Workshop Outline

This three-day workshop will be dedicated to sharing knowledge, ideas and workflows related to predicting, characterizing and establishing fluid properties in exploration. The workshop will emphasize case studies and workflows which help delineate and mitigate for charge risk in exploration and appraisal.

The ongoing exploration for hydrocarbons within the industry is increasingly moving toward targeting specific fluid types that fulfill explicit criteria within the framework of an exacting drilling program. An understanding of the controls on Oil and Gas Phase and Quality are essential in developing a predictive capability to help delineate areas of interest pre-drill and to fulfill discerning criteria for contemporary conventional and unconventional exploration plans.

Charge Systems Analysis is a quantitative understanding of the Formation, Movement and Alteration of Petroleum Fluids from the Source interval, through Carrier Systems and into Reservoir Accumulations. An enhanced understanding of how the Charge System works includes analysis on Source Rock Organofacies development and preservation, Heat Flow variations and an understanding of the underpinning controls, as well as Migration styles and Timing relative to Trap formation. Numerous other post-emplacement effects such as Biodegradation, Water-washing, Bacterial Sulfate Reduction (BSR) / Thermal Sulfate Reduction (TSR), Oil to Gas Cracking and Gravity Segregation / Fractionation are also important considerations in the final Fluid Phase and Quality prediction for a given area.

The workshop will be focused on the theme of better understanding the Charge System by employing key geoscience sub-disciplines such as Fluid Systems Analysis (including PVT data integration), Organic Geochemistry and Numerical Simulations as well as Geology, Geophysics, Facies Analysis, Petrophysics, Structural Geology and Reservoir Engineering to help further define best practices in Predicting Fluid Phase and Quality in Exploration.

Benefits of attending

The workshop is an opportunity to share commonly practiced workflows, up-to-date knowledge and experience in using Fluid Analysis and Modeling in exploration and appraisal. It is also an opportunity to network and share experiences as well as participate in breakout sessions and discussions during the 3 days.

Who should attend?

This workshop targets technical experts involved in using Geochemistry and Basin modeling focused on Predicting Fluid Phase and Quality in exploration and appraisal, in national/international operating companies, service companies as well as academic institutions.
SESSION DESCRIPTIONS

DAY 1 MONDAY, 11 FEBRUARY

SESSION 1: SOURCE ROCK ORGANOFACIES, DEVELOPMENT AND PRESERVATION

“Starting with the end in mind”: a thorough description of the initial potential of the source rock in time and space is an often over-looked step in Petroleum Systems Analysis. Terms such as “world class source rock” have been so over-used as to make them little more than an advertising slogan. Many modern basin modeling packages still proliferate the problem by requiring a single number per cell, as input to the kinetic model calculation of generated and expelled masses and volumes – essentially a hang-over from the low computing power of the 1980’s when kinetic modeling originated. Present-day computing power now allows us to model the effects of “real” vertical and lateral changes in source rock Organofacies, richness and quality arising from the conditions under which organic matter was developed and preserved. In turn, this now behooves us to go “back to the source” to revise / develop new workflows in mapping and quantifying the raw material from which the Petroleum System originates.

The last decade or so of exploitation of organic-rich “shale” reservoirs has created large volumes of detailed geochemical and petrophysical data on source rocks, that were rarely available in the often sparsely-sampled conventional exploration world. Here, it has become easier to see how changes in organic matter properties result in differences in “shale” reservoir fluid properties such as GOR and viscosity and in some cases the storage characteristics of the reservoir rock itself. This session aims to bring together insights from conventional and unconventional “shale” geoscience to illustrate advances in the quantitative description of source rock potential in time and space.

SESSION 2: HEAT FLOW, CHARGE AND MIGRATION MODELLING

Petroleum migration and prospect charge timing and history have a first-order impact on fluid properties. Source rock properties, kitchen size and maturity, migration pathways and trap type and size are critical parameters when estimating migration efficiency and trap fill. Basin and petroleum systems modeling is the principal tool to quantify processes of migration and accumulation of petroleum fluids as it couples the thermal and stress evolution of basins and prospects with basin fluid flow. Amount and rate of petroleum generation and expulsion depend on past and present thermal conditions and are affected by heat flow variations through geological time. These principles are also applicable to unconventionals where retention processes are critical and migration pathways are short.

