

CARBONATE RESERVOIRS OF THE MIDDLE EAST



AAPG

Geosciences Technology
Workshops 2015

Yas Island Rotana Hotel
Abu Dhabi, UAE
23-25 November 2015



This three-day workshop is dedicated to sharing knowledge, ideas and workflows in exploring for and developing hydrocarbon bearing carbonate reservoirs of the Middle East. The workshop will emphasize case studies involving field scale reservoir characterization to regional scale lithofacies distribution, depositional models and sequence stratigraphy.

The Middle East is blessed to have numerous carbonate reservoirs from the late Precambrian (Ediacaran), late Paleozoic (middle to upper Permian), Mesozoic and Cenozoic throughout the Arabian Plate. These carbonate reservoirs have produced significant quantities of hydrocarbons in most Middle East countries. Initial production from carbonate reservoirs was from large anticlinal traps, with the focus now shifting to exploration for stratigraphic traps.

In recent years significant advances in reservoir characterization of carbonate reservoirs has been through sequence stratigraphy to better define vertical and lateral lithofacies changes. Many carbonate reservoirs and/or series of carbonate reservoirs cover large areas and require a regional understanding of lithofacies distribution and depositional environments. Carbonate reservoirs are subject to significant diagenetic modification, which has to be taken into account when exploring for and developing specific reservoirs.

This workshop will review case studies via maps, cross sections and well data that illustrate the regional to field scale distribution of lithofacies and how they fit into an overall depositional model and their sequence stratigraphy. Key learnings include the distribution of carbonate reservoirs throughout the Arabian Plate. Issues include both technical and management decision making.

Cores from several Middle East carbonate reservoirs will be on display as well as poster sessions.

Benefits of Attending

This workshop provides the opportunity to receive an up-to-date knowledge of carbonate reservoirs, their characterization, regional distribution, case studies and state of the art technology that can be utilized to explore for and develop these reservoirs. This workshop will provide the opportunity to network and share experiences. Participants will receive a USB containing abstracts of talks and poster sessions that are presented.

REGISTRATION BROCHURE

PROGRAM COMMITTEE

Abdulla Al Mansoori, ADCO (Co-Chair)

Nassir Najj, Saudi Aramco (Co-Chair)

Noel Lucas, Al Hosn Gas

Christian Strohmenger, ExxonMobil Research Qatar

Harald Granser, OMV

Thomas Steuber, Petroleum Institute

Nasser Al-Ghamdi, Saudi Aramco

Aita Bijaripour, Weatherford Labs

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FIELD TRIPS SPONSOR



شركة أبوظبي للعمليات البترولية البرية المحدودة (أدكو)
Abu Dhabi Company for Onshore Petroleum Operations Ltd. (ADCO)

Schedule

Day 1: Monday, 23 November 2015

07:30 - 08:30	Workshop Registration
08:30 - 08:40	Workshop Chairmen's Welcome and Introduction
08:40 - 08:50	Welcome Speech Mohamed Juma, ADCO
08:50 - 13:00	Session 1: Long-Produced Giant Reservoirs
Session Chairs:	Abdulla Al Mansoori, ADCO & Christian Strohmenger, ExxonMobil Research Qatar

This session will focus on well-characterized giant carbonate oil and gas reservoirs of the Middle East. Advances in reservoir characterization will be elucidated through case studies of Cretaceous, Jurassic, and Permo-Triassic reservoirs from different Middle Eastern fields and countries (UAE and Saudi Arabia). New approaches in stratigraphic correlation and reservoir quality prediction will be shown at regional and field scales. The main emphasis is to demonstrate how new ideas and concepts can help to enhance the economic efficiency of hydrocarbon production of "old", long-produced carbonate fields. Revisiting and integrating all available geological, geophysical, petrophysical, and engineering data in light of new understanding is crucial, not only for enhancing hydrocarbon production of known oil and gas fields, but also for recognizing future exploration opportunities.

08:50 - 09:20	Session Keynote Abdulkader Afifi, Saudi Aramco
10:10 - 10:30	Coffee Break
11:20 - 13:00	Core Display and Poster Discussions
13:00 - 14:30	Lunch
14:30 - 18:00	Session 2: Under Explored Reservoirs
Session Chairs:	Thomas Steuber, Petroleum Institute & Nassir Al Naji, Saudi Aramco

This workshop session will focus on under explored conventional reservoirs of the Middle East. These conventional reservoirs may contain high reservoir potential in under explored parts of the Middle East. Examples are the Rub Al Khali and Red Sea and other areas throughout the Middle East with similar under explored areas. Advances in reservoir characterization, new approaches to stratigraphic correlation, reservoir quality prediction based on integration of data bases, such as geological, geophysical, petrophysical and engineering data bases help focus on key under explored areas and specific stratigraphic intervals. Once these areas/stratigraphic intervals are identified a new wave of exploration for additional hydrocarbons will discover additional oil and gas fields throughout the Middle East.

