, 2 Litres. Cat #: 02-591-9A	3 pcs	Graduated Plastic Beaker with Handle, 2 Litres. Cat #: 02-591-9A	
2	Graduated Plastic Beaker with Handle, 3 Litres. Cat #: 02-591-9C	2 pcs	Graduated Plastic Beaker with Handle, 3 Litres. Cat #: 02-591-9C	
3	Graduated Cylinder, Polypropylene, 500 ml, Brand: Azlon CPB0500P	5pcs	Graduated Cylinder, Polypropylene, 500 ml, Brand: Azlon CPB0500P	
4	Heavy-Duty Carboy with Spigot, Polypropylene, 10 liters, Cat #: S01989D	5 pcs	Heavy-Duty Carboy with Spigot, Polypropylene, 10 liters, Cat #: S01989D	
5	Heavy-Duty Carboy with Spigot, Polypropylene, 20 liters, Cat #: S01989B	5pcs	Heavy-Duty Carboy with Spigot, Polypropylene, 20 liters, Cat #: S01989B	
6	Natural Rubber One-Hole Stopper, Fisherbrand Product Code: 12089897, Pack= 2 pcs	1 packet	Natural Rubber One-Hole Stopper, Fisherbrand Product Code: 12089897, Pack= 2 pcs	
7	Wash Bottle, LDPE, 250 ml, Catalog No. 03-409-10D, Pack of 4	2pkts	Wash Bottle, LDPE, 250 ml, Catalog No. 03-409-10D, Pack of 4	
8	Wash Bottle, LDPE, 500 ml, Catalog No. 03-409-10E, Pack of 4	2pkts	Wash Bottle, LDPE, 500 ml, Catalog No. 03-409-10E, Pack of 4	
9	Sterile Plastic Syringes, Single Use, 5 ml, Fisherbrand Product Code: 15869152	30 pcs	Sterile Plastic Syringes, Single Use, 5 ml, Fisherbrand Product Code: 15869152	
10	Sterile Plastic Syringes, Single Use, 10 ml, Fisherbrand Product Code: 15879152	30 pcs	Sterile Plastic Syringes, Single Use, 10 ml, Fisherbrand Product Code: 15879152	
11	Sterile Plastic Syringes, Single Use, 20 ml, Fisherbrand Product Code: 15889152	30 pcs	Sterile Plastic Syringes, Single Use, 20 ml, Fisherbrand Product Code: 15889152	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
12	Sterile Plastic Syringes, Single Use, 5 ml, Fisherbrand Product Code: 15869152	30 pcs	Sterile Plastic Syringes, Single Use, 5 ml, Fisherbrand Product Code: 15869152	
13	Plastic Wash Bottles LDPE or HDPE; labeled for acetone, methanol, water, etc	20 pcs	Plastic Wash Bottles LDPE or HDPE; labeled for acetone, methanol, water, etc	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
Lot 25 LABORATORY CHEMICALS AND REAGENTS				
1	Acetone, Pure lab grade, 2.5 litre per bottle	10 bottles	Acetone, Pure lab grade, 2.5 litre per bottle	
2	Acetonitrile, 95-98 %, 2.5 litre/bottle	2 bottles	Acetonitrile, 95-98 %, 2.5 litre/bottle	
3	Acetic Acid, 95-98 %, 2.5 litre/bottle	2 bottles	Acetic Acid, 95-98 %, 2.5 litre/bottle	
4	Ethylene glycol. High quality grade, 99.9 % per gal	2 gal	Ethylene glycol. High quality grade, 99.9 % per gal	
5	Hydrochloric Acid, 37 %, 2.5-liter bottle	10 bottles	Hydrochloric Acid, 37 %, 2.5-liter bottle	
6	Hydrofluoric Acid, 95-98 %, 2.5 litre/bottle	2 bottle	Hydrofluoric Acid, 95-98 %, 2.5 litre/bottle	
7	Hydrogen Peroxide, ACS Reagent, 3 %, 500 ml/bottle	4 bottle	Hydrogen Peroxide, ACS Reagent, 3 %, 500 ml/bottle	
8	Methanol, Pure Lab grade, 2.5 liter bottle	6 bottle	Methanol, Pure Lab grade, 2.5 liter bottle	
9	Nitric Acid Solution, Concentrate, 2.5 litre/bottle	5 bottle	Nitric Acid Solution, Concentrate, 2.5 litre/bottle	
10	Sodium chloride (NaCl), Lab Grade, 1k g/bottle	4 bottle	Sodium chloride (NaCl), Lab Grade, 1k g/bottle	
11	Sodium Hydroxide Solution, 1 litre/bottle	4 bottle	Sodium Hydroxide Solution, 1 litre/bottle	
12	Sulfuric Acid, ACS Reagent, 95-98 %, 2.5 litre/bottle	4 bottle	Sulfuric Acid, ACS Reagent, 95-98 %, 2.5 litre/bottle	
13	Toluene, extra pure, 2.5 liter per bottle	10 bottle	Toluene, extra pure, 2.5 liter per bottle	
14	Xylene Solution, 1 gal (approximately3.785 litres)	3 gal	Xylene Solution, 1 gal (approximately3.785 litres)	
15	Potassium Hydroxide (KOH) 95-98 %, 2.5 litre/bottle	4 bottle	Potassium Hydroxide (KOH) 95-98 %, 2.5 litre/bottle	

