The American Association of Petroleum Geologists (AAPG) and our suppliers, venues and services partners are committed to providing a clean and safe environment and experience for all our event participants. We remain alert to COVID-19 risks and are closely following and adapting to all applicable health and safety guidelines. While conditions vary between countries, cities, municipalities, and facilities, safeguarding measures you may encounter at AAPG events include physical distancing and masking, readily available hand sanitizer, enhanced cleaning and disinfecting protocols, temperature health checks and screenings, minimized touchpoints and cashless payment options.

As personal safety is a shared responsibility, we ask that all participants ensure that they are feeling well and in good health, with no fever or other symptoms related to COVID-19, before showing up at an AAPG event. Any specific delegate obligations will be published in pre-event communications and clearly displayed on signage throughout our venues.

Given the ever-changing nature of the pandemic recovery, registrants will receive regular updates and instructions concerning the latest health and safety requirements.

The 2nd AAPG Integrated Emerging Exploration Concepts GTW will be held in Dhahran in November 2022. Building on the success of the first edition which was held in Dhahran in 2019, this event aims to provide a broad platform for professionals from all across the industry to discuss the challenges, future trends and opportunities to unlock remaining hydrocarbon potential in the subsurface.

The fast changing energy landscape coupled with the exploration challenges faced by the hydrocarbon industry require sophisticated and diverse technologies to ensure a safe and reliable energy future for the next generations. The ever-rising global energy demand, highly volatile prices for hydrocarbon resources, and increasingly stringent environmental regulations have led to the need for optimized exploration strategies. Navigating these economic and technical challenges effectively require multidisciplinary workflows that are able to extract maximum value from the available data.

In addition to that, simple exploration ideas are already known and mostly discovered, and finding sizable discoveries in mature basins has never been more challenging. This necessitates the generation of new exploration concepts and innovative techniques to identify conventional and unconventional prospective hydrocarbon resources in the subsurface. Furthermore, the global trend towards energy system decarbonization, open up new opportunities for subsurface utilization including Carbon capture and storage (CCS) and geothermal energy resources. This will require new ways for utilizing subsurface data to ensure the success and sustainability of such applications.

The workshop will emphasize the importance of developing new approaches and adopting best practices to generate and mature new exploration ideas. It will emphasize that with the accelerated advancements in technology and massive amount of subsurface data, the best approach is to integrate all disciplines to unlock further potential and reduce uncertainty. It will also showcase some of the latest developments in unconventional resources exploration and characterization workflows. Overall, the workshop will aim to give attendees the chance to learn how exploration challenges may have been tackled elsewhere, allowing them to share gained knowledge and perspective in their respective workplaces. As well as, helping them make impactful improvements to current workflows and processes in a challenging business environment for exploration.

During the workshop, selected speakers will present their case studies and ideas through several technical sessions covering different subsurface aspects of unconventional exploration. Breakout sessions and workshops will be also included.

Main themes to be covered during the technical sessions include:
- Existing best practices of exploration
- Under-explored and emerging exploration concepts
- The role of integrated modeling in maturing new exploration concepts
- Innovative geophysical techniques for prospect generation
- Multi-disciplinary workflows: Geology, geophysics, petrophysics
- Enhancements in unconventional resources exploration and characterization

Benefits of Attending

The workshop is a great opportunity for attendees to discuss new ways of exploration and the way forward. Deep understanding and case studies can be introduced. It is an opportunity to network and share experiences. Additional to the oral presentations and posters, there will be breakout sessions to openly discuss the concerned topics.

Who Should Attend?

This workshop targets geologists, geophysicists, petrophysicists, petroleum engineers, and managers working or interested in exploring for hydrocarbons.

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SESSION 1: EXISTING BEST PRACTICES OF EXPLORATION

Best practices of exploration in the oil and gas industry are continually being advanced and developed in many ways in accordance with technical innovations and the industry’s needs. Advancement and development across the industry have significantly increased over the last few years. However, unresolved challenges in exploration remain, and therefore, this session is designed to bring together geoscientists, petroleum engineers, leaders, and decision-makers to share the advancement and development of best practices in exploration with examples of how best practices that are being developed recently and over time have helped to resolve challenges in the exploration and characterization for both conventional and unconventional resources.

This session aims to cover a large spectrum of topics pertinent to current issues related to exploration: examples of applied research conducted by the industry, academia, and consulting firms, topics include but are not limited to current exploration challenges and solutions, subsurface imaging, and advances in reservoir characterization, identifying new resources, investigating geological systems, integrated geological, geophysical field, and subsurface studies, source rock and traps characterization and modeling, highlighting new and proven approaches, evaluation, characterization, and sweet-spot prediction of unconventional resources, new advances in reservoir geology, geophysics, geochemistry, characterization of natural fractures and application of new technologies and innovative solutions to improve environmental footprint. Overall, the session will aim to introduce a comprehensive technical discussion that covers recent advancements and developments in exploration along with a future outlook on exploration innovations in solving currently unresolved challenges.

