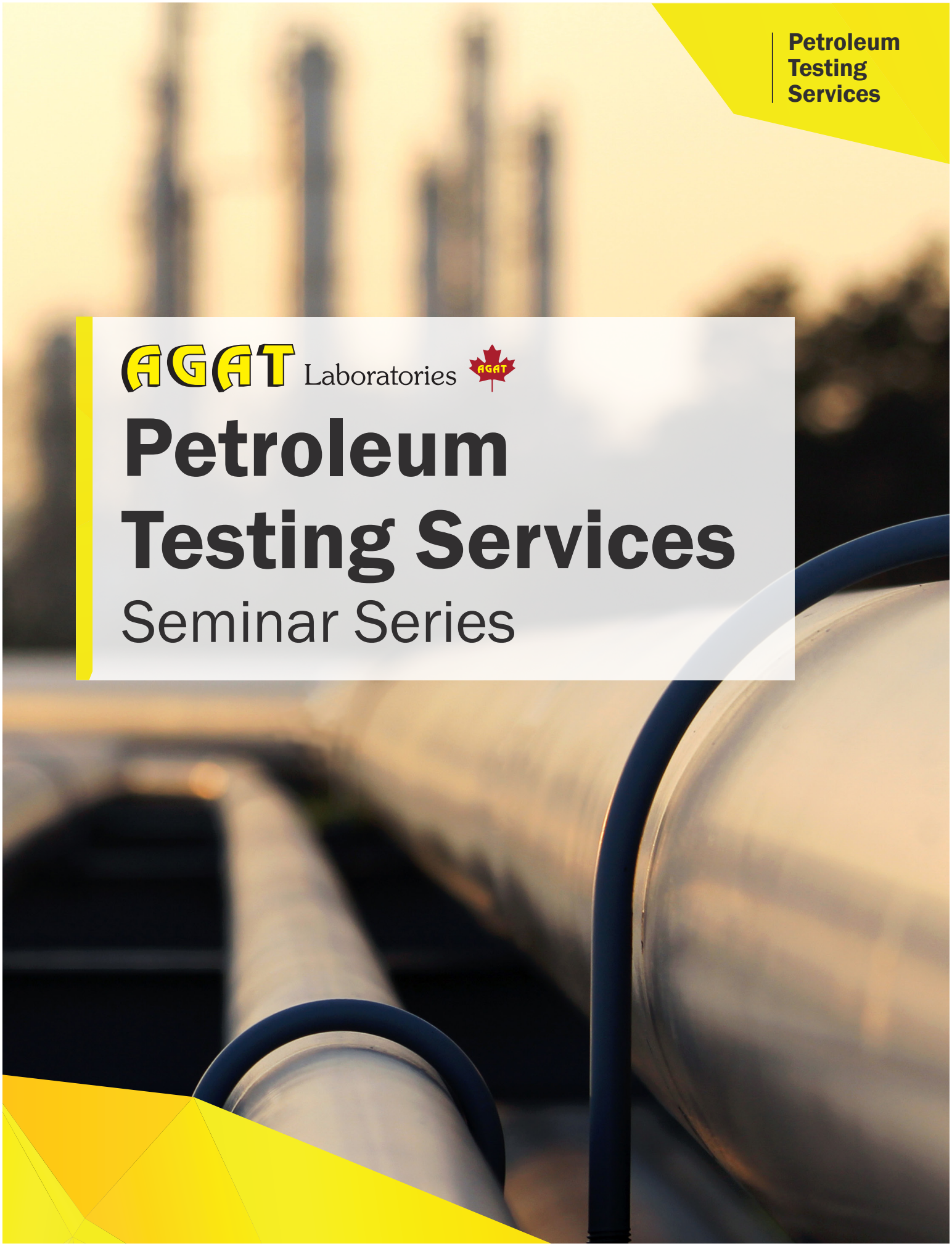

AGAT Laboratories

Petroleum Testing Services

Seminar Series

About AGAT Laboratories

AGAT Laboratories is a highly specialized Canadian company providing analytical solutions worldwide. As Canada's sole privately-owned laboratory network, AGAT Laboratories is renowned for providing accurate, timely and defensible solutions to complex analytical requests with a constant focus on ensuring "Service Beyond Analysis" to its national and international clients. With 1,200 employees coast to coast, AGAT Laboratories is comprised of 12 scientific divisions that service a wide spectrum of industries, namely, Oilsands, Rock Properties, Reservoir Characterization, Petroleum Testing, Lubricant Testing, Air Quality Monitoring, Environmental Chemistry, Forensic Chemistry, Ultra-Trace and Toxicology, Food Testing, Agricultural Analysis and Mining Geochemistry.