14:30 - 15:00	Session Keynote Ahmad Saqer Al Suwaidi, ADMA-OPCO
15:25 - 15:45	Coffee Break
16:35 - 18:00	Core Display and Poster Discussions
18:30	Icebreaker Reception and Dinner

DAY 2: Tuesday, 24 November 2015

08:30 - 12:20	Session 3: Unconventional Reservoirs
Session Chairs:	Noel Lucas, Al Hosn Gas & Aita Bijaripour, Weatherford Labs

The success of unconventional reservoir production in the United States has sparked intense interest worldwide, particularly among several nations in the Middle East and North Africa. Leaders in these countries view unconventional reservoirs as a key strategic resource to add to their energy portfolio. In particular unconventional reservoir gas production is viewed as a critically important energy source for running electrical power and desalination plants, alleviating the need for costly gas imports. In an effort to develop this resource, these countries are actively seeking unconventional reservoir technology from the United States and other countries.

During the early phases of exploration and prospect appraisal of unconventional reservoirs, drilling, coring, and logging of a number of stratigraphic wells must be conducted to properly develop an accurate sub-surface model. The complexity and heterogeneity of unconventional reservoirs demands it. To drill and complete a lateral well can easily cost upwards of \$MM10 USD, 70% of which will be spent on the required hydraulic fracture stimulation. To mitigate risk, and ensure maximum production from every well, an operator must have a clear understanding of reservoir properties within a geological and stratigraphic framework. Based on the resulting core, fluid, geologic, stratigraphic, and log evaluation, informed decisions are then made possible to determine economic potential, lateral well placement, and an optimal completions strategy.

08:30 - 09:00	Session Keynote Volker Vahrenkamp, ADCO
09:25 - 09:45	Coffee Break
11:00 - 12:20	Core Display and Poster Discussions
12:20 - 14:00	Lunch

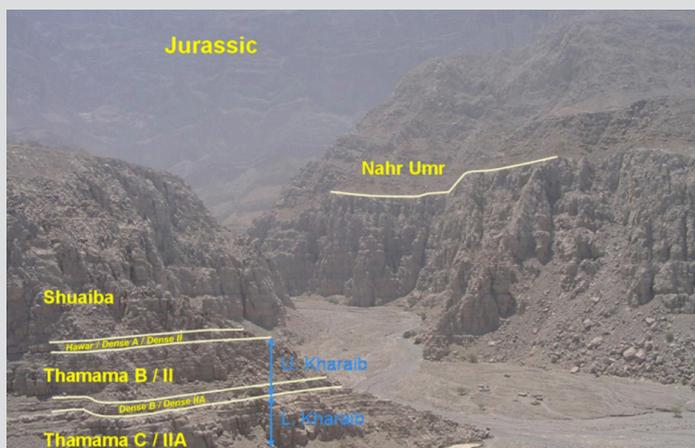
FIELD TRIP OPTION 1: Field trip to the Kharai and Shuaibi Formations (Barremian to Aptian), Wadi Rahabah, Ras Al Khaimah, UAE

Overnight field trip departing at 14:00
Accommodation will be provided in Ras Al Khaimah.
Limited to 30 participants.

Field Trip Leaders: Abdulla Al Mansoori & Ali Al Shamry, ADCO; Christian Strohmenger, ExxonMobil Research Qatar

The field trip will take you to outcrops of the Musandam Peninsula of Ras Al-Khaimah, UAE equivalent in age and architecture to the producing Shuaiba and Kharai formations in the subsurface of the Arabian Peninsula. Outcrops are of seismic scale and thus provide field-scale cross-sections that help to refine sequence stratigraphic and facies models, and aid to the understanding of reservoir geometry distribution, and reservoir continuity in the subsurface.

The objective of this field trip is to compare stratigraphy, sedimentology (depositional sequences and parasequence stacking patterns), as well as structural geology of the Lower Cretaceous Shuaiba and Kharai formations, outcropping at Wadi Rahabah with core and well-log data from the subsurface of the Arabian Platform. In addition, the Hagab Thrust and the impact of structural controls (mechanical stratigraphy) will be studied in Wadi Rahabah.



