AAPG Geosciences Technology Workshops 2017

SILICICLASTIC RESERVOIRS OF THE MIDDLE EAST

AMMAN, JORDAN • 15-16 MAY 2017

Workshop Outline:

Building on the success of the last AAPG Siliciclastic Reservoirs of the Middle East Workshop which was held in Kuwait in March 2015, a two-day workshop is planned to take place in Amman, Jordan from 15th - 16th May 2017.

Significant hydrocarbon resources, both conventional and unconventional, are locked up in clastic sedimentary successions found across the Middle East. Therefore the exploration and development of such reservoirs are greatly influenced by the prediction of continuity and connectivity of the reservoir facies, and associated structural deformation. The workshop will assist in understanding the regional depositional systems, structural and sequence stratigraphic frameworks that are key for any exploration activities. On the development phase, being able to predict reservoir characteristics can directly impact the reserve estimate, recovery factor and consequently the Net Present Value (NPV) of a field development project.

This workshop will be dedicated to knowledge sharing, exchanging ideas, and workflows pertaining to exploration and development of siliciclastic reservoirs in the Middle East region. The workshop will focus on case studies involving field and outcrop scale reservoir characterization as well as regional depositional models and their sequence stratigraphic frameworks. Selected speakers will share their knowledge and experience in various aspects. Cores display sessions will be held in separate breakout groups along with poster presentations.

The workshop will be followed by an optional geological field trip that will cover the area around Wadi Rum about 60km to the Northeast of Aqaba city. These Paleozoic (Cambrian to Ordovician) sediments are dominated by sandstone formations, along with a hot shale unit that is represented by the Mudawwara Formation of Silurian Age. During this trip various siliciclastic facies will be observed with an emphases on sedimentary structures, rock fabric, paleogeography, paleontology, and depositional environments.

Benefits of Attending:

The workshop is an opportunity for attendees to receive up-to-date knowledge about clastic reservoir characterization, exposure to regional stratigraphic case studies and to be introduced to state of the art-technologies utilized to explore and develop these important reservoirs. It is an opportunity to network and share experiences. The participants will receive a summary of the breakout sessions and discussions, lessons learned and a USB with abstracts for papers presented in the workshop.

Who Should Attend:

Geologists, geophysicists, petrophysicists, petroleum technologists, reservoir engineers and decision makers working in exploration, appraisal and development of hydrocarbon accumulation in clastic reservoirs.

REGISTRATION BROCHURE

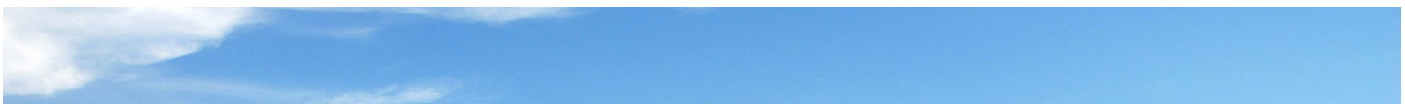
PROGRAM COMMITTEE

Co-Chair

Nassir Naji, Saudi Aramco

Committee Members

Edward Warren, BP
Rachad Zeriek, Halliburton
Khalid Ramadan, KFUPM
Maher Khatatneh, National Petroleum Company, Jordan
Mohammed Al-Masrahy, Saudi Aramco
Aimen Amer, Schlumberger
Khitam Alzughoul, University of Jordan
Aita Bijaripour, Weatherford



TECHNICAL PROGRAM

DAY 1 MONDAY, 15 MAY

07.00-08.00 Workshop Registration

08.00-08.10 Workshop Chairmen's Welcome and Introduction

08.10-08.20 Inaugural Keynote Speech:
Sa'id Al Hajri, Saudi Aramco

08.20-08.50 Inaugural Keynote Speech:
Professor Abdulkader Abed, University of Jordan

08.50-12.10 SESSION 1: UNDERSTANDING THE DEPOSITIONAL ENVIRONMENTS AND PROCESSES OF CLASTIC RESERVOIRS

The presence of stratigraphic complexity and heterogeneity at a scale below seismic resolution, coupled with stratigraphic architectures characterized by notable lateral facies changes, means that prediction of 3D stratigraphic architecture in subsurface reservoirs is challenging. Therefore, studying appropriate ancient successions (outcrop and subsurface) and modern analogues is imperative to provide insight into reservoir heterogeneity and potential variability in geological models. Understanding the nature and dynamic of various types of clastic depositional environments, and considering their resultant sedimentological expression, is important for prediction and interpretation of preserved deposits of such systems that might be recognized in the ancient stratigraphic record. A variety of types and scales of subsurface reservoirs are commonly related to the different types of depositional settings. Each Depositional setting usually exhibits different architectural element, with different characteristics resulting from the processes of sediment transport and subsequent deposition into various depositional environments. In this session, the focus will be on the studies of modern and ancient depositional environments, including -but not limited to- eolian, fluvial, shallow marine and glacial systems and their reservoir implications; this will also include reservoir characterization and modeling.

10.40-10.50 Coffee Break & Posters

10.50-11.50 Breakout Session

11.50-12.10 Report Back

12.10-13.30 Lunch

13.30-16.50 SESSION 2: INTEGRATED STRATIGRAPHIC TECHNIQUES AND STUDIES: A BETTER WAY OF CORRELATION

In this session, the focus will be in the richness of the integration of different stratigraphic disciplines such as lithostratigraphy, biostratigraphy, and sequence stratigraphy in the characterization of the siliciclastic reservoirs across the Middle East as for example the Unayzah Formation in Saudi Arabia.

In the last decade, chemostratigraphy was a proven a new technical tool technique to the previous mentioned correlation techniques helping in the proper matching and delineation of stratigraphic boundaries across local to global scale. Chemostratigraphy simply consists of "fingerprinting" or characterizing sedimentary units using their inorganic geochemical compositions and by using the stratigraphic variations in the inorganic whole-rock geochemistry to correlate different sedimentary sequences of any lithology of any age especially when other delineations techniques have limitations such as in clastic formations where fossils are poor or barren.

Nevertheless, the integration of all these techniques along with well logs, core analysis and seismic interpretation, together will lead to get a more complete understanding of the different clastic reservoirs across a region.

15.20-15.30 Coffee Break & Posters

15.30-16.50 Core Display Session

DAY 2 TUESDAY, 16 MAY

08.50-12.00 SESSION 3: DIAGENETIC CONTROLS ON RESERVOIR QUALITY: ASSESSMENT AND PREDICTION

Prediction and assessment of reservoir quality (RQ) distribution in clastic reservoirs ahead of drill bit is crucial task and more challenging in HC exploration and production. RQ is controlled by an interrelated sedimentary and diagenetic processes, including sediment source and weathering, depositional facies, and diagenetic processes (compaction, cementation and dissolution). Diagenetic alteration of reservoir properties occurs continuously with depth and time and is attributed to elevated temperature and pressure along with fluids and chemical processes. Therefore, to predict successfully porosity and permeability of clastic reservoir, one has to

understand the heterogeneities imposed by differences in sandstone compositions, textures, and burial histories.
Accurate reservoir sedimentary models can provide guidance to inter-well prediction of the spatial and temporal distribution of RQ. Distribution and factors controlling porosity destruction, preservation and enhancement in deeply buried sandstone reservoir will be addressed and discussed in this session. For example, early clay coating around sandstone grains (e.g. Devonian Jauf Reservoir) may prevent deep burial silica cements, and hence preserve the primary depositional porosity.
In this session, integrated case studies of different structural and stratigraphic settings will be covered illustrating the effect of diagenesis on RQ of various clastic reservoirs in Middle East.

10.25-10.40 Coffee Break & Posters

10.40-11.40 Breakout Session

11.40-12.00 Report Back

12.00-13.30 Lunch

13.30-17.10 SESSION 4: STRUCTURE, GEOMECHANICS AND FLUID FLOW PROPERTIES OF SILICICLASTIC RESERVOIRS

Faults and fractures within structurally complex reservoirs commonly impact fluid flow leading to compartmentalization, impacting well placement and the field development plan that are crucial for maximizing the reservoir contacts and enhancement of well productivity. Stress anisotropy impacts rock strength that controls drillability in shallow siliciclastic reservoirs and controls the ability to stimulate deeply buried conventional and unconventional reservoirs.
This session invites contributions of recent studies and advances into fracture stimulation and reservoir compartmentalization. These may include application of outcrop analogs to reservoir fault/fracture description, seismic and microseismic interpretations, geomechanical modelling and calibration, experimental studies of rock mechanics and petrophysics, and other structural/geomechanic studies of the influence of faults/fractures and rock mechanics to fluid flow and reservoir stimulation.

15.20-15.30 Coffee Break & Posters

15.30-16.50 Core Display Session

16.50-17.10 Wrap Up and Workshop Adjournment

WORKSHOP GUIDELINES

FORMAT
The workshop will be 2 days, consisting of technical presentations, poster presentations, core display sessions and breakout sessions, where participants can discuss and investigate a specific theme that is of mutual interest. The first day will feature two inaugural keynote speeches by high-profile professionals 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 JPEG or PDF high resolution format) to **akuzmenko@aapg.org** by **13 April 2017.** 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.

DOCUMENTATION
All accepted abstracts will be published on the workshop "Abstracts USB" and distributed to delegates onsite. Kindly provide your permission to publish your abstract upon submission or it will not be included on the abstract USB.

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 **8 May 2017.**

WORKSHOP LOCATION
Amman, Jordan

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. Nonpayment 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.

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Last Name _____ First Name _____

Nickname for Name Tag _____ ❑ Male ❑ Female

Company _____ E-mail (required) _____

Business Address _____ Business Telephone _____

Job Title _____

City _____ State/Province _____ Post Code _____ Country _____

Alternative Telephone _____ Fax _____

AAPG Member? ❑ Yes ❑ No ❑ Member Nº _____ I am also a member of: ❑ EAGE ❑ SEG ❑ SPE ❑ Other _____

REGISTRATION TYPE & FEES

❑ Member ($ 1100) ❑ Non-Member ($ 1300) ❑ Join & Save ($ 1300) ❑ Students/Young Professionals ($ 500)

PAYMENT

❑ MasterCard ❑ VISA ❑ American Express ❑ Discover

Card Number _____ Expiration Date _____ CSC _____

Billing Address _____ City/State _____ ZIP _____

Card Holder Name _____ Authorized Signature _____

Credit card charges will be processed in US dollars.

Complete this form and send to: Anastasia Kuzmenko
American Association of Petroleum Geologists Middle Events Coordinator
Email: akuzmenko@aapg.org | Tel: +971 4 372 4198 | Fax: +971 4 372 4204