This session covers the processes of petroleum fluid migration and mixing and the impact of thermal and mechanical stresses as they affect quantities and properties of charge volumes, including numerical and analytical methods, critical calibration data and case histories.

DAY 2 TUESDAY, 12 FEBRUARY

SESSION 3: GEOCHEMICAL CHARACTERIZATION OF HC AND NON-HC FLUIDS

The geochemical characterization of HC (oil and gas) and non-HC (associated water, TSR fluids, H2S, CO2, N2, He and H) fluids is considered as a good qualitative assessment tool to better understand the evolution of petroliferous basins and the development of its petroleum systems. HC and non-HC fluid groups/families can be identified based on interpretation of different physical, bulk chemical, molecular chemical and isotopic properties data. Fluid compositional variations can be rationalized with respect to current knowledge and basin models; e.g. the presence of physical barriers and periods of tectonic activity. The application of fluid characterisation is a good method for evaluating basin models and aid in optimising exploration activities to reduce geological risks.

This session will focus on the identification, occurrence, distribution, origin and controls over compositional variations of HC and non-HC fluids.

SESSION 4: RESERVOIR ALTERATION PROCESSES

Hydrocarbons encounter numerous chemical and physical alterations during generation, migrations and upon accumulations and then the subsequent geological processes that control the reservoir conditions such as temperature, pressure, biological activities and so forth. These processes are mainly biodegradation, water-washing, bacterial sulfate reduction (BSR) / thermal sulfate reduction (TSR), oil to gas cracking and gravity segregation / Fractionation). Understanding the changes associated with these processes and their controls will directly trace alteration during transit and predict quality of reservoired hydrocarbons. Moreover, it will provide explanations of altered oils and associated gases. This warrants a higher predictive and assessment power of oil quality and distribution at field and reservoir scales. Currently, the common practice in the scientific community is studying each stage separately with a focus on a specific set of biomarkers, isotopes or PVT properties. The session aims to bring together insights from case studies and characterization methodologies related to the various reservoir alteration processes to raise the awareness of the relationship between the various hydrocarbon geochemical and PVT parameters in assessing and predicting alteration process.
SESSION DESCRIPTIONS

DAY 3    WEDNESDAY, 13 FEBRUARY

SESSION 5: FLUID COMPOSITIONAL ANALYSIS ON AN OPERATIONS TIME-SCALE.

Fluid compositional analysis gathered during drilling, testing and analysis of fluid samples in the laboratory has significant impact throughout the drilling life-cycle of a well. Real-time Mud gas acquisition (Conventional and Advanced techniques including real-time GCMS and Isotope analyses) is usually the only direct indication of Petroleum fluids when drilling the well and techniques using these data have significant impact on drilling operations. Additional detailed Isotope information (such as C1 to C5 and Deuterium) can be rapidly obtained from mud gases through laboratory analyses. Further insight into characterizing fluids can be acquired from down hole sampling tools (through optical spectroscopy) during wireline formation testing operations before final fluid compositional PVT laboratory studies on down hole samples are carried out at a later stage. This topic is open for workflows showing the value of compositional information as an enabler to characterize fluid type, indicate alteration processes, gain insight into migration and aid in the understanding of reservoir fluid during the early exploration stage.

SESSION 6: INTEGRATED CHARGE SYSTEMS ANALYSIS

“The whole is bigger than the parts”, an integrated approach emphasizes on the overall understanding on how petroleum fluids do form in source rocks, move and fractionate during migration, accumulate and be potentially subject to alterations in traps. In this holistic approach the interdependences of the parts are as important as the parts themselves and requires an in-depth background in basin modelling, geochemistry/kinetics, regional geology, proper data gathering as well as having pro-active teamwork interactions with sedimentologists/sequence stratigrapher, structural geologist/geomechanics, petrophysicist, seismic (quantitative) interpreter, geomodellers and reservoir engineers.

The Integrated Charge Systems Analysis session is aimed at presentations, which illustrate the benefits and values of an overall holistic approach towards Petroleum Systems Analysis and the impact on fluid characterization and quantification.