S/N	Description	Qty	Technical Specification and Standards	Offered Specification
16	Heptane 95-98 %, 2.5 litre/bottle	2 bottle	Heptane 95-98 %, 2.5 litre/bottle	
17	Phenolphthalein, 1 litre/bottle (pH indicators for titration.)	2 bottle	Phenolphthalein, 1 litre/bottle (pH indicators for titration.)	
18	Bromothymol Blue 1 litre/bottle (pH indicators for titration.)	2 bottle	Bromothymol Blue 1 litre/bottle (pH indicators for titration.)	
19	Methyl Orange, 1 litre/bottle (pH indicators for titration.)	2 bottle	Methyl Orange, 1 litre/bottle (pH indicators for titration.)	
20	Silver Nitrate ($AgNO_3$) 95-98 %, 2.5 litre/bottle	2 bottle	Silver Nitrate ($AgNO_3$) 95-98 %, 2.5 litre/bottle	

NB : Warranty: 2 Years

Section VII. Sample Forms

Notes on the Sample Forms

The Tenderer shall complete and submit with its tender the ***Tender Form*** *and* ***Price Schedules*** *pursuant to ITT Clause 10 and in accordance with the requirements included in the tender documents.*

When requested in the Invitation for Tenders, the Tenderer should provide the ***Tender Security****, either in the form included hereafter or in another form acceptable to the Purchaser, pursuant to ITT Clause 16.2.*

The ***Contract Form****, when it is finalised at the time of contract award, should incorporate any corrections or modifications to the accepted Tender resulting from price corrections, acceptable deviations, spare parts or quantity variations. The Price Schedule and Schedule of Requirements deemed to form part of the contract should be modified accordingly.*

The ***Performance Security Form*** *and* ***Bank Guarantee Form for Advance Payment*** *should not be completed by the Tenderers at the time of their tender preparation. Only the successful Tenderer will be required to provide performance security and bank*

guarantee for advance payment in accordance with one of the forms indicated herein or in another form acceptable to the Purchaser.

The ***Manufacturer's Authorization*** *form should be completed by the Manufacturer, as appropriate.*

1. Tender Form and Price Schedules

Date: _____
IFT No: _____

To: *[name and address of Purchaser]*

Gentlemen and/or Ladies:

Having examined the Tender documents including Addenda Nos. *[insert numbers],* the receipt of which is hereby duly acknowledged, we, the undersigned, offer to supply and deliver *[description of goods and services]* in conformity with the said Tender documents for the sum of GHS_____ *[total Tender amount in words and figures]* or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this Tender.

We undertake, if our Tender is accepted, to deliver the goods and services in accordance with the delivery schedule specified in the Schedule of Requirements.

If our Tender is accepted, we will provide a Bank Guarantee acceptable to the Purchaser in a sum equivalent to _____ percent of the Contract Price for the due performance of the Contract, in the form prescribed by the Purchaser.

We agree to abide by this Tender for a period of …….. *[insert number as specified in Tender validity period]* days from the date fixed for Deadline for Tender submission, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Commissions or gratuities, if any, paid or to be paid by us to agents relating to this Tender, and to contract execution if we are awarded the contract, are listed below:

Name and address of agent	Amount and Currency	Purpose of Commission or gratuity
_____	_____	_____
_____	_____	_____
_____	_____	_____

(if none, state "none")

Until a formal Contract is prepared and executed, this Tender, together with your written acceptance thereof and your notification of award, shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any Tender you may receive.

