CERTIFICATE OF ACCREDITATION

This is to attest

ENVASERV RESEARCH CONSULT LTD

GC-035-7872, 8 DR. LAMPTEY STREET, SOWUTUOM
ACCRA, GHANA

Testing Laboratory TL-803

has met the requirements of AC89, *IAS Accreditation Criteria for Testing Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories.* This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date April 4, 2025

IAS is an ILAC MRA Signatory

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ENVASERV RESEARCH CONSULT LTD

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Accredited to ISO/IEC 17025:2017 *Effective Date April 4, 2025*

Water	
APHA 23rd Edition 2320B; PALINTEST PHOT 37	Alkalinity (CO_3, $CaCO_3$, HCO_3)
APHA 23rd Edition 2340; PALINTEST PHOT 15	Hardness
APHA 23rd Edition 2510B	Electrical Conductivity
APHA 23rd Edition 2540C	Total Dissolved Solids
APHA 23rd Edition 4500B C	Determination of Boron as B
APHA 23rd Edition 4500-Cl G; PALINTEST PHOT 108	Chlorine - Free, Total/Available
APHA 23rd Edition 4500CN-C+E	Total Cyanide
APHA 23rd Edition 4500CN-E	Free Cyanide
APHA 23rd Edition 4500D; PALINTEST PHOT 46	Method for Chloride Ions in Water
APHA 23rd Edition 4500-H+B	pH
APHA 23rd Edition 4500-NH3 A; PALINTEST PHOT 94-95	Nitrogen (Ammonia)
APHA 23rd Edition 4500-NO3 E; PALINTEST PHOT 23	Method for the Determination of Nitrogen (Nitrates)
APHA 23rd Edition 4500-Norg	Total Kjedahl Nitrogen
APHA 23rd Edition 4500-O G	Dissolved Oxygen
APHA 23rd Edition 4500-P A; PALINTEST PHOT 28	Method for the Determination of Phosphates
APHA 23rd Edition 4500-SO_4 2 D; PALINTEST PHOT 32	Method for the Determination of Sulphate

APHA 23rd Edition 5210B	BOD
APHA 23rd Edition 5220D; ASTM D1252 B; PALINTEST PHOT 80-83	COD
APHA 23rd Edition 5310C; Walkley Black Method	Total Organic Carbon
APHA 23rd Edition 5520C; ASTM D7066-4; EPA 413.2; EPA 418.1	Total Oil and Grease
APHA 23rd Edition 9222B	Total Coliforms, E. *coli*
APHA 23rd Edition, 2120B; PALINTEST PHOT 47	Color
APHA 23rd Edition, 2130B; PALINTEST PHOT 48	Turbidity
APHA 2540D/Photometric method HACH Method 8006	Total Suspended Solids
ASTM D1292-15	Standard Test Method for Odor in Water
ASTM D4458-15	Standard Test Method for Chloride Ions in Brackish Water, Seawater, and Brines
ASTM D4658, SM 4500-S2-D; PALINTEST PHOT 33	Standard Test Method for Sulfide Ion in Water
EPA METHOD 200.7	Heavy Metals (Al, As, Ba, Cd, Cr, Cu, Fe, Hg, Pb, Zn)
Flame Photometer	Alkalis (K, Na, Li, Ca, Ba)
GB 7485-87 / EPA 200.7	Method for the Determination of Arsenic
PALINTEST PHOT 18-19	Method for the Determination of Iron as Fe
PICRIC ACID METHOD (In-house)	WAD Cyanide
SM 4500-CO_2 C	CO_2 content
Glycol	
ASTM D1122-16(2017); ASTM D5931-13(2017)	Standard Test Method for Density or Relative Density of Engine Coolant Concentrates and Engine Coolants by the Hydrometer (Also Digital Density Meter)
ASTM D1123-99(2015)	Standard Test Method for Water in Engine Coolant Concentrate by the Karl Fischer Reagent Method