FIELD TRIP OPTION 2: Field trip to the Modern Sabkha Environment, Abu Dhabi, UAE

Half day field trip departing at 14:00

Limited to 30 participants

Field Trip Leaders: Ibrahim Al Ali & Ismail Al Hosani, ADCO; Hesham Shebl, ZADCO

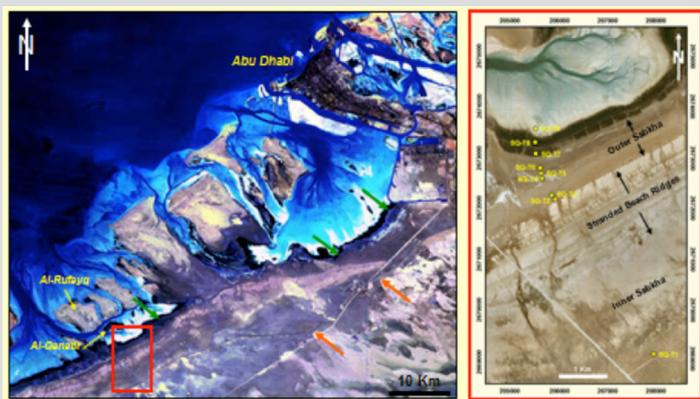
The modern carbonate-evaporite depositional environments along the Abu Dhabi shoreline and offshore Abu Dhabi belong to the few areas of the world where the geoscientist can observe the interplay between carbonate and evaporite sedimentation. Supratidal (sabkha) to intertidal and shallow subtidal (microbial mat and peloid-skeletal tidal-flat) environments will be studied in the vicinity of Al-Qanatir Island.

Al-Qanatir Island

In the vicinity of the road to Al-Qanatir Island participants will be able to study a complete and undisturbed lateral facies succession from the upper supratidal to the lower intertidal and shallow subtidal:

- Upper supratidal stranded beach ridges
- Topographic highs, some cm above the adjacent upper sabkha environment
- Upper sabkha (upper supratidal)
- Surface covered by polygonally-cracked halite crust
- Middle sabkha (middle supratidal)
- Surface covered by finely-crystalline, whitish anhydrite polygons
- Lower sabkha (lower supratidal)
- Surface covered by shiny, sparkling gypsum crystals
- Upper to lower intertidal microbial mat
- Crenulated or crinkled microbial mat above gypsum mush facies
- Blistered and pinnacle microbial mat
- Polygonal and tufted microbial mat
- Lowermost intertidal to shallow sub-tidal
- Peloid-skeletal tidal-flat

Many of these depositional environments and facies successions correspond to those observed in cores from the subsurface of the Arabian Peninsula.



THE WORKSHOP GUIDELINES

FORMAT

The workshop will be 3 days, consisting of technical sessions, core displays and poster presentations, along with 2 field trip options. The presentations, core displays and posters will enable participants to discuss and investigate a specific theme that is of mutual interest. There will be an Icebreaker Reception and Dinner on **Monday, 23 November 2015**.

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 **22 October 2015**. 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 200 cm (height).

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

Please provide the topic with a short abstract of the proposed poster.

DOCUMENTATION

Participants will be provided with electronic access to documentation from the core-display sessions after the workshop.

REGISTRATION TYPES & FEES

Fees are inclusive of onsite documentation, coffee breaks, luncheons, field trips and any social events taking place during the workshop. By selecting 'Join and Save' you are opting for your registration fee to cover the cost of becoming an AAPG member.

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 work experience. Please note submission of valid ID will be required at registration. If valid proof cannot be provided you will be asked to pay the full registration fee.

REGISTRATION DEADLINE: 16 November 2015.

WORKSHOP LOCATION: Yas Island Rotana Hotel
Abu Dhabi, UAE, +971 2 656 4000

FIELD TRIPS

Participants are requested to select which field trip they wish to attend. Both field trips are included free of charge as part of the workshop registration fee. Places are limited for both trips and registration will be on a first come first served basis.

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.

Complete this form and fax to:
Anastasia Kuzmenko
American Association of Petroleum Geologists
Middle East Region
Marketing & Events Coordinator
Email: akuzmenko@aapg.org
Fax: +971 4 3724204

CARBONATE RESERVOIRS OF THE MIDDLE EAST

Abu Dhabi, UAE • 23 - 25 NOVEMBER 2015

Last Name	First Name
Nickname for Name Tag	<input type="checkbox"/> Male <input type="checkbox"/> Female
Company	E-mail (required)
Business Address	Business Telephone
City	State/Province
Post Code	Country
Telephone	Fax
AAPG Member? <input type="checkbox"/> Yes <input type="checkbox"/> No Member No.	I am also a member of: <input type="checkbox"/> EAGE <input type="checkbox"/> SEG <input type="checkbox"/> SPE <input type="checkbox"/> Other

ACTIVITIES AND EVENTS

- Yes, I will attend the Icebreaker Dinner and Reception.
- Yes, I will have a guest joining me at the Icebreaker Reception and Dinner for the additional fee of \$150.
- Yes, I will attend the field trip option 1 (Wadi Rahabah, Ras Al Khaimah - over night trip)
- Yes, I will attend the field trip option 2 (Modern Sabkha Environment, Abu Dhabi - half day trip)

REGISTRATION TYPE & FEES

- Member (\$1500) Non Member (\$1700) Join & Save (\$1700) Students / Young Professionals (\$500)

PAYMENT

Credit Card: MasterCard VISA American Express Discover

Card Number	Expiration Date
Card Holder Name <small>Credit card charges will be processed in US dollars.</small>	Authorized Signature

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.

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