WORKSHOP GUIDELINES

FORMAT
The workshop will be 3 days, consisting of oral presentations, poster presentations and breakout sessions where participants can discuss and investigate a specific theme that is of mutual interest. The first day will feature an inaugural keynote speech by a high-profile professional from the industry.

ATTENDANCE
Registrations are invited from all relevant disciplines with experience and/or knowledge of the subject areas being addressed in the workshop. Registrations will be accepted on a first-come, first-served basis.

CALL FOR POSTERS
You are invited to prepare a poster display for presentation. If you are interested in participating, please send a short abstract along with the poster artwork (in PDF high resolution format) to cnavarro@aapg.org by 27 December 2018. All posters will be produced as pull-up banners and delivered by AAPG. There will not be any other format available for poster display. Please ensure that the poster artwork measurements are 85 cm (width) x 165 cm (height). Please provide the topic with a short abstract of the proposed poster.

REGISTRATION TYPES & FEES
Fees are inclusive of onsite documentation, coffee breaks and luncheons. To register as a ‘Student / Young Professional’ you must either be a current student or a young professional under the age of 35 with less than 10 years of work experience.

REGISTRATION DEADLINE
To guarantee your seat, please make sure to register by 31 January 2019.

WORKSHOP LOCATION
Steigenberger Hotel, Business Bay, Dubai
+971 4 369 0000

CANCELLATION POLICY
AAPG will refund the tuition, less a $100 processing fee, if the request is received no later than 30 days prior to the workshop. Cancellations must be made in writing. The registrar will accept cancellation notices by telephone, but all such notices must be followed up by fax or e-mail. No refund will be made for cancellations received less than 30 days prior to a workshop being given. Non-payment of tuition does not constitute automatic cancellation. If no cancellation notice is received by 30 days prior to a workshop, participants are liable for full tuition. AAPG reserves the right to cancel a workshop if enrollment is insufficient to ensure proper effectiveness. Substitutions for individuals can be made at any time. A paid enrollment may be transferred one time to a future workshop if the request is received prior to the 30 day cut-off date. Rollment is insufficient to ensure proper effectiveness. Substitutions for individuals can be made at any time. A paid enrollment may be transferred one time to a future event if the request is received prior to the 30 day cut-off date.
### AAPG REGIONAL VARIATIONS IN CHARGE SYSTEMS AND THEIR IMPACT ON PETROLEUM FLUID PROPERTIES IN EXPLORATION GTW

11-13 FEBRUARY 2019 • STEIGENBERGER HOTEL, BUSINESS BAY, DUBAI

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#### REGISTRATION TYPE & FEES

- Member* ($1,575)
- Non-Member ($1,785)
- Join & Save ($1,785)
- Students/Young Professionals ($525)

*To avail the member rate you must be an ACTIVE member of AAPG  

(All rates are inclusive of 5% VAT)

#### PAYMENT

- MasterCard
- VISA
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- Discover

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Credit card charges will be processed in US dollars.

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**Complete this form and send to:** Cora Navarro  
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T: +971 4 3724201 | F: +971 4 3724204 | E: cnavarro@aapg.org

Invoices must be paid within 10 days of receipt. Should your application be received six weeks prior to the commencement of the workshop, please note that we will only accept credit card payment. AAPG will refund the tuition, less a $100 processing fee, if request is received no later than 30 days prior to the workshop. Cancellation must be made in writing. The registrar will accept cancellation notices by telephone, but all such notices must be followed up by fax or e-mail. No refund will be made for cancellations received less than 30 days prior to a workshop being given. Nonpayment of tuition does not constitute automatic cancellation. If no cancellation notice is received by 30 days prior to a workshop, participant is liable for full tuition. AAPG reserves the right to cancel a workshop if enrollment is insufficient to ensure proper effectiveness. Substitutions for individuals can be made at any time. A paid enrollment may be transferred one time to a future workshop if the request is received prior to the 30 day cut-off date. The American Association of Petroleum Geologists (AAPG) does not endorse or recommend any products and services that may be cited, used or discussed in AAPG publications or in presentations at events associated with AAPG.