ASTM D1287-11	Standard Test Method for pH of Engine Coolant
ASTM D1881-17; ASTM D4921-95(2012)	Standard Test Method for Foaming Tendencies of Engine Coolant
EPA 3510	Test Method for Hydrocarbon Content Using Separating Funnel Liquid-Liquid Extraction
PALINTEST PHOT 18 &19	for the Determination of Iron Content
SM 2540A/Photometric method HACH Method 8006	Method for Total Suspended Solids
Ambient Air/Gas	
AEROQUAL AQM65 LASER COUNTER METHOD	Particulate Matter
AEROQUAL AQM65 PID	Volatile Organic Compounds
GPA 2286-14	Method for the CO_2 Content
AS 3580.4.1-2008	H_2S content
AS 3580.5.1-1993	Nitrogen Dioxide
AS 3580.7.1-1992	Carbon monoxide
Petroleum/Lube Oil/Condensate	
Ashing & Analysis by ICP-OES	Wear metals, contaminants, additives
ASTM D1142-95(2012)	Standard Test Method for Water Vapor Content of Gaseous Fuels by Measurement of Dew-Points Temperature
ASTM D1298-12(2017); IP 160	Standard Test Method for Density, Relative Density, API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method
ASTM D130; IP 227	Method for the Detection of the Corrosiveness of Aviation Turbine on Silver
ASTM D1318-16	Standard Test Method for Sodium in Residual Fuel Oil (Flame Photometric Method)
ASTM D156	Standard Test Method for Saybolt Color of Petroleum Products (Saybolt Chromometer Method)
ASTM D1742-18	Standard Test Methods for Oil Separation from Lubricating Grease During Storage
ASTM D189-06(2014)	Standard Test Method for Conradson Carbon Residue of Petroleum Products
ASTM D2265-15	Standard Test Method for Dropping Point of Lubricating Grease Over Wide Temperature Range

ASTM D2420–13(2018)	Standard Test Method for Hydrogen Sulfide in Liquefied Petroleum (LP) Gases (Lead Acetate Method)
ASTM D2500-17a	Standard Test method for Cloud Point of Petroleum Products and Liquid Fuel
ASTM D2711-17	Standard Test Method for Demulsibility Characteristics of Lubricating Oils
ASTM D323-15a	Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method)
ASTM D381-12(2017)	Standard Test Method for Gum Content in Fuels by Jet Evaporation
ASTM D3838	Standard Test Methods for Flash Point by Small Scale Closed Cup Tester
ASTM D3944-12(2017)	Standard Test Method for Solidification Point of Petroleum Wax
ASTM D4294-03	Standard Test Method for Sulphur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry
ASTM D445	Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)
ASTM D473-07(2017)	Standard Test Method for Sediment in Crude Oils and Fuel Oils by the Extraction Method
ASTM D482-13	Standard Test Method for Ash From Petroleum Products
ASTM D4928-12(2018); ASTM D6304-16e1	Standard test Method for Water in Crude Oils, Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration
ASTM D5853; ASTM D97	Standard Test Method for Pour Point of Crude Oils/ Petroleum Products
ASTM D611-12(2016)	Standard Test Methods for Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbons
ASTM D86-17	Standard Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure
ASTM D892-18	Standard Test Method for Foaming Characteristics of Lubricating Oils
ASTM D974	Standard Test Method for Acid and Base Number by Color-indicator Titration
Insoluble Test Cell (correlates to IP 316)	Determination of Heptane Insolubles in Used Lubricating Oils
Internal SOP	Lubricating Oil Aging Characteristics (Conradson Carbon Residue Method)
IP 400	Determination of Base Number of Petroleum Products by Conductimetric Titration Method
IP 48	Determination of Oxidation Characteristics of Lubricating Oil
IP77	Determination of Salt Content-Extraction and Volumetric Titration Method

SX-100K Portable Cetane Analyzer (According to ASTM D4737-03; ASTM D613; EN ISO 5165)	Cetane Number
SX-100K Portable Octane Analyzer (According to ASTM D2699-86; ASTM D2700-86)	Anti Knocking Index AKI (Pump Octane Number)
SX-100K Portable Octane Analyzer (According to ASTM D2699-86; ASTM D2700-86)	Motor Octane Number
SX-100K Portable Octane Analyzer (According to ASTM D2699-86; ASTM D2700-86)	Research Octane Number
Test Cell Correlates to ASTM D4740-04(2014)	Cleanliness & Compatibility
Water in Oil Test Cell (correlates to IP 386)	Determination of Water in Crude Petroleum
Soil/Sediment	
EPA METHOD 3050 plus ICP-OES analysis	Heavy metals (Al, As, Ba, Cd, Cr, Cu, Fe, Hg, Pb, Zn)
Flame Photometer	Alkalis (K, Na, Li, Ca, Ba)
GB 7485-87 / EPA METHOD 200.7	Method For the Determination of Arsenic
ISO/TR 11046:1994	Determination of Mineral Oil Content by Infrared Spectrometry
Fertilizer	
GFAM-K3	Potassium
GFAM-N1	Nitrogen
GFAM-P8	Phosphorus
Water/Soil/Sediment/Tissue	
MASEP EPH	Method for PAH analysis in water/sediment/soil/organic material (to replace ASTMD 1292-15)