SESSION 2: UNDER-EXPLORED AND EMERGING EXPLORATION CONCEPTS

Exploration efforts have long focused, primarily on the abundance of four way dip closure traps. However, since most of these relatively easy to find structures have been already drilled, current and future exploration efforts will need to focus on subtle and complex trap setups (i.e. Stratigraphic, combination traps, dip closure traps). However, since most of these relatively easy to find structures have been already drilled, current and future exploration efforts will need to focus on subtle and complex trap setups (i.e. Stratigraphic, combination traps, dip closure traps). Therefore, emerging energy decarbonization will enable geoscientists to tackle complex challenges and provide them with more accurate prediction of the subsurface, leading the way to mature and target new exploration concepts. Furthermore, emerging energy decarbonization applications such as subsurface carbon sequestration and geothermal energy resources, introduce new opportunities and challenges to geoscientists. This requires developing new approaches, technologies and concepts for subsurface exploration and characterization.

SESSION 3: THE ROLE OF INTEGRATED MODELING IN MATURING NEW EXPLORATION CONCEPTS

Due to the increasing complexity of exploration targets, modeling became an integral part of the workflow to identify and mature new exploration concepts. Building a robust geological model is considered to be key to understand complex geological processes. Furthermore, with increasing need for more sophisticated models to understand such complex processes, there is an exponential increase in the computational power of workstations and the development of AI algorithms that enable the generation of such advanced models. However, the main challenge for modelers remains to be how to integrate different types of data including (seismic data, well data, cores, analogs, and dynamic etc) while ensuring consistency in interpretation across a wide range of disciplines and at different scale levels, from basin to prospect scale. In addition to the challenge of properly addressing the risks and uncertainties associated with any generated model, in order to best guide future exploration drilling decisions and strategies.

SESSION 4: INNOVATIVE GEOPHYSICAL TECHNIQUES FOR PROSPECT GENERATION

In the modern landscape of the energy industry, conventional technologies are rapidly being replaced by smarter, faster, and more efficient ones. Keeping up in pace with the global digital revolution, these technological advancements enable geoscientists to adopt innovative geophysical techniques, providing them with valuable insights to new concepts of conventional and unconventional hydrocarbon exploration. Different Geophysical methods including both seismic and non-seismic, allow the study of physical properties of the subsurface rocks. They are often combined to obtain more accurate and reliable results to help in identifying new prospects along with assessing their associated risks and volumes. The session will aim to showcase innovative geophysical techniques focusing on modern acquisition, seismic data processing and imaging workflows, Key advancements in seismic data inversion and rock physics. As well as, ML/AL applications in aiding innovative geophysical data processing and interpretation techniques.

SESSION 5: MULTI-DISCIPLINARY CASE STUDIES: GEOLOGY, GEOPHYSICS, PETROPHYSICS

Navigating the current exploration challenges effectively requires multi-disciplinary workflows that are able to extract maximum value from the available data. These integrated workflows are essential to unlock additional hydrocarbon potential in the subsurface. This session will aim to showcase studies that highlight how geological, geophysical, and petrophysical data can complement each other to provide geoscientists with a comprehensive understanding for a given technical problem. It will also aim to provide insights on the value that can be obtained through a multi-disciplinary approach, and how such an approach can be optimized to answer key technical questions facing explorationists, leading the way to reduce risks and tap into remaining hydrocarbon potential.

SESSION 6: ADVANCEMENT IN UNCONVENTIONAL RESOURCES EXPLORATION AND CHARACTERIZATION

Exploration of unconventional resources has proven to be very complex and categorized as a high-risk investment, however, with high rewards. Unconventional plays are highly heterogeneous in terms of rock and fluid properties; capturing the variability at the earliest is critical for evaluating recoverable resources and further optimum development of the field. To address the challenges, integrating geoscience and engineering is one of the key aspects of defining the controls that influence productivity and make unconventional resources profitable/viable.

Unconventional resources exploration and development in Middle East are considered to have significantly huge potential. The session ‘Advancement in Unconventional Resources Exploration and Characterization’ intends to deliberate the geoscience perspective of the recent developments in unconventional resource exploration and characterization with emphasis to Middle East. Advancement in the unconventional resources exploration includes but is not limited to, the latest technological advances in seismic interpretation techniques, assessment of key reservoir properties, such as TOC content and the elastic moduli, that help to guide to map the sweet spots in the reservoir with favorable characteristics for production.

The Advancement in Unconventional Resources Exploration and Characterization session aims to cover a wide range of geoscience approaches, seismic interpretation, rock mechanical properties and deformation processes, petrophysical properties, geochemical properties and advanced core analysis.