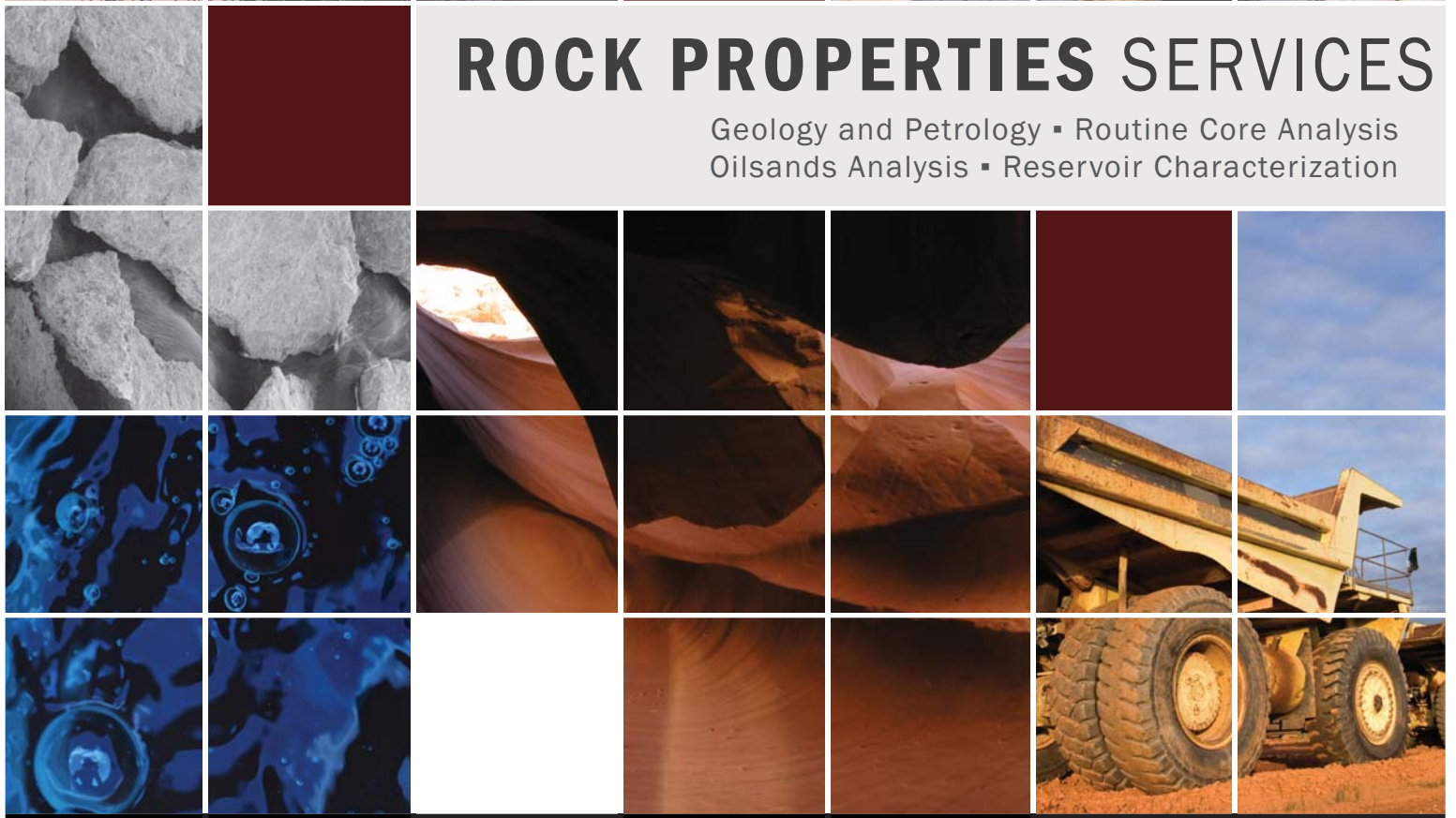




ROCK PROPERTIES SERVICES

Geology and Petrology ▪ Routine Core Analysis
Oilsands Analysis ▪ Reservoir Characterization



AGAT Laboratories

Service Beyond Analysis ■ www.agatlabs.com

AGAT Laboratories is a highly specialized, Canadian-based company that provides analytical laboratory services worldwide. We offer services to the Energy, Environmental, Mining, Transportation, Industrial, Agri-Food and Life Science sectors. With world-class facilities and state-of-the-art instrumentation, our qualified personnel adhere to our mission statement, delivering “Service Beyond Analysis”.



ROCK PROPERTIES SERVICES

AGAT Laboratories has been providing an integrated geological and engineering approach to conventional core and special core analysis for 30 years. Our geologists, engineers and technicians offer comprehensive reservoir quality analysis, which aids in resolving or preventing potential reservoir quality and fluid sensitivity problems. Within our Rock Properties Division, AGAT Laboratories offers a unique, combined source of geological and engineering data that is used in the development and management of petroleum reservoirs.

The AGAT Advantage

In pursuit of excellence, AGAT Laboratories remains committed to the following major initiatives to provide our clients with unique methods to optimize their business.

Quality

AGAT Laboratories' *Quality Management System* is accredited to the International Organization for Standardization (ISO) 17025:2005. We also maintain memberships in the American Petroleum Institute Subcommittee for Core Analysis (SCA), the Canadian Society for Petroleum Geologists (CSPG) and the Association of Professional Engineers, Geologist and Geophysics of Alberta (APEGGA).

Health, Safety and Environment

AGAT Laboratories is committed to safeguarding the health and safety of our employees and clients and our safety systems are regulated by provincial and federal government legislations. We also take a “Green” approach to all of our operations to lessen our environmental footprint while still providing optimal services.

Client Project Managers

Our Rock Properties' Client Project Managers are highly qualified and experienced in managing both domestic and international large-scale core programs. These personnel have over 30 years of experience and are available to provide clients with technical advice and interpretation for the evaluation of reservoirs and oil recovery. They actively participate in the planning and coordinating of client projects throughout all stages of the laboratory process.

Technical Innovations

AGAT Laboratories has an active *Research and Development Program* that has contributed greatly to keeping us at the forefront of technology and innovation. We are committed to investing in new developments to continue to advance science and offer our clients the latest in analytical technology.

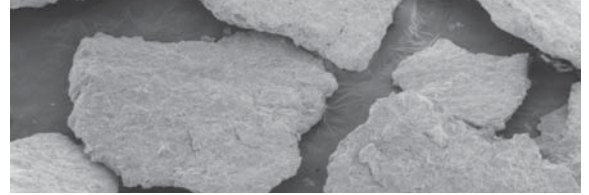
Facilities

We have over 350,000 square feet of laboratory spaced dedicated to serving the Energy Sector. Our diversity of services allows us to offer our clients a full scope of analysis from the divisions of Rock Properties, Oil and Gas Chemistry, Environmental Chemistry, Air Quality Monitoring and Tribology Preventative Maintenance.

Geology and Petrology

Our Geological Services group provides data that is used by both exploration and completion engineers. We offer interpretation programs as well as rock-based analytical programs. These services are designed to accurately evaluate depositional environments, mineralogy, reservoir quality, sensitivity to drilling and completion fluids, and the potential possible mechanisms for formation damage. These services include the following:

- Fracture analysis
- Full Petrographic analysis
- Thin Section analysis
- X-Ray Diffraction
- X-Ray Energy Spectrometry
- Energy Dispersive X-Ray analysis
- Scanning Electron Microscopy
- Cathodoluminescent analysis



Routine Core Analysis

Routine Core analysis frequently emerges as the standard and can be considered the cornerstone upon which formation evaluation rests. Routine measurements are performed on core or plugs to determine petrophysical properties of rock samples for effective characterization. Understanding that each core program is unique, our geologists and engineers will customize analytical programs based on project needs. They are available to describe, depth-correct and prepare core for client viewing as well as assist in sample selection for further analysis to achieve optimal results. These services include the following:



- Core Handling
- Porosity and Permeability
- Fluid Saturation
- Grain Density
- Core/Gamma Logging
- UV and Color Digital Photography
- Probe Permeameter
- Overburden Small Plug analysis

Oilsands Analysis

Our Oilsands Division provides services for the mining, cold production and in-situ production of oil from heavy oil and tar sand reservoirs. Data generated from our heavy oil services is used by geologists, engineers and petro-physicists to calibrate wire line logs, identify potentially productive intervals, estimate reserves and evaluate reservoir quality for description. These services include the following:

- Dean Stark Analysis
- Clark Hot Water Process
- Proprietary V-Notch Sampling
- Particle Size Distribution
- X-Radiography
- Digital colour photography techniques
- Tailing Ponds Analysis and Bitumen Extraction

WebOILSANDS | weboilsands.agatlabs.com

WebOILSANDS is a customized, web-based, software package designed for oilsands data management. This program has the ability to recognize trends and anomalies and to ensure the repeatability and quality of data. This secure, online database interacts with our laboratory *Oilsands Reporting System (ORS)* to provide real-time project and sample progress reports, photo-capture, preliminary analytical results, work flow processing, and standard and custom report generation with data quality checking.



Our *Research and Development Program* enables us to work collaboratively with clients in creating innovative, environmentally-focused solutions for SAGD and mining extraction operations. We specialize in tailing ponds analysis and characterization, helping to provide green studies for petroleum production for our clients

Reservoir Characterization

AGAT Laboratories' Reservoir Characterization Division offers a complete range of services to efficiently explore, develop and produce petroleum resources. We offer clients one integrated source for complete formation and reservoir evaluation through a combination of professional personnel, advanced technology, experience and training.

Special Core Analysis

The following tests are performed to allow better predictions of reservoir performance from core samples, and to evaluate any detrimental effects of subjecting a reservoir to foreign fluids, to avoid or eliminate production problems.

- Mercury Injection Porosimetry
- Capillary Pressure Measurements
- Wettability Evaluation
- Formation Resistivity Parameters
- Relative Permeability Parameters
- Liquid Permeability Recovery Tests
- Drilling Mud Leak-off Tests
- SAGD, ES-SAGD, VAPEX
- Critical Velocity/Sensitivity
- Threshold Pressure
- Fluid Compatibility
- WAG Flood

AGAT Laboratories' SAGD simulator replicates all elements in the well system during SAGD, ESSAGD and VAPEX recovery processes. Data produced from this advanced instrumentation provides vital information when making final decisions for performance optimization and increasing economic return. Our SAGD simulator can be completely customized based on project needs.

Detailed Reservoir Fluid (PVT) Studies

The following tests are conducted on representative reservoir hydrocarbon fluids acquired through downhole sampling or recombination of surface separator samples. The data generated through these services is essential for the prediction of reservoir performance and product mix throughout the producing life of the reservoir.

- Differential Displacement
- Pressure-Volume Relationship
- Live Oil Viscosity
- Separator Flash
- Downhole Fluid Sampling Services
- Miscibility

Scale and Corrosion Services

Scale and corrosion inhibitor products can be evaluated to minimize the problems associated with the identified scale formation or equipment corrosion. The following services are useful in evaluating the potential production problems associated with handling produced and/or make-up water in both the surface facilities and injection into the reservoir.

- Water Compatibility Simulation Modeling
- Physical Compatibility
- Scale Inhibitor Evaluation
- Dynamic Wheel Corrosion Inhibitor

Rock Mechanics

Rock mechanics testing provides key information on the strength and stability of reservoir rocks with respect to drilling, fracturing and production. These services include the following:

- Elastic Modulus
- Acoustic Velocity
- Compressive Strength
- Splitting Tensile Strength
- Mohr's Circle