We certify/confirm that we comply with the eligibility requirements as per ITT Clause 2 of the Tender documents.

Dated this _____[dd] day of _____[mm] month of 20_____[yy].

_____ _____
[signature] *[in the capacity of]*

Duly authorized to sign Tender for and on behalf of _____

Price Schedule

Name of Tenderer _____ IFT Number _____ Page _____ of _____

S.No.	Description	Country of origin	Quantity	Unit Price EXW (specify place)	Total Price EXW	Total Price of Inland delivery to final destination	Total CIP site plus VAT/NHIL	Incidental Services and others	Total Tender Price	Remarks
1	2	3	4	5	6 = (4x5)	7	8 = (6+7)	9	10 = (8+9)	11
Grand Total										

Total Tender Price (in words) ……..

Signature of Tenderer: _____

Note: 1. In case of discrepancy between unit price and total, the unit price shall prevail.

2. *Tenderer must have to accept the correction of arithmetic error pursuant to ITT Clause 26.2*

2. Tender Security Form

Date:

To [name and address of Purchaser]

Whereas *[name of the Tenderer]* (hereinafter called "the Tenderer") has submitted its Tender dated *[date of submission of Tender] for the supply of [name and/or description of the goods and services]* (hereinafter called "the Tender").

KNOW ALL PEOPLE by these presents that We *[name of bank/insurance/bonding institutions]* of *[name of country]*, having our registered office at *[address of bank]* (hereinafter called "the Bank/insurance company/bonding company"), are bound unto *[name of Purchaser]* The Government of Ghana (hereinafter called "the Purchaser") in the sum of *[amount]* for which payment well and truly to be made to the said Purchaser, the Bank/Insurance Company/Bonding Company binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank/Insurance Company/Bonding Company this _____ day of _____*[mm]* 20____.

THE CONDITIONS of this obligation are:

1. If the Tenderer

(a) withdraws its Tender during the period of Tender validity specified by the Tenderer on the Tender Form; or
(b) does not accept the correction of errors in accordance with the Instructions to Tenderers; or

2. If the Tenderer, having been notified of the acceptance of its Tender by the Purchaser during the period of Tender validity:

(a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Tenderers, if required; or
(b) fails or refuses to furnish the performance security, in accordance with the Instructions to Tenderers;

We undertake to pay to the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by him is due to him, owing to the occurrence of any of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including twenty-eight (28) days after the period of Tender validity or as it may be extended by the Purchaser, notice of which extension(s) to the Bank/Insurance Company/Bonding Company is hereby waived.

And any demand in respect thereof should reach the Bank/Insurance Company/Bonding Company not later than the above date.

_____ *[signature of the bank/insurance company/bonding company]*

Seal of the issuing Bank/Insurance Company/Bonding Company:

Witness :

Signature:

Name :

Address :

3. Tender Securing Declaration - **Not Applicable**

[The Tenderer shall fill in this Form in accordance with the instructions indicated .]

Date: *[insert date (as day, month and year) of* Tender *Submission]*
NCT No.: *[insert number of Tendering process]*
Alternative No.: *[insert identification No if this is a* Tender *for an alternative]*

To: *[insert complete name of Purchaser]*

We, the undersigned, declare that:

1. We understand that, according to your conditions, tender must be supported by a Tender -Securing Declaration.

2. We accept that we will automatically be suspended from being eligible for Tendering in any contract with the Purchaser for the period of time of *[insert number of months or years]* starting on *[insert date],* if we are in breach of our obligation(s) under the bid conditions, because we:

(a) have withdrawn our Tender during the period of tender validity specified by us in the Tendering Data Sheet; or

(b) having been notified of the acceptance of our Tender by the Purchaser during the period of tender validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the ITB.

3. We understand this Tender Securing Declaration shall expire if we are not the successful Tenderer, upon the earlier of (i) our receipt of a copy of your notification of the name of the successful Tenderer; or (ii) twenty-eight days after the expiration of our Tender

4. We understand that if we are a Joint Venture, the Tender Securing Declaration must be in the name of the Joint Venture that submits the Tender. If the Joint Venture has not been legally constituted at the time of bidding, the Tender Securing Declaration shall be in the names of all future partners as named in the letter of intent.

Signed: *[insert signature of person whose name and capacity are shown]* In the capacity of *[insert legal capacity of person signing the* Tender *Securing Declaration]*

Name: *[insert complete name of person signing the* Tender *Securing Declaration]*

Duly authorized to sign the bid for and on behalf of: *[insert complete name of* Tender*er]*

Dated on _____ day of _____, _____ *[insert date of signing]*

4. Qualification Information

Notes on Form of qualification Information

The information to be filled in by Tenderers in the following pages will be used for the purpose of post-qualification. This information will not be incorporated in the Contract. Please attach additional pages, if necessary.

1. For Individual Tenderers or Individual Members of Joint Ventures.

1.1 Constitution or legal status of Tenderer *[attach copy]*

Place of registration : ……..
Principal place of business : ……..
Power of attorney of signatory of Tenderer : *[attach original]*

1.2 Total annual volume of supplies made in the last two years, in GHS:

19xx/20xx ……
20xx/20xx ……..
20xx/20xx ……..
20xx/20xx ……..

1.3 Supplies performed as prime Supplier on goods of similar nature and volume over the last two years. The value should be indicated in the same currency used for Item 1.2 above. Also list details of supplies under way or committed, including expected completion date.

Procurement ID No.	Name of Purchaser	Type of goods	Agreement date	Delivery completion	Value of

1.4 Financial reports for the last two years : balance sheet, profit and loss statements, auditors' reports, etc. List them below and attach copies.

.....
.....
.....
.....

1.5 Names, addresses and telephone, telex, facsimile numbers and email addresses of banks that may provide references if contacted by the Purchaser.

.....
.....
.....
.....

1.6 Information on current litigation in which the Tenderer is involved.

Other party(ies)	Cause of dispute	Amount involved

4. Additional Requirements

2.1 Tenderers should provide any additional information required in the Tender Data Sheet.

.....
.....
.....
.....
.....
.....

5. Notification of Award

[This letter should be in the form of letterhead paper of the Purchaser]

……..[Date]
To: …….. *[name of the Supplier]*

……. *[address of the Supplier]*

Subject : Notification of Award

This is to notify you that your Tender dated …… for execution of the contract of …… *[name and identification number of the Tender]* in the amount…… *[amount in words],* as corrected in accordance with the Instructions to Tenderers is hereby accepted.

This Notification of Award will constitute the formation of Contract. However, until and unless you furnish the Performance Security of GHS. ……. *[amount of Performance* Security in figures, i.e. 5% - 10% of the Successful Tenderer's Tender Price] and send it to us within fourteen (14) days of the receipt of this Notification of Award the Contract shall not be deemed as active. You are hereby instructed to proceed with the fulfilment of performance Security and Signing of Contract within fourteen (14) days of receipt of this letter. Failure to comply with the fulfilment of Performance Security and Signing of Contract within the time will constitute the failure of formation of contract and forfeiture of Tender Security. If you so require ,you may proceed with the processing of the Bank guarantee for the advance payment (if applicable)

You are hereby instructed to proceed with the necessary action for the execution of the said Procurement in accordance with the Tender and Contract documents.

Authorised Signature : ……

Name and Title of Signatory: ……..

Name of Agency: ……..

Address for correspondence : …….

6. Contract Form

THIS AGREEMENT made the _____ day of _____*[mm]* 20_____ between *[name of Purchaser]* of *[country of Purchaser]* (hereinafter called "the Purchaser") of the one part and *[name of Supplier]* of *[city and country of Supplier]* (hereinafter called "the Supplier") of the other part:

WHEREAS the Purchaser invited Tenders for certain goods and ancillary services, viz., *[brief description of goods and services]* and has accepted a Tender by the Supplier for the supply of those goods and services in the sum of [contract price in words and figures in *Cedis]* (hereinafter called "the Contract Price").

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:

(a) the Tender Form and the Price Schedule submitted by the Tenderer;

(b) the Schedule of Requirements;

(c) the Technical Specifications;

(d) the General Conditions of Contract;

(e) the Special Conditions of Contract;

(f) the Purchaser's Notification of Award; and

(g) Contract Data Sheet *(to be used only when there are corrections to the original price schedule submitted by the supplier).*

3. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the goods and services and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the goods and services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the contract at the times and in the manner prescribed by the Contract.

5. This Agreement shall not be valid unless;

signing by both parties;

authorisation in the form of a Purchase Order (PO) generated from the Ghana Integrated Financial Management Information Systems (GIFMIS) or in a form specified by the Ministry of Finance (MoF) pursuant to the Applicable Law.

the fulfilment of conditions precedent such as the submission of performance bond, if any, that may be required on the part of either party under the Agreement or under the Applicable law.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.

On behalf of the Purchaser	**On behalf of the Supplier**
Name:	Name:
Signature:	Signature:
Designation:	Designation:
Seal:	Seal:
Date:	Date:
Witnessed By:	**Witnessed by:**
Name:	Name:
Signature:	Signature:
Designation:	Designation:
Date:	Date:

7. Manufacturer's Authorization Form (N/A)

Date:

To: *[name of the Purchaser]*

WHEREAS *[name of the Manufacturer]* who are established and reputable manufacturers of *[name and/or description of the goods] having factories at [address of factory]*

I hereby authorise *[name and address of Agent]* to submit a Tender, and subsequently negotiate and sign the Contract with you against IFT No. *[reference of the Invitation to Tender]* for the above goods manufactured by us.

We hereby extend our full guarantee and warranty as per Clause 15 of the General Conditions of Contract for the goods offered for supply by the above firm against this Invitation for Tenders.

_____ *[signature for and on behalf of Manufacturer]*

Note: This letter of authority should be on the letterhead of the Manufacturer and should be signed by a person competent and having the power of attorney to bind the Manufacturer. It should be included by the Tenderer in its Tender.

8. Performance Security Form

Date:

To: [name of Purchaser]

[address of Purchaser]

WHEREAS *[name and address of Supplier]* (hereinafter called "the Supplier") has undertaken, in pursuance of Contract No. *[reference number of the contract]* dated _____*[yy/mm/dd]* to supply *[description of goods and services] (*hereinafter called "the Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the Supplier shall furnish you with a bank guarantee by a reputable bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Supplier such a Bank guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantors and responsible to you, on behalf of the Supplier, up to a total of [amount of the guarantee in words and figures Ghanaian Cedis*],* and we undertake to pay you, upon your first written demand such sum being payable in the types and proportions of currencies in which the contract price is payable, and without cavil or argument, any sum or sums within the limits of *[amount of guarantee in Ghana Cedis]* as aforesaid, without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of demanding the said debt from the Supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Goods to be supplied thereunder or of any of the Contract documents which may be made between you and the Supplier shall in any way release us from liability under this Guarantee, and we hereby waive notice of any such change, addition or modification.

This Guarantee is valid until a date 28 days from the date of issue of the Certificate of Acceptance.

Signature and seal of the Guarantors

_____
[name of bank]

_____
[address]

_____
[date]

9. Bank Guarantee Form for Advance Payment

Date:

To: [name of Purchaser]

[address of Purchaser]

[name of Contract]

Gentlemen and/or Ladies;

In accordance with the payment provision included in the Special Conditions of Contract, to provide for advance payment, *[name and address of Supplier]* (hereinafter called "the Supplier") shall deposit with *[name of the Purchaser],* The Government of Ghana (hereinafter called "the Purchaser") a bank guarantee to guarantee proper and faithful performance under the said Clause of the Contract in an amount of *[amount of guarantee in figures and words in Ghanaian Cedis].*

We, the *[name of the bank]*, as instructed by the Supplier, agree unconditionally and irrevocably to guarantee as primary obligator and not as surety merely, the payment to the Purchaser on his first demand without whatsoever right of objection on our part and without his first claim to the Supplier, in the amount not exceeding *[amount of guarantee in figures and words in Ghanaian Cedis].*

We further agree that no change or addition to or other modification of the terms of the supply of Goods to be performed thereunder or of any of the Contract documents which may be made between the Purchaser and the Supplier, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition, or modification.

This guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until the Purchaser receives full repayment of the same amount from the Supplier.

Yours truly,

Signature and seal of the Bank

_____

[name of Bank]

_____

[address]

_____

[date]

Section VIII. List of Eligible Source Countries

[the Purchaser shall provide a list of countries from where the supplier may source the goods for this tender]