

Substrata®



Best Service Delivery in Oil & Gas Exploration and Production

Corporate Profile



Substrata®

About Substrata

Substrata Oil and Gas Limited (RC 663293) was incorporated in 2006 to carry out oilfield services to the Oil and Gas industry in Nigeria.

The need to reduce costs by introducing new, effective and efficient technology, coupled with the recent introduction of new government policies aimed at encouraging and ensuring more participation by competent Nigerians in the upstream Oil & Gas industry has played an important role in the development of Substrata Oil and Gas Limited.

Substrata Oil and Gas Limited is wholly Nigerian owned with local and international affiliations and partnerships. Our operations are knowledge driven, backed by technology.

Strengthened by a board of directors with vast experience in the oil and gas industry, and staff driven by the zeal to deliver qualitative, on-time and cost-effective services to our esteemed clients, we are poised to ensure quality and reliability in all the services we render.

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Our Mission

To provide the best value in services for the oil and gas industry in Nigeria and Africa at large.

Best value means providing fit-for-purpose solutions that best meet our client's criteria and resources through the following:

- Best-in-class technology
- Maintenance of a keen competitive edge through efficiency, superior service quality and good safety record.
- Training, motivation and empowerment of our personnel to maintain top-quality service at all times.



Our Values

- *Integrity
- *Excellence
- *Team Spirit
- *Corporate Social Responsibility

Our Vision

To become the point of reference in the Africa Oil and Gas industry, known for superior service delivery with utmost professionalism.



Management Team

- Kayode Thomas Ph.D. **Managing Director**
- Iyke Mgbemena BSc. **Chief Operating Officer**
- Analiefo Nzegwu MBA. **Chief Financial Officer**
- Yusuf Mohammed MEngr . **Head QHSE & Administration**
- Blessing Okereke BSc. **Head Business Development**
- Ituah Ayewoh BSc. **Head Training, NCD & Compliance**

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What we do.....

- Subsurface Services
- Well Diagnostics Services
- Drilling Support Services
- Training Services
- Other Services

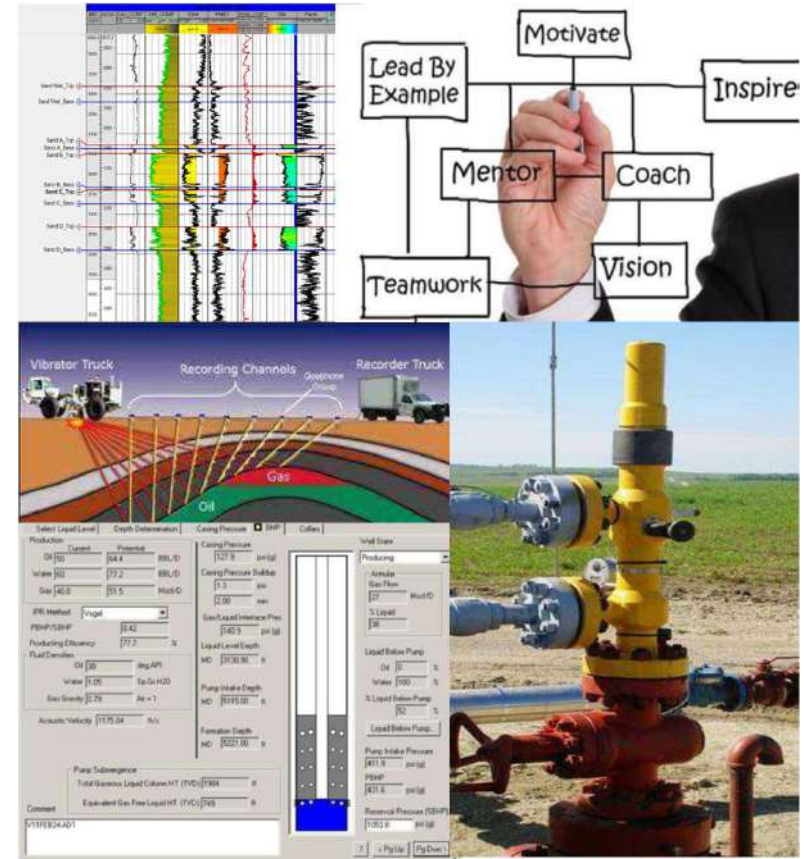
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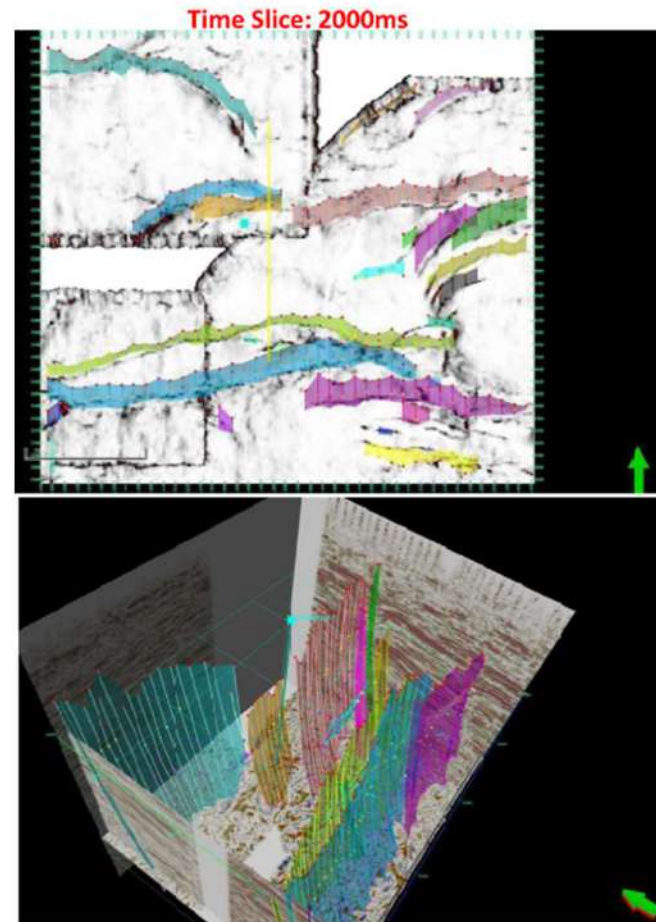
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SUBSURFACE SERVICES

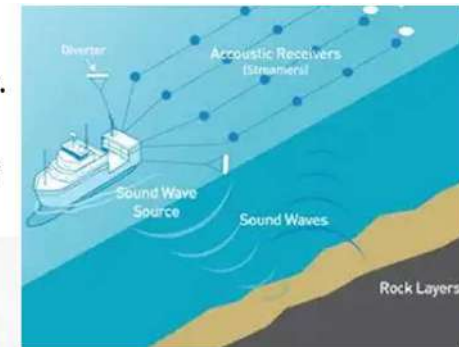


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Seismic Data Acquisition & Supervision

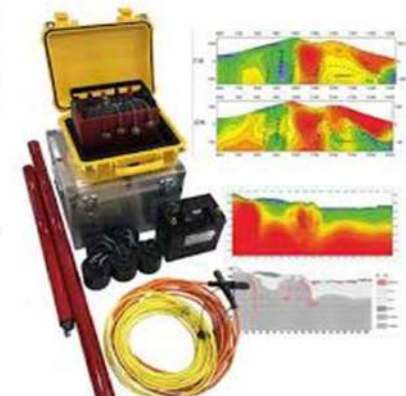
Seismic data acquisition is the foundational phase of geophysical exploration where acoustic or elastic waves are generated and recorded to image the Earth's subsurface. Our team of seismic experts have a combined experience of over 100 years of seismic design, acquisition and supervision. We have experience spanning all the continents of the globe. Our expertise in Nodal/Cable Telemetry includes;

- Land and Swamp seismic
- Transition Zone seismic
- Towed streamer Seismic
- 4C - Four Component Ocean bottom Seismic
- Ocean Bottom Cable (OBC) seismic



Magnetoelluric Data Acquisition

This is a passive geophysical method used to map the Earth's subsurface electrical resistivity by measuring natural variations in electric and magnetic fields at the surface. Controlled-Source Audio-frequency Magnetotellurics (CSAMT) system is used to perform surveys for natural resources exploration. It's been used extensively in the Gongola Basin in Nigeria.



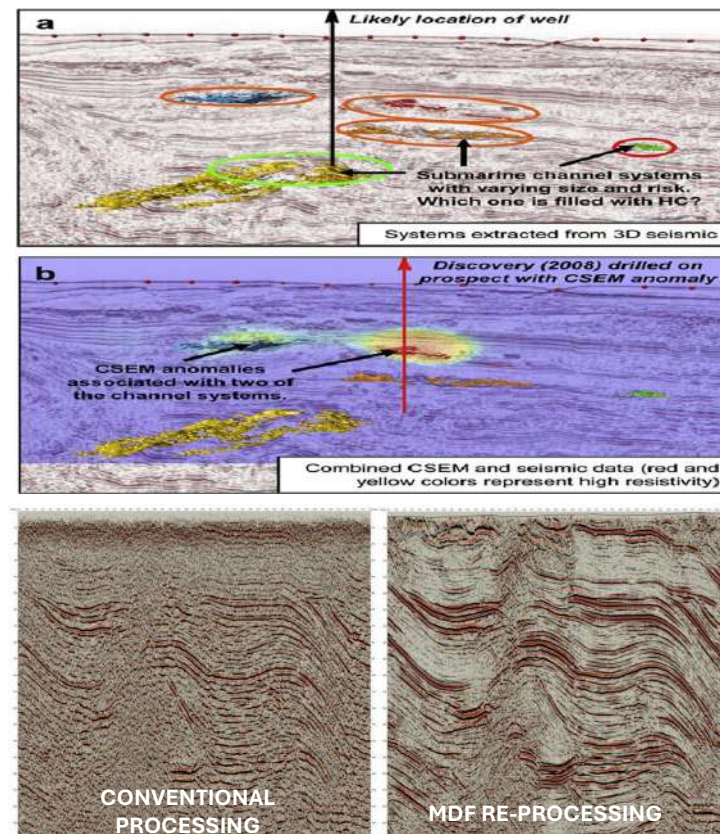
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EFFECTIVENESS OF COMBINED SEISMIC AND MAGNETOTELLURIC(MT) INTERPRETATION

A combination of Seismic and MT Interpretation can help de-risk your drilling campaign by over 95%. Carrying out a MT acquisition over a seismic delineated prospect helps in positioning Wells to be drilled into the prospect. This increases the positioning accuracy by circa 95%. Cost of the MT data acquisition in Land and Swamp environments is not more that \$200K, which equates to not more than 4 days of the Rig rate. This is a small amount to pay compared to the cost of drilling a well in the wrong position.

SEISMIC DATA PROCESSING & RE- PROCESSING

We deliver high quality processed and reprocessed seismic data to our clients, ready for qualitative interpretation. In conjunction with our technical partners, GEOTOMO, we are able to tackle difficult terrains and reprocess poorly acquired data with new technologies and algorithms. GEOTOMO is a leading provider of innovative and cutting-edge solutions to the Oil and Gas industry. The Multi Domain Filtering (MDF) processing is a very efficient and robust tool in tackling wide range of geophysical/geological challenges.



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DATA CENTER

Substrata has a purpose built, fully equipped Data Center with ultra modern equipment and technology, in the heart of Trans Amadi Industrial area in Port Harcourt.

Cluster manufacturer and model (Compute & Storage)		Compute Cluster IBM Inc.
Compute Clusters	Architecture	Brand name: HS22 & HS23 IBM . No of Chassis : HS22 = 10, HS23=2 Compute nodes per Chassis: HS22=14 , HS23=10 Total compute Cluster Nodes = 160 nodes
	CPU	Brand name: IBM Inc. Intel Xeon E5506 2.13 GHz dual-socket 4-core (8- core per node) = 1120 CPUs Total compute Cluster CPU = 1120 CPUs
	RAM	Brand name: IBM Inc. 16GB of RAM per node = 4480GB RAM per Chassis Total compute Cluster RAM = 4.480TB



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DATA CENTER EQUIPMENT AND SOFTWARE

Number of Tape Drives	3 x 3592 2 x 3590/3590E 1 x DLT 1 x LTO 1 x 8mm
Other Support Peripherals Installed	1 x HP Officejet Pro 8710 Color Printer 1 x Brother Printer Color Printer 1 x HP LaserJet 1200 Series Printer
Network Hardware	1 x Cisco Catalyst 3750 Series Switch 1 x Cisco 2800 Series Router 4 x Ubiquiti Routers
Server Room Cooling Units	4 x 2hp LG Industrial AC Unit
High Speed Internet Data Connections	2Mbps/4Mbps VODACOM Internet Service; latency-125ms



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DATA CENTER EQUIPMENT

Visualization resources	1 x EPSON Data Projector 1 x Excel Van LED Projector Video conferencing facilities with 60inch Television
Power specifications	Uninterrupted Power Supply units for Load Protection – 1 x 40 KVA EATON 93E 40KVA UPS 1 x 10 KVA EATON 9E 10KVA UPS 1 x 7.5 KVA SU-KAM SEOGT Power Conditioning Unit Standby Generator units – 1 x 30KVACUMMINS 1 x MIKANO-80KVA

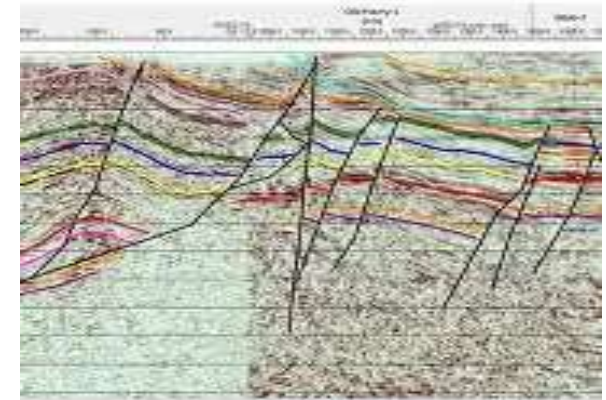
SOFTWARE

- **TomoPlus** - Seismic Processing System
- **GeoThrust & Ethos** - Near Surface Solutions
- **VECON** - Survey Modeling and Design
- **Landmark** - Promax
- **g-Platform** - Seismic data processing
- **g-Space** - Geological and geophysical interpretation
- **g-Viewer** - Geophysical data visualization

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SEISMIC DATA INTERPRETATION

It's the geophysical process of analyzing 2D or 3D seismic waves to map subsurface geological structures, stratigraphy, and potential fluid reservoirs. This process is more of an art than exact science. Experience and knowledge of the geology of the terrain are critical success factors.

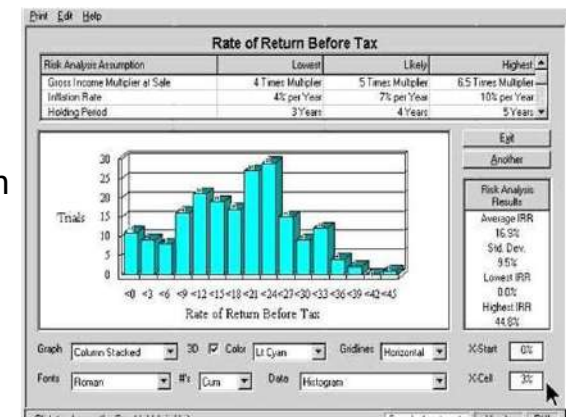


FIELD DEVELOPMENT AND PROSPECTIVITY STUDIES

This involves systematically transforming an appraisal-ready hydrocarbon resource into a fully operational production field. This process is guided by a Field Development Plan (FDP), which integrates multidisciplinary engineering, geological, economic, and regulatory considerations.

ECONOMIC EVALUATION OF ASSETS AND PETROLEUM ECONOMICS

This is an important aspect of the petroleum cycle. Results for the economic evaluation forms an integral tool used by oil and gas investors to make investment decisions. Economical evaluation is complicated because there are so many variables to be considered in the study and decision-making process. Experience and excellent knowledge of Petroleum Economics are critical success factors.

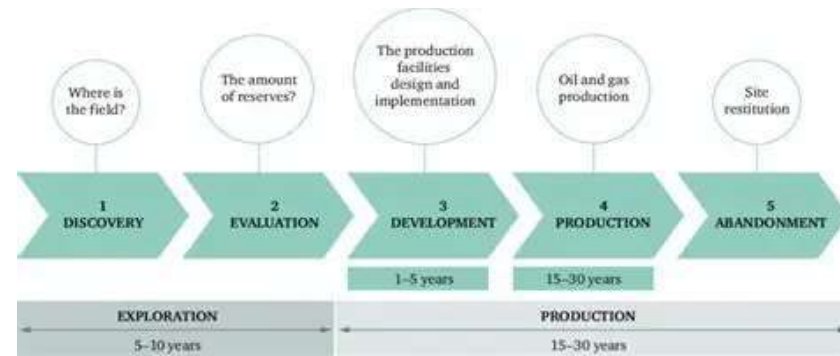


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FIELD OPTIMIZATION

Field Optimization involves maximizing hydrocarbon recovery, minimizing operational costs, and extending asset life by systematically analysing and improving all components of the production system—from the reservoir through wells to surface facilities. Modern approaches integrate advanced engineering, computational modelling, and digital technologies to achieve holistic optimization.

There's an industry shift from siloed reservoir/surface models to fully integrated digital workflows. Continuous production optimization leveraging real-time IoT sensors, AI predictions, and autonomous control. Application of intelligent completions and advanced intervention techniques to revive underperforming wells.

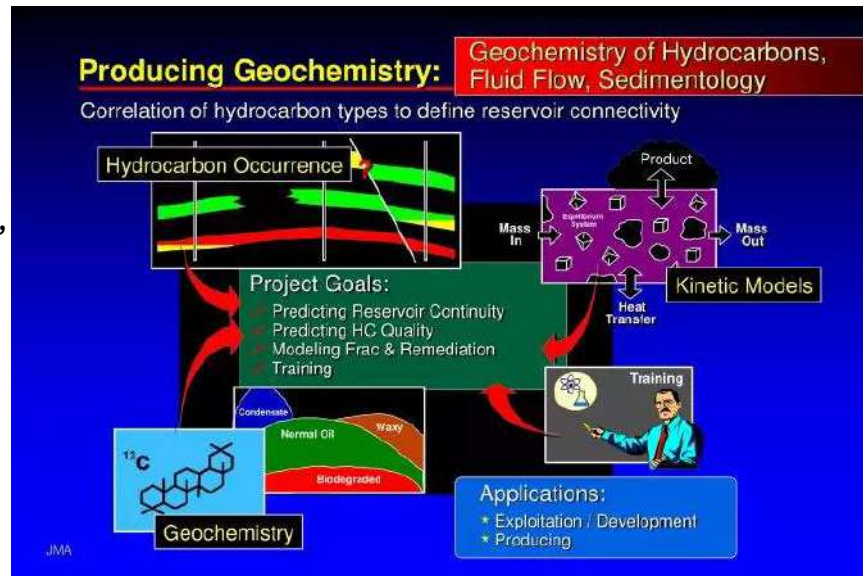


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GEOMECHANICS AND GEOCHEMISTRY STUDIES

Geomechanics combines principles from mechanical engineering, geology, and material science to understand and predict the behavior of earth materials under different loading conditions. It focuses on both soil mechanics (the study of soil behavior) and rock mechanics (the study of rock behavior), as well as their interactions with structures such as tunnels, dams, foundations, and underground reservoirs.

Geochemistry integrates principles of chemistry, geology, physics, and biology to understand the origin, evolution, and distribution of chemical elements throughout the Earth. It focuses on both natural processes, such as rock formation and volcanic activity, and human impacts, such as pollution and resource extraction.



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WELL DIAGNOSTICS

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ACOUSTIC LOGGING AS A DIAGNOSTIC TOOL

The success of a Well Intervention is largely dependent on the accuracy of the diagnosis of the problems with the Well. It could be issues with the reservoir or the wellbore. In some cases, it's as simple as tweaking the pressure drawdown (ΔP), which is the difference between the static bottomhole pressure (SBHP) and the flowing bottomhole pressure (P_{wf}). In other case, it could mean tubing retrieval where a Hydraulic Workover Unit (HWO) is used.

Well intervention is planned such that the objectives are met, while minimizing formation damage and operational costs. Costs must be kept in check if the intervention must be economically successful.

Acoustic Logging service ensures accurate and qualitative analysis of wells are carried out at minimal cost, about a quarter of conventional slickline/wireline/coil tubing spread costs.



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BENEFITS OF ACOUSTIC LOGGING

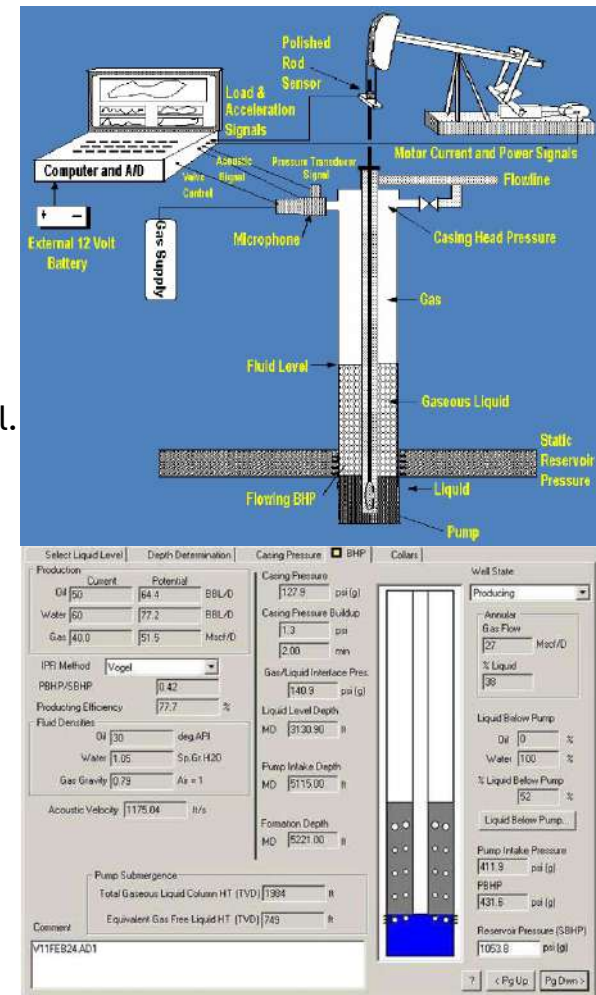
The Echometer Well Analyzer equipment generates the acoustic pulses that are sent down the well bore and also has the microphone that listens for the echo from the generated acoustic pulses. It is used to optimize production from Oil and Gas wells. The principal objective of the Well Analyzer is to provide all the necessary data to analyze the performance of an Oil or Gas well.

Accurate Fluid Level Measurement

Acoustic logging allows operators to measure fluid levels in wells with high precision using acoustic fluid level surveys. The generated pressure pulses travel down the well and reflect off tubing collars, perforations, and fluid surfaces, providing detailed insights into well conditions and potential issues such as casing leaks or pump inefficiencies.

Enhanced Well Analysis

Acoustic logging captures simultaneous fluid levels, and pressure records. This enables operators to measure well performance and production efficiency. The data supports NODAL analysis to optimize well production and reservoir management.



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Versatility Across Well Types

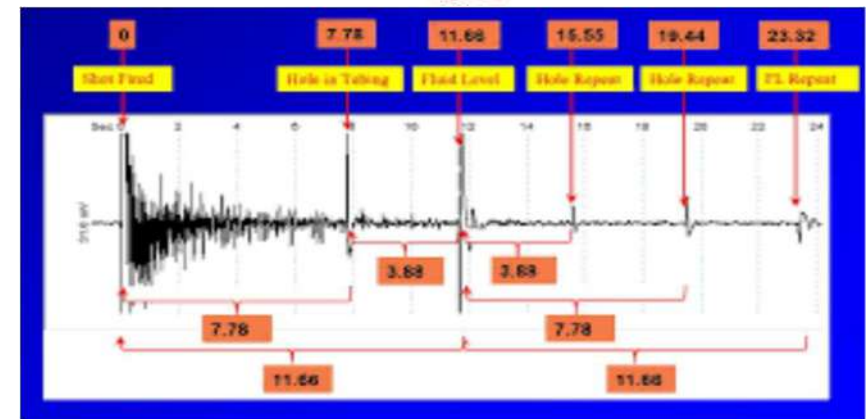
Echometer equipment is effective for various well systems, gas lift wells and electrical submersible pumps. It also helps confirm tubing or casing issues before costly interventions.

Acoustic System Portability

Echometer equipment spread includes the Laptop, CIU, the Gas Guns, Assorted cables, power source, gas bottles and some hand tools. All these equipment and materials can fit in two (2) hand carried Pelican cases. No matter how remotely located or how cramped up for space your Wellhead is, because of its portability, we are able to Rig Up the Echometer for quality data acquisition.

Effective and efficient BHP survey

Due to the portability of the equipment, we are able to carry out multiple Bottom Hole Pressure (BHP) surveys for multiple oil and gas wells in a very short period of time at very low costs.



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DRILLING SUPPORT SERVICES



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DRILL RIG INSPECTION

Rig Inspection is a systematic evaluation of a drilling rig to verify that it is safe, mechanically sound, and compliant with applicable regulations and industry standards. It provides independent Structural, Mechanical, Safety, and Operational Evaluations of Drilling Units to manage risk and meet regulatory mandates .

Our services cover Land Rigs, Swamp Rigs, Jack-ups, and Offshore drillships. It's to avoid costly Non-Productive Time (NPT) and preserve crew safety, operator reputation and all untoward activities/events related to a catastrophic failure.

Inspection types.

- **Pre-purchase inspections** – Assess the condition of a rig before purchase.
- **Pre-mobilization inspections** – Verify readiness before moving to a new drilling site. **(LEVEL 3)**
- **Periodic inspections** – Monthly, quarterly, or annual inspections based on company policy or regulations. **(LEVEL 1)**
- **Third-party inspections** – Independent verification for clients or regulatory compliance. **(LEVEL 2)**
- **API-based inspections** – Performed in accordance with standards from the American Petroleum Institute and other recognized industry bodies.



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RIG MOVE

A rig move is a complex process of relocating an oil drilling rig from one site to another, involving careful planning, transportation logistics, and strict adherence to safety and operational standards. A move can occur for multiple reasons, including completion of a project, exploration at a new site, upgrade or replacement of equipment. Rig moves are significant operations because these rigs are large, heavy, and consist of numerous components including the derrick, substructures, drilling equipment, and support facilities.

Types of Rig Move

The type of rig move depends on the distance, terrain, and whether the rig is land-based or offshore.

Onshore Rig Move: The rig, including its derrick, drilling rig floor, and support equipment, is disassembled and transported via trucks, trailers, or modular transporters to the new site. Roads must be assessed for weight limits, bridges, and passage clearances. Sometimes, temporary roads or reinforcements are constructed to facilitate movement.

Swamp Rig Move: Used in swamp, riverine, or shallow-water locations. The rig is transported on barges to the new drilling site. Common in areas such as the Niger Delta.

Offshore Rig Move: Applies to offshore drilling units. **Jack-up rigs** are towed by tugboats or may move short distances under their own propulsion if designed for it. **Semi-submersible rigs** are towed or self-propelled. **Drillships** typically sail under their own power.

Each type of rig move requires careful planning, lifting procedures, transportation logistics, and safety controls to minimize downtime and prevent equipment damage.

Substrata®

Drilling Equipment Supply Services

We have a team dedicated to supporting our esteemed clients in ensuring efficient, on-time and successful delivery of their drilling campaigns.

We supply the following;

- Drilling bits – We have OEM agreements.
- Tubing and Casings (OCTGs).
- Fishing and fishing tool rental services.
- Waste management services
- Drilling fluids



O'Bannon Style Fishing Tools
Overshot Socket



Substrata®

TRAINING SERVICES



Substrata®

Strategic Training Objectives

- We will provide inspiring training that motivates individuals to achieve their full potential thereby helping our Clients achieve their corporate goals.
- We will work in partnership with our Clients ensuring that courses we offer are specifically designed and thoughtfully adapted to suit their learning and workplace outcomes
- Provide timely and structured learning experiences, operational training, and career development programs to all Client employees to improve and maintain job performance to support the stated corporate business goals.
- Our trainings are designed to address skill gaps in the industry or, in some cases, specifically for addressing specific skill gaps in our client's organization.
- Other trainings are specifically designed for the introduction of new services or products.



Substrata®

OTHER SERVICES



Substrata®

DOWNHOLE CAMERA

We offer new downhole camera technologies, expert operational experience, visual inspection and information that enable accurate diagnosis of downhole failures. Operators can take immediate action to rectify problems, helping to improve well integrity, maximize production, and reduce operating costs.

Main application areas

- Wellbore Inspection (Well jewellery, Wellhead equipment, Safety valves, Borehole nipples, etc.)
- Corrosion Inspection and Monitoring
- Wellbore Fishing Support with exact imaging of dropped object
- Inflows and Fluid Flow visualization and monitoring
- Identification of Deposits (Scale, Salt, Hydrate, etc.)
- Well assemblies for gas Storage
- Inspection of Downhole Completions (Uppers Completion, Lower Completion, Gravel Packs)
- Open Hole Imaging of Formations
- Many More...



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Sand Management

Sand detection and Sand rate determination using advance non-intrusive sand detector equipment.

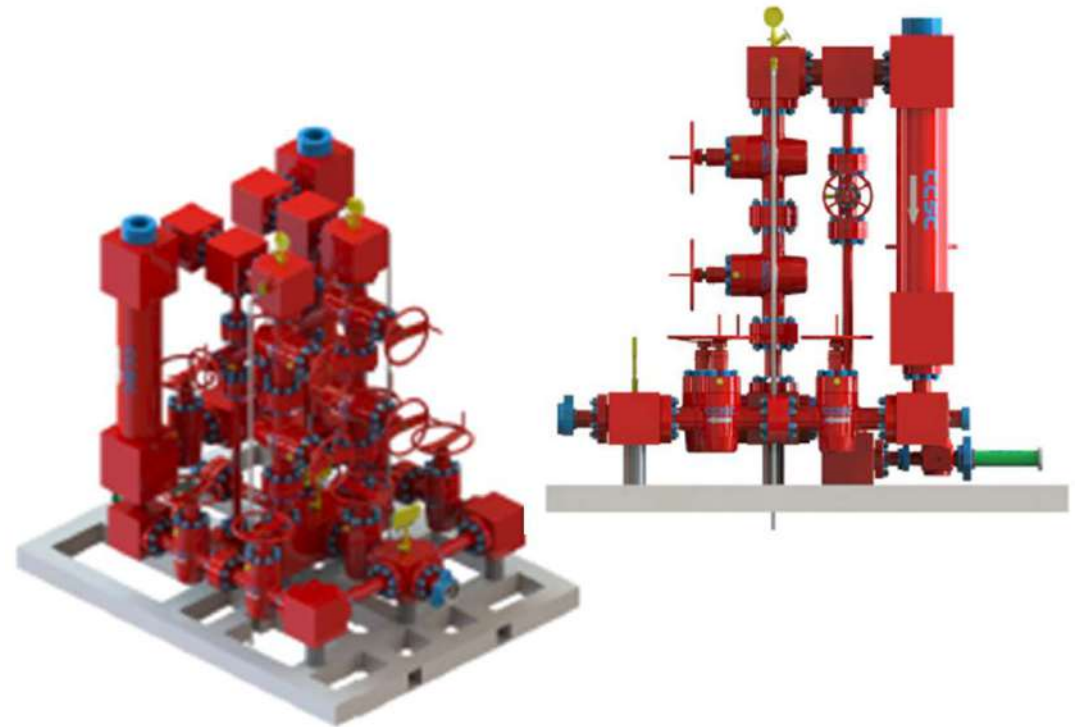
Sand sample collection for sieve analysis .

Grain size determination.

Design of wellhead desander and Hydrocyclones to remove identified solids from the multiphase flow.

Remove sand and abrasive solids from the flow.
For example, crude oil production, drilling fluids,
and other multiphase flows.

Controlled disposal of removed solids.



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WELLHEAD INSTALLATION AND MAINTENANCE

Wellhead

Wellhead maintenance ensure the pressure integrity of an oil or gas well throughout its entire lifecycle. The wellhead acts as the mechanical interface between the surface equipment and the underground casing strings, making proper execution critical for safety and blowout prevention.

Maintenance

Regular servicing prevents leaks, structural failures, and catastrophic blowouts. It is typically split into two operational levels.

Routine Maintenance – First Line

Visual Inspections: Checking for physical damage, severe corrosion, and signs of bubbling or leaking gas.

Valve Greasing: Injecting specialized synthetic lubricants into gate valves to ensure smooth operation and tight pressure seals.

Function Testing: Functionally cycling critical master valves, wing valves, and surface safety valves (SSVs) to confirm they close fully during emergencies.

Pressure Monitoring: Recording pressures in the A, B, and C annuli (the spaces between different casing strings), as available, to detect internal seal leaks.



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Corrective Maintenance – Second Line

Seal Re-energizing: Injecting plastic packing or sealant compounds into internal wellhead voids to stop active annular leaks.

Valve Repair: Replacing worn gate packing, stems, or complete valve gates without killing the well (using specialized lubrication equipment).

Corrosion Treatment: Sandblasting, priming, and painting surface equipment exposed to harsh offshore or desert elements.

Installation

The installation process occurs sequentially as the well is drilled deeper, with each layer of casing requiring a corresponding wellhead component.

Welding or Threading the Base: The bottom casing head (starting head) is welded or threaded onto the surface casing string.

Landing and Nipple-Up: land the casing head housing, level it precisely, and "nipple up" (bolt on) the Blowout Preventer (BOP) stack for the next drilling phase.

Setting Casing Hangers: Once a casing string is run and cemented, a mechanical hanger is wrapped around the pipe and wedged into the wellhead bowl to support the weight.

Roughneck Cut and Seal: The excess casing sticking out above the wellhead is cut off cleanly. Seals and pack-offs are installed to isolate pressure between casing layers.

Installing the Christmas Tree: After completion tubing is run, the production "Christmas Tree" (a system of valves and chokes) is bolted to the top of the wellhead.



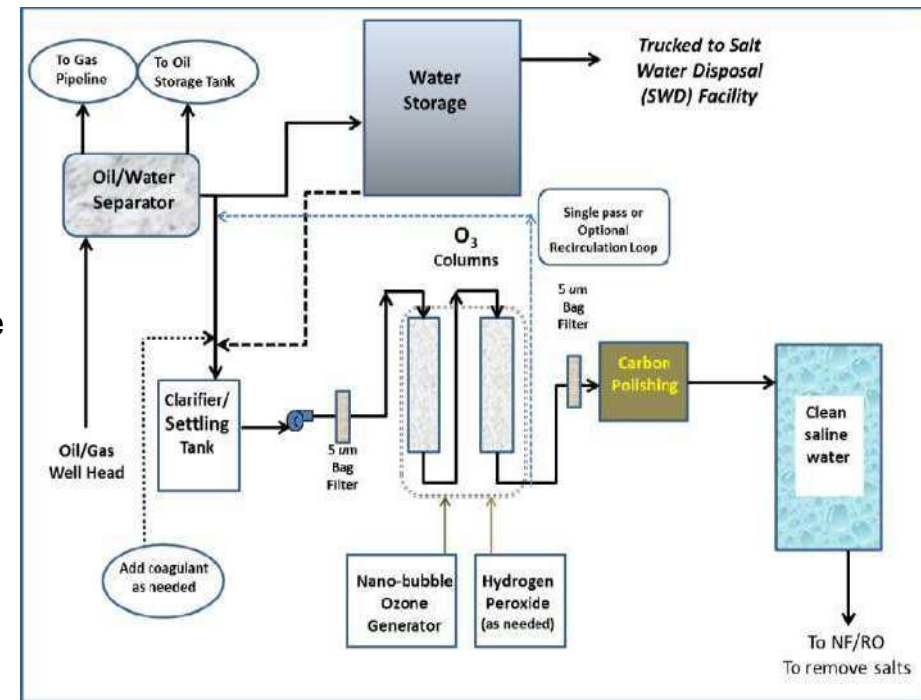
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PRODUCED WATER MANAGEMENT STRATEGY

Produced water is a major problem associated with oil and gas production. It can limit the productive life of the oil and gas wells, causing severe problems including corrosion of tubular, fines migration, and hydrostatic loading. It represents the largest volume of polluted effluent.

Produced water represents the largest waste stream associated with oil and gas production. In Nigeria, it is estimated that on average 8 barrels of water are produced for each barrel of oil. The environmental impact of handling, treating and disposing of the produced water can seriously affect the profitability of oil and gas production. The annual cost of disposing the produced water in Nigeria is in excess of 1 (One) billion dollars.

The effect of effluent discharged offshore may be diluted and dissipated by currents, reducing the hazards to the environment. Effluents discharged on land or into brackish waters may undergo comparatively little dilution, especially during the dry season, and may pose a hazard to man and aquatic organisms.



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PRODUCED WATER MANAGEMENT STRATEGY

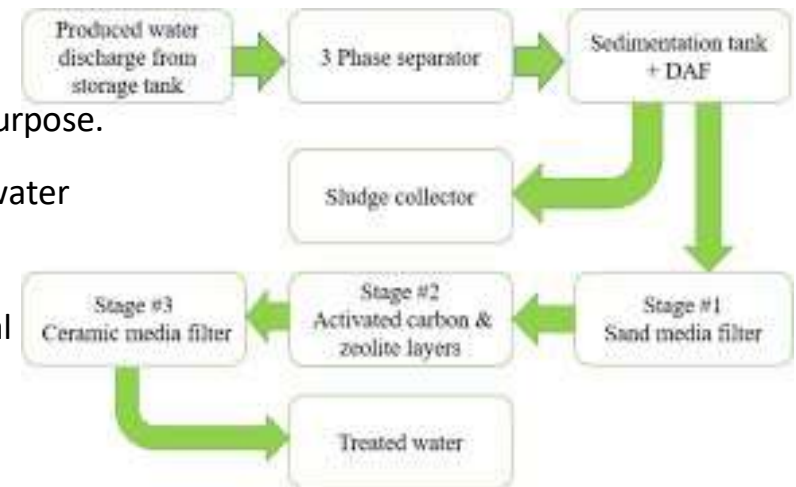
The threat to human population may occur through consumption of contaminated organisms and through drinking of water from contaminated rivers or wells.

By regulation, Produced formation/oily waters should not be discharged into inland and nearshore areas. The disposal options are:

- (a) injection into disposal wells or
- (b) re-injection to reservoir (sub-surface stratum or strata) approved for the purpose.

Produced formation/oily waters may be discharged into offshore and deepwater areas provided the following conditions are satisfied;

- (i) An Oily water treatment system, designed to maintain the treatment efficiency during load variations and to operate with minimum chemical addition, shall be installed;
- (ii) The oil shall be separated from the produced/oily water;
- (iii) As a minimum, the concentration of the dispersed oil in the water to be discharged, shall not exceed 40mg/l (monthly average, otherwise the produced formation/oily waters shall be re-injected.



Substrata®

PARTNERS AND ALLIANCES





**Don't gamble with your
processing and re-processing**



Contact Us

59, Professor Okujagu street, Off Trans Amadi road, Port Harcourt.

Telephone: 08059572257, 084-302879

Website: www.substrataoilandgas.com

Email: info@substrataoilandgas.com