For more information, please visit **www.agatlabs.com** and follow AGAT Laboratories on **LinkedIn** and on **Twitter @AGATLabs**.

AGAT Laboratories

Who We Are

AGAT Laboratories is a highly specialized, Canadian-based company that provides laboratory services worldwide. With over 40 years of experience, locations coast to coast and 1,200 employees Canada-wide, AGAT Laboratories is the most geographically and technically diversified commercial testing laboratory in Canada. Committed to local communities, AGAT Laboratories aims to maintain our mission statement to deliver “Service Beyond Analysis”.

Our laboratory operations offer full-service solutions for a wide range of industries, including Mining, Environmental, Energy, Industrial, Transportation, Agriculture and Food, Forensic Science, and the Life Sciences sectors.

AGAT Laboratories’ network of laboratory facilities and depots provides extensive geographic coverage in Canada.

We are proud to set high standards in the laboratory industry with our mandate to provide timely, accurate and defensible solutions for our clients’ analytical needs with services ranging from basic testing to extremely complex technical projects.

When you choose AGAT Laboratories, you will experience “Service Beyond Analysis”. We provide quality data and unsurpassed service through our client-focused approach to accomplish and deliver on your specific needs. We understand the importance of providing accurate and timely results with consistently great service. Our methodologies, operating procedures and instrumentation are selected to provide suitable analytical techniques to produce the most precise and accurate analytical results possible. Our cutting-edge technical expertise and innovations enable us to provide you with service excellence.

Our Accreditation

AGAT Laboratories employs top quality assurance professionals who strive to improve the overall quality of service that we provide. Our Quality Assurance Department monitors the operations of the company and ensures compliance with internationally recognized standards, policies and procedures.

AGAT Laboratories is accredited for specific tests as listed in the laboratory’s current scope of accreditation by the following organizations:

- **The Standards Council of Canada (SCC)**
- **The Canadian Association for Laboratory Accreditation (CALA)**
- **SAI Global**
- **ISO/IEC 17025:2017**
- **ISO 9001:2015**
- **APEGA Certificate (Calgary)**

Proudly Canadian

We are proud to be a Canadian-based business. AGAT Laboratories continues to invest in our company and the interests of Canada’s communities. Our management team values and fosters continued development, diversification and innovation in science and technology which enable us to continually support and invest in local communities.

Corporate Seminars

• The AGAT Overview

"Service Beyond Analysis" is the mission. Learn more about the full range of multi-disciplinary analytical services offered within AGAT Laboratories' four operating divisions: Energy, Environmental, Mining and Geochemistry. A short introduction to each division will be provided along with an in-depth overview of their capabilities and how they can help clients achieve their quality goals.

Seminar Level: Beginner

Estimated Time: 30 minutes

• WebFLUIDS and Custom Data Solutions

WebFLUIDS is a Well Data Management System that provides seamless data transfer capabilities coupled with an extensive database. The WebFLUIDS analysis and tracking system will ensure that Production Accountants have the most up-to-date analyses for use in their calculations.

WebFLUIDS is designed to save companies both time and money. Learn about the historical data uploading capabilities, historical trending and flagging for anomalies, the sample scheduler function, AER submissions and customized export functions into Field View, ProTrend, Prism, Excel and PDF.

AGAT Laboratories has a dedicated team of in-house programmers, allowing us to develop custom data solutions and exports for unique IT systems. Examples of custom client data solutions and upcoming feature development of WebFLUIDS will be discussed. This seminar will also provide an opportunity to voice suggestions for our development team to improve and enhance AGAT's internal systems.

Seminar Level: Beginner to Intermediate

Estimated Time: 30 – 45 minutes

• Sample Verification: How Is It Performed and How Does It Impact You?

Using inaccurate or poor quality results in your Revenue Calculations and Allocations can cost your company hundreds of thousands of dollars. This seminar will provide an overview of how to ensure the quality and validity of your sample results and compositional analysis. It will also touch on the potential financial impacts of using poor quality results.

We will discuss in depth how an Analytical Laboratory performs their own validation of results before releasing them to the client and how we ensure that only accurate results are delivered to the end user. This seminar also serves as an introduction to our Client Project Management team who can assist you in meeting Data Management/Validation objectives.

Seminar Level: Intermediate to Advanced

Estimated Time: 45 – 60 minutes

• Understanding Laboratory Quality: The Importance of QA/QC

AGAT Laboratories prides itself on maintaining a stringent Quality Assurance (QA) and Quality Control (QC) program in all of our areas of operations. Learn about the policies and procedures that surround our QA/QC program and how it helps achieve the highest quality results for all of your analytical data. This seminar aims at arming the engineering community with quality terminology and critical information that will allow for a more comprehensive review and interpretation of analytical data.

AGAT Laboratories is compliant with ISO/IEC 17025:2017 which is the major international standard for lab testing and calibration. We will touch on what it means to be accredited to this standard and the advantages of using an accredited lab over an unaccredited third-party tester.

Seminar Level: Beginner to Intermediate

Estimated Time: 30 minutes

• Introduction to Oil and Gas Field Sampling: The Steps and Importance of Proper Sampling

AGAT Laboratories will introduce field operators, engineers and other personnel to the requirements of Oil and Gas Field Sampling from an analytical laboratory perspective. Topics covered include the importance of an optimal sample point, common issues encountered when sampling, the use of proper containers and the transportation of samples. We will discuss the equipment developed by AGAT Laboratories for specialty sampling and the requirements that need to be met during sampling events. We have also developed several novel solutions and custom methods designed for troubleshooting common issues experienced during operational upsets. This seminar incorporates several interactive elements which allow you to get accustomed to the equipment and supplies commonly used by our Field Sampling teams.

Seminar Level: Beginner to Intermediate

Estimated Time: 30 – 40 minutes

• Understanding AER Directive 17

Directive 17's purpose is to clarify the Alberta Energy Regulator (AER) requirements for measurement points used in AER royalty accounting. In its attempt to cover every possible scenario that an Albertan upstream producer may encounter, navigating the document to find relevant sections to an individual producer is difficult to locate and interpret. The AGAT Laboratories technical team has decades of cumulative experience working with Directive 17 and we have tried to distill many key takeaways into this seminar.

This seminar provides a general overview of important aspects of each section of the standard with a major focus on the sampling and analysis requirements. This is a highly customizable seminar meant to specifically cover your needs related to Directive 17. We can help to answer any questions you have relating to Directive 17. If you have specific sections you wish covered, please inform your Business Development Representative ahead of time so that we can tailor this presentation to your needs.

Seminar Level: Beginner to Intermediate

Estimated Time: 30 - 60 minutes

Oil Testing

- ## Routine Oil Testing Analysis: An Overview of AGAT Laboratories' Oil Testing Capabilities

  Learn more about AGAT Laboratories' oil testing capabilities. This seminar will discuss how a sample progresses through the chain of custody; from obtaining the oil by our field sampling team to the preparation and testing of the sample in the laboratory. Individual methods and equipment will be introduced and we will discuss the differences in testing requirements for a variety of oil APIs.

  Discuss the methods that interest you most with your Business Development Representative and we can prepare a customized seminar that is designed to provide a greater depth of understanding for specific tests and sample types.

  A portion of this seminar will be geared towards interpretation and understanding the routine oil report produced by AGAT Laboratories. This will be an in-depth examination of individual reports and any questions surrounding deliverables from the laboratory will be answered.

  Seminar Level: Beginner to Intermediate

  Estimated Time: 30 – 45 minutes

• Oil Characterization

This seminar will discuss the experiments required to fully characterize an oil sample (often referred to as a full crude assay). The resulting data will provide information regarding the class, quality and value of the oil, and will also help determine the optimum processing and handling procedures. A critical first step in the oil characterization process involves proper sample preparation and cleaning. In particular, heavy oil can be separated from oil sand samples or emulsions through multiple centrifugation steps or rotary evaporation. Once cleaned, key physical properties such as density, API gravity, viscosity, cloud points and pour points can be determined. This is all valuable information pertaining to the production and transportation of your oil.

This discussion seeks to demystify the assay process by breaking it down into key principles.

Seminar Level: Beginner to Intermediate

Estimated Time: 30 – 45 minutes

• Asphaltene Precipitation and Flocculation

Asphaltenes are large, polyaromatic molecules that contribute to production problems. This seminar will discuss the three factors that govern asphaltene solubility in oil: pressure, temperature and fluid composition. The effect of these variables on asphaltene deposition behaviour is investigated through the use of filtration and near infra-red (NIR) precipitation experiments.

The key methods for detecting asphaltenes will be discussed as well as approaches for increasing asphaltene solubility in oil products. This seminar is generally recommended for people also interested in hydrocarbon blending, as crude incompatibility is often a leading cause of asphaltene precipitation.

Seminar Level: Beginner to Intermediate

Estimated Time: 30 minutes

• Hydrocarbon Blending

Blending hydrocarbons with varying densities can create final products of much higher value than the original constituents. Unfortunately, blending different hydrocarbon streams can often lead to unintended consequences such as incompatibility and shrinkage. This seminar provides guidance and an introduction to the blending process. Tools to help calculate desired blend ratios, shrinkage calculations and predicting compatibility issues will be discussed in this seminar.

There is also opportunity to go through your blending program with AGAT Laboratories' Special Projects team. This group has been instrumental in helping to develop blending programs and designing testing protocols for dozens of major Alberta Oil and Gas producers.

At the end of this seminar, you will have the tools you need to begin formulating your own blending programs and determine the testing requirements for your final products.

Seminar Level: Intermediate to Advanced

Estimated Time: 30 – 45 minutes

• Understanding Pipeline Specifications

Navigating the world of pipeline specifications can be difficult. Small changes in specifications can often result in additional costs in the forms of additional testing, financial penalties and cumbersome operational challenges for a producer. This seminar is designed for Marketers and others who deal with custody transfer via pipelines. We will break down some of the most common testing requirements and discuss how sampling and analysis procedures can influence results. If you wish to have a particular pipeline specification examined in detail, please inform your Business Development Representative.

Seminar Level: Beginner

Estimated Time: 30 minutes

• Water Content in Oil Samples

It is crucial to know the precise water content in crude oil after it is produced. Significant amounts of entrained water can financially impact the value of the oil and can lead to corrosion issues during storage and transport. In this seminar we focus on available methods for determining water content in oil samples as well as the positive and negative aspects of each method. In addition, we will explain best practices for water content testing in terms of sampling, method selection and custody transfer.

Seminar Level: Beginner to Intermediate

Estimated Time: 30 minutes

• Introduction to SAGD Sampling and Testing

The unique process of SAGD creates an equally unique sample matrix that requires customized methodology to deal with. This seminar will focus on discussing the intricacies of working with SAGD-produced hydrocarbon material.

AGAT Laboratories has designed a proprietary method for capturing emulsion samples in a closed system for complete water/steam retention at high temperatures. Capturing this representative sample will be the first step in a long process to determine the critical parameters necessary to provide a valuation of the hydrocarbon stream being captured.

AGAT Laboratories has also developed novel methodologies for removing water from bitumen emulsions, determining hydrogen sulfide in steam, establishing gas/water ratio for vapour streams, validating enhanced solvent recovery applications and determining high accuracy water cuts for meter proving. We will review these methods and discuss key differences required for SAGD testing compared to conventional oil and gas streams.

Seminar Level: Beginner to Intermediate

Estimated Time: 30 minutes

Live Oil Testing

- ## Light End Analysis

  One of the most common issues producers see in the current market conditions is correctly assigning a light ends (C4-) concentration to their final sales oil. Due to the intricacies of custody transfer, this parameter will often result in some of the largest penalties to the value of products when they are above the specification limits. Disagreement in lab data is a very common issue and we will discuss ways to navigate any dispute situations that may develop.

  The goal of this seminar is to help producers understand how the light ends of a sample are calculated and the methods available for determining concentration. Proper sampling techniques and choosing the right methodology for your product will be a major talking point in the seminar.

  Seminar Level: Beginner to Intermediate

  Estimated Time: 30 – 40 minutes

• Vapour Pressure Testing

Vapour pressure is quickly becoming one of the most popular testing parameters for hydrocarbon products produced across Canada. Midstream companies require vapour pressure testing to ensure the integrity of the hydrocarbon stream in the pipeline as well as monitoring it as a critical safety parameter. Despite the simple nature of the test, there are various methods available with critical differences that will affect the usability of results.

We will focus on method selection for a variety of commercial products and discuss sampling requirements and common issues associated with each method. In addition, we will compare vapour pressure values across these different methodologies.

Seminar Level: Beginner to Intermediate

Estimated Time: 30 minutes

Condensate and Gas Testing

- ## Routine Condensate and Gas Analysis: An Overview of AGAT Laboratories' Pressurized Sample Testing Capabilities

  Learn more about AGAT Laboratories' capabilities in terms of testing condensate and natural gas samples. This seminar will discuss how a sample progresses through the chain of custody; from obtaining the condensate or gas by our field sampling team to the preparation and testing of the sample in the laboratory. Individual methods and equipment will be introduced and we will touch on the differences in testing requirements for a variety of API ranges (NGL, LPG or condensate). This seminar can be tailored around your own individual sampling and analysis plans. Discuss with your Business Development Representative which methods interest you most and we can customize the seminar to provide a greater understanding of those specific sample types.

  A portion of this discussion will be geared towards interpretation and understanding the routine condensate and gas reports produced by AGAT Laboratories. This will be an in-depth examination of individual reports and questions surrounding deliverables from the laboratory will be answered.

  Seminar Level: Beginner to Intermediate

  Estimated Time: 30 – 40 minutes

Produced Water Testing

- ## Routine Water Testing: An Overview of AGAT Laboratories' Water Sample Testing Capabilities

  Learn more about AGAT Laboratories' capabilities in terms of the testing of produced water. This seminar will discuss how a sample progresses through the chain of custody; from obtaining the produced water by our field sampling team to the preparation and testing of the sample in the laboratory. Individual methods and equipment will be introduced and we will discuss the testing available for aqueous matrices (amines and glycols). This seminar can be tailored around your own individual sampling and analysis plans. Discuss with your Business Development Representative which methods interest you most and we can design a seminar that will provide a greater understanding of the specific sample types.

  A portion of this seminar will be geared towards interpretation and understanding the final water reports produced by AGAT Laboratories. This will be an in-depth examination of individual reports and any questions surrounding deliverables from the laboratory.

  Seminar Level: Beginner to Intermediate

  Estimated Time: 30 – 40 minutes

• Compatibility and Scale Testing

The term “scale” refers to the formation of solid deposits due to changes in water chemistry which can result from mixing incompatible waters, or changes in temperature and pressure. The formation of such deposits can severely hinder oil and gas production thus prompting the use of varying mechanical, chemical, and inhibitory techniques targeted to reduce and remove specific scale build-ups.

Although the rate and quantity of a scale deposition is highly unpredictable, the chemical and physical features of any water can be used to accurately predict the scaling tendency and compatibility of individual waters and their mixtures. AGAT Laboratories combines experimental techniques and calculations that have been customized to replicate reservoir temperatures and pressures to predict these issues.

Compatibility of different water sources can be determined through physical experimentation (at atmospheric or reservoir conditions) or simulated by our team of technical experts utilizing software developed by the United States Geological Survey.

In this seminar, we will examine the common causes that drive compatibility and scale issues as well as provide a high-level overview of the lab testing procedures available for these parameters.

Seminar Level: Intermediate

Estimated Time: 30 minutes

• Predicting Corrosion Tendency of Produced Waters

Corrosion can be extremely detrimental to oil and gas production and transportation facilities. There are several types of corrosion that can affect oil and gas wells such as sweet corrosion, sour corrosion, oxygen corrosion and microbial corrosion.

Corrosion in wells and facilities is costly to repair but can be prevented and treated early using an analytical approach. AGAT Laboratories offers a water corrosion package to quantify the major contributors of corrosion such as H2S, CO2 and dissolved oxygen as well as identify signs of corrosion such as iron and manganese levels.

This seminar will explore our corrosion testing capabilities in detail and explain how we identify corrosion issues preemptively before they become a much larger problem.

Seminar Level: Intermediate

Estimated Time: 30 minutes

AGAT Laboratories

Visit us at

www.agatlabs.com

and find out more about our
wide range of